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Table of Contents

Journal of Research and Rural Planning
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Original Article

Investigating Spatial-Physical Consequences of Polygamy Phenomenon in Border Villages of Iran (Case Study: Hirmand County)

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Abstract

Purpose- The most common type of marriage in Iran is monogamy, however polygamy is sometimes happening. It seems that the situation of polygamy, as well as the causes and factors involved in it, is varied in different geographic regions and even within the geographical regions of Iran. Also, the phenomenon in different regions will have many physical consequences. So, the basic question is, given the particular geographical situation and ethnic diversity in the region, what are the physical consequences of polygamy on rural settlements in Hirmand County? The purpose of this study was to analyze the situation and spatial consequences of polygamy phenomenon in rural areas of Hirmand County in Sistan and Baluchistan province, Iran.

Design/methodology/approach- The research is descriptive-analytical and based on, field studies and completion households' questionnaires. The statistical population of the study consisted of 303 villages, which after the consultation with members of the councils, local experts in the study area, 30 villages with prevailing occurrence of polygamy had been selected by proportional allocation method according to their destination to the border. SPSS and ArcGIS soft wares were used for data and statistical analysis and zoning.

Findings- The results of the study confirm that the less distance between the villages of Hirmand County from the border of Iran and Afghanistan, the more polygamy cases in villages within a radius of 5 km of the border is more common than other villages. In this regard, the results of Kendall test confirm the significant relationship between this lifestyle and its impact on the physical development of villages.

Originality / Value- A review in the literature of research shows that this issue has not been taken into consideration in previous studies related to the field of geography. To this regard, the study, understanding the necessity and importance of this issue, sought to study and analyze the situation of polygamy as well as to analyze its physical consequences on the rural settlements in Hirmand County.

Keywords: Polygamy, Spatial consequences, Villages, Hirmand County, Iran.

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1. Introduction

Marriage has always been acknowledged as the most important and most important social formulation for full filling the emotional needs of individuals. Marriage is also a complex, subtle way of human communication. The review of existing literature shows that some of main reasons of marriage are mainly love and affection, having a partner and companion in life, satisfying emotional-psychological needs and increasing happiness (Nawabinejad, 2001). In this regard, the family as a social system involves a group of people living together through marriage, reproduction and raising children. This system and social organization have played a vital role in the history of human development and socialization, which is influenced by other social institutions, and possibly made a change in them (Mohammadi & Sheikhi, 2008, as cited in Parsons and Bills, 1998). In fact, marriage is entering to a new stage of life, which is a very important part of individual and social life of each person. How to initiate and form relationships in their subsequent behaviors can affect their couples and their children positively or negatively. Since marriage is often referred to as legal, religious, and cultural practices, whose nature and quality is built upon by social norms, it can therefore be called monogamy or polygamy, which are in a different position in each society (Bernardes, 2005). The phenomenon of polygamy is one of the topics that has been widely considered by social thinkers and family studies in the last century. The term polygamy means a marriage that lets to be married to more than one woman. In terms of etymology, it does not identify the number of husband or wives, but its historical usage has always been the marital concept of a man with more than one woman (Gould & Kolb, 1964). Polygamous marriage in collective societies is a typical pattern. In these societies, fertility rates are high and children are seen as providing sources of labor and wealth, and they are protecting the parent's socio-economic interests. Thus, the desire to have a lot of children, has been supported through the polygamy structure for the family system. Nevertheless, in Iran, polygamy is not common, and there is a minor difference on the number of married women with the number of married men, statistically. In 1996, this number was 78000, which is 0.66 percent of the total number of married men, and in 2004 the number became less than that and decreased to 32.2 percent (Ramezan Nargesi, 2005). Although this phenomenon is low in Iran, this social phenomenon is still high in some parts of the country (Mojahed & Birashk, 2004). Studies have shown that the phenomenon of polygamy is emerging, even it's already been in some specific regions. For example, estimates show that in Zahedan in 2006, out of 151,100 couples, 86,799 husbands had more than one wife. Among them, 65,425 man had two spouses and 21,374 had three or more spouses, at the same time. Moreover, the number of single-wife families in this city is 64,301. Analysis of marriage cases in this city indicates that about 42.5% of families in Zahedan have a single wife structure and 58.5% of them are in no single wife ones. (Statistics Center of Sistan and Baluchestan, 2006, as cited in Sheikhi and Mohammadi, 2008). In this regard, there are several questions that can be asked, including to which variables does polygamous phenomena depend on? What factors are contributing to the phenomenon? Is the situation of this phenomenon different, or the same, among different social groups, especially Sunnis and Shias? What are the physical consequences of polygamy for rural areas in the region? Searching in existing literature shows various factors which have been identified as the causes of polygamy. Some of them are: lack of self-denial, lack of respect to strangers' privacy, extortion of wealthy married men, save the family from poverty, and allured girls, which is a sign of moral decline in society. However, some of other real causes are: confronting divorce, sexual or physical disability of the spouse, unwanted marriage with the first wife, fighting moral corruption and illegitimate relationships, which are indicative of the proper functioning of this legal establishment (Ramezan Nargesi, 2005). It was seen that different sources have mentioned a wide range of factors as causes of polygamy. It should be noted that the above causes are among the general causes involved in the phenomenon of polygamy, and some other causes are also effective in this case, which are mostly local, and directly related to the construction, and composition of the population in

different geographical areas. Regarding this, the specific geographic regions, whose population composition is special, in terms of ethnic and religious diversity. The quantity and quality, as causes, can be different in different areas. In fact, it seems that the situation of polygamy and the causes and factors involved in it are different between geographic regions and even within geographic areas. Moreover, the phenomenon in different regions will have many physical consequences. A review in the research background shows that this issue has not been much considered in previous studies related to this field. In this regard, the present study, understanding the necessity and importance of this issue, seeks to study and analyze the situation of polygamy as well as to analyze its physical consequences on the rural settlements in Hirmand County. So the basic question is, given the particular geographical situation and ethnic diversity in the region, what are the physical consequences of polygamy on rural settlements in Hirmand County?

Accordingly, these questions will be risen, how is basically the phenomenon of polygamy in the rural areas in this county? And what was the physical consequences of this phenomenon in the villages of this county? It is expected that the findings of the study will shed light on demographic policies in the country down to the local level.

It was found out from the databases and scientific documents that there was no such study in Sistan region. However, some of the most related researches to the present study were been selected as part of the literature review.

Aref Nazari and Mazaheri (2005) conducted a study on the attachment styles and the methods of spouse selection (monogamy-polygamy) in Tehran. Findings of this study showed that there was no significant difference between the two groups. Therefore, the result shows that unsafe attachment pattern and non-normative growth frameworks are not a factor for polygamy as there is considerable tendency in women to choose men with high social and economic status. Therefore, regardless of the marital status of a man, the degree of attachment of a woman to affluent men is socially and economically high (Aref Nazari & Mazaheri, 2005).

Ramezan Nargesi (2005) mentioned that one of the reasons for marriage of women with married men was increasing girls' marriage age. His study showed that the rising age of marriage among girls is one of the reasons for getting married to a married man. In fact, in such situation that there are fewer opportunities to marry for boys due to different reasons, spouse selection opportunities for many girls is limited, too; and some girls being frustrated to marry a single person. In such a situation, they must either remain single until the end of their lives, and being deprived of advantages like being a mother or a wife, or marry the second wife. Some girls prefer to be chosen as second wife.

Nourbakhsh (2005) noted that in areas where the number of girls is higher than that of boys, polygamy is carried out with the consent of women, and the purpose of such action is to increase population and prevent prostitution. But if poverty be predominant and equity between wives cannot be met by the husband, it is psychologically unhealthy, especially when women are forced to live together in a home (Nourbakhsh, 2005).

Mohammadi & Sheikhi (2008) regarding the typology of conflict in a polygamist family, concluded that families' intensity of conflict in Shia families with Persian ethnicity is higher. Because the acceptance rate of polygamy in this group is significantly lower than women in Sunni and Baluch families. Moreover, the least intensity of verbal, psychological and physical conflicts was observed in consensual polygamist marriages, however, the most intensity of these conflicts was in increased forced polygamist marriages, which leads to conflict in power, emotional and sexual relations. Providing social services and public awareness to people in polygamist families empower women in these families. Such an action is effective in reducing the intensity of conflict and its negative effects (Mohammadi & Sheikhi, 2008).

It can be said that in the most of researches the effective factors in polygamy can be set in these categories: the economic and social status of individuals, the socioeconomic status of the society, cultural factors such as the attitude towards polygamy, the availability of suitable wives, and women situation in the society. An interesting point in examining the literature that make this research so important is that in most of these studies, the role of geographical conditions, ethnic-religious diversity and socio-cultural

conditions in different regions have not been considered, enough. Perhaps the strength of this research is to cover the mentioned factors.

Regarding what has been said so far, the purpose of the study was to investigate the physical consequences of polygamy in the villages of Hirmand County.

2. Research Theoretical Literature

2.1. The Basis of Polygamy

One of the issues discussed in the husband and wife's rights is the issue of polygamy. Some Western scholars and eatern scholars have criticized polygamy in Islam, considering it is an equivalent to the "haram". Some Muslims even regard a negative attitude to this. Maybe some of them based on bias call it one of the initiatives of the Islamic religion, while the history of polygamy goes back to pre-Islam (Motahari, 1974). In history, in the era of the Quran descent, when God limited the number of wives of a man to four, there were men who had more than four spouses and the Prophet gave them to choose four of them and leave the rest. “When Ghailan converted to Islam, and he had ten wives, the Prophet (PBUH) said to him: Keep four (of them) and leave the rest of them and separate from them” (Kanz al-Irfan, vol. 2, p. 141).

Therefore, polygamy had existed before Islam. The necessity of prescribing polygamy according to the religion of Islam is undeniable. In addition, the acceptance of polygamy in Islam was followed by other objections and doubts from Christians, and other religions. Criticism and objections have also spread to Islamic societies, and some Muslim writers have also objected to this convention. The most important objection is that polygamy is the product of sexual desire of men and their domination and tyranny over women, and its prescription leads to inequality and oppression of women (Mehrizi, 2012).

2.2. Historical Background of Polygamy

Polygamy is a tradition that has a history dating back to human history. There is more evidence of polygamy in various historical periods. Prior to Islam, this tradition had existed among all the divine religions at that time except Christianity (Ramezan Nargesi, 2005).

In western, and especially in Eastern world, polygamy had become quite commonplace. The Medes, the Babylonians, the Assyrians, the Iranians, the Indians and the Chinese, were less convinced of having a single wife. Among the Arabs, polygamy was also widespread and not limited (Afra, 2010). Gustaw Lobun also emphasized that before Islam, among the eastern tribes, the same pattern was common among Jews, Iranians, Arabs, etc. (Ramezan Nargesi, 2005).

In ancient Rome, men married more women, the purpose of multiple marriages was to achieve more dowry from women. Another purpose of multiple marriages was to connect with aristocrats and rich women (Elbedour et al., 2007). According to Ferdowsi's testimony from the Shahnameh, Bahram Goor had adopted more than 930 women, so in almost all religions and sharias, multiple wives were allowed for men.

2.3. Islamic scholars on polygamy

The issue of polygamy was not confronted with intellectual and jurisprudential problems until the new age, the question of doubts in recent times has led Muslim scholars to rationalize the same beliefs, or to re-examine the issue and present new ideas.

The popular thought in jurisprudential books, apart from the discussion of numerical delimitation and related issues, cannot be seen other ideas about it. In these documents, polygamy is considered to be an indisputable one, and its limits is four spouse. The only condition that is sometimes expressed is the financial and to observe material justice between the spouses, and the fulfillment of these two conditions is also required.

According to this group, there are some factors that suggest the use of multiple spouse and sometimes as a right for men. These factors are: infertility of a woman, woman's menopause, and man's or community's need for increasing the population; increased availability of women than men, being more females compared to males, wars which eliminate men more than women (Mahrizi, 2012).

The other group is Muhammad Abduh and his followers. They believe that polygamy is when there is an urgent need. They rely on reasoning and believe in the limitation. The most important proofs are:

1. The main condition for having more than one spouse is justifying between them, and this condition is almost impossible;
2. Religion comes to the benefit of the community and prevents the harm, but the corruption of polygamy is more likely to be not beneficial;

3. Polygamy causes hostility among children.

2.4. Polygamy in Iranian Civil Code

Polygamy has always been an important part of family law in Iran. The examination of the current rules on remarriage (Articles 16 and 17 of the Family Protection Act) indicates that the conditions set out in the current bill are somewhat making polygamy easier, and, subject to two conditions against several conditions in 1973. These two conditions are subject to a lot of ambiguity and criticism. According to the Family Protection Act of 1973, a man who is applying for a new marriage must submit his application to the court in two copies of the reasons in his request (Nikpey & Pouya, 2012). A copy of the application will be communicated to his / her spouse at the time of the notification. The court authorizes remarriage by conducting the necessary investigations and, if possible, investigating the first spouse, the man's financial ability, and administering justice. In all cases, the right reserved for the first spouse to request a certificate of impossibility of conciliation from the court. Moreover, the imprisonment for the husband, the spouse and the registrar in case of violation is predicted. A look at these two regulations, one in 1974 and the other in 2008, reveals the fundamental differences between them. In the current terms, remarriage is simplified for men by removing some necessary conditions and measures. Furthermore, the condition of commitment to the administration of justice is ambiguous and not easily possible (Nikpey & Pouya, 2012).

2.5. Polygamy in Islam

The fact is that in Islam, the importance of females, especially when it comes to motherhood, it is not comparable to a male. In this regard, there are many narratives in which the primacy of the mother's right is pointed out. One of the most prominent examples of this priority is the treatise on the rights of Imam Sajjad, in which he detailed the rights on the basis of priority (Javid, 2010). Islam does not accept polyandry, but accepts polygamy and restricts it. First, it's limited to a number, and second, doesn't allow to choose multiple wives to everyone (Ellahi & Malekutifar, 2010). Therefore, Islam has constrained polygamy in a framework of the necessities of human life, and put it under some conditions. These conditions with adherence in which it's encouraging justice and virtue and ultimately validated in the form of an acceptable version. In Islam, men can take up to four spouses, provided that the man is in charge of the conventional material and spiritual expenses (Javid, 2010). Quran says: if you are afraid of justice violation, you should only marry to one female (Surah Nisa, verse 3). The meaning of justice, as it is derived from the narratives, is the observance of equality in alimony and sexual life and other matters of life (Ellahi & Malekutifar, 2010). Currently, having several permanent spouses is accepted among all Muslims, since in the Holy Quran the principle of marriage with several women is not abandoned (Bodaghi, 2008). In general, Islam did not abolish polygamy, but corrected it.

2.6. Consequences of polygamy

Unlike some Arab and African countries, where polygamy is prevalent, this phenomenon may not have much adverse effect on the culture of those countries. In Iran, due to the culture and ethics of society, there are many negative and even negative effects of polygamy (Rafiee, 2007). Here are just some of the few adverse effects that may occur in the family or community.

The emergence of conflict of interests: In a polygamist structure, the existence of wives that have the same roles and different bases, in a way, provides the basis for competing in the use of shared resources, and, on the other hand, the disagreement over the division of labor and the use of available resources provides (Sheikhi & Mohammadi, 2008).

Fair distribution of valuable benefits: Beauty, money, mental status, youth, influence, affirmation, the ability to love are the most valuable benefits that men always seek to find in women. These characteristics among women make them more popular if a woman loses any of their characteristics, her valuable resources are at risk. Thus, if a woman has the most of these resources, they have more power than others who do not have such resources. According to studies by Simmel on polygamist families, one wife among spouses finds a more prominent position than others. This woman may be the first wife, the most favorite or the most noble, or the youngest of them who possesses valuable resources, while in both cases there is a degree of evident struggle and conflict that can be proved (Simmel, 2005).

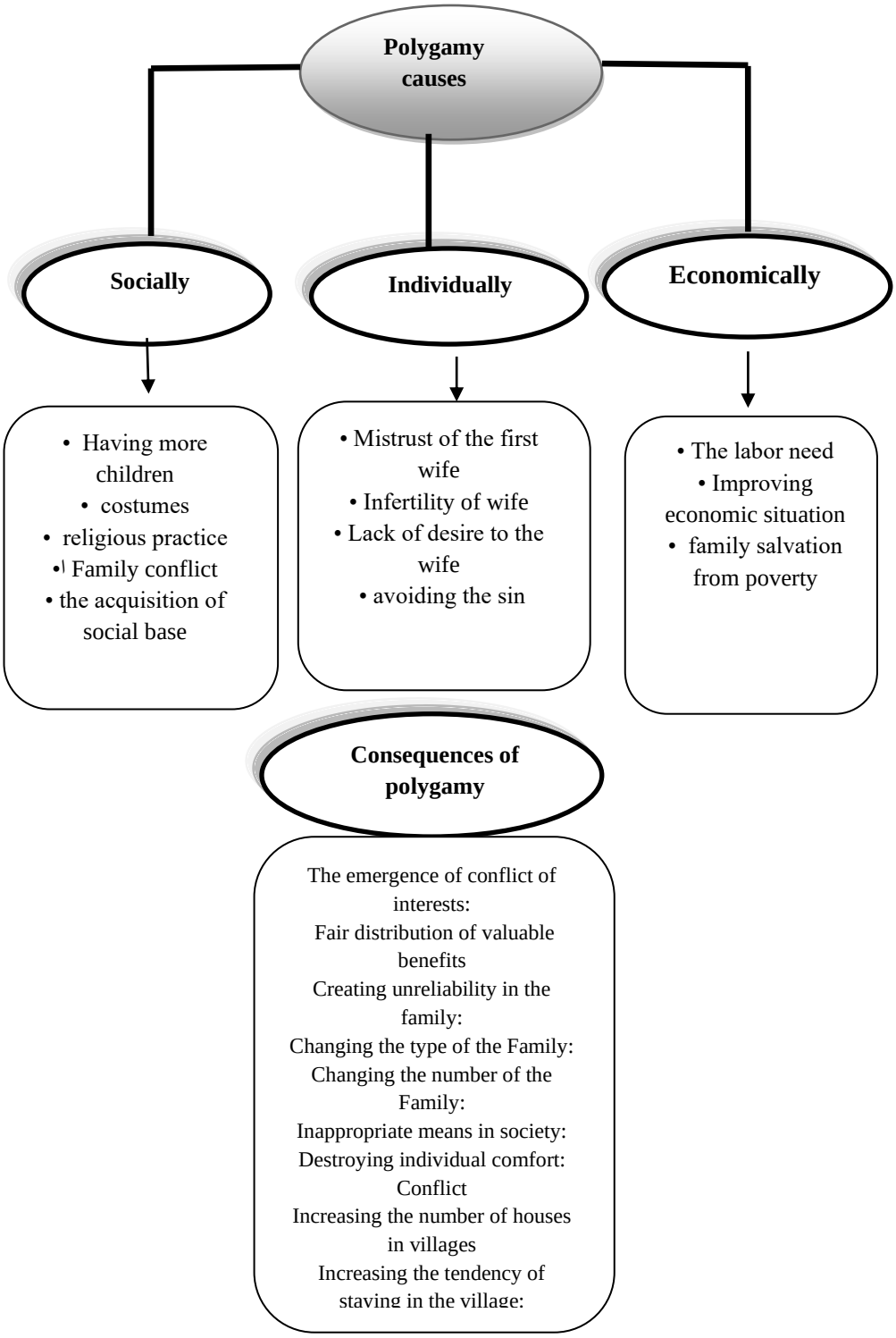

Figure 1. Polygamy causes

Creating unreliability in the family: One of the things that is necessary in social life is the trust and confidence of individuals towards each other. In the family environment, the existence of trust between women and men is necessary, so that life will be difficult without it (Rashidpour, 1994). In the polygamist families, the husband's marriage causes distrust of the first spouse to the husband

and, in some cases, children and other members of the family. It won't be the same trust on him after second marriage.

Changing the Structure of the Family: This means changing the structure of the family from monogamy to polygamy. In a society like Iran, the family structure is more monogamous. Remarriage in society changes this structure.

Changing the Number of the Family One of the things that can cause some kind of shock in the family system is the arrival of a new member to the family, since the change brings about change in the entire structure and function of the family, the roles and the tasks are transformed and expectations has been changed (Etemadi & Ebrahimi, 2010). The arrival of a spouse or a new child increases the number of family members, and this can create social and economic changes in the family system.

Inappropriate means in society: Considering the people's sight of men with multiple spouses who are viewed as lascivious and vulgar, this attitude leads to the rejection and being abandoned (Afra, 2010).

Destroying individual comfort: The value of the family is more than anything based on friendship and intimacy among its members, especially husband and wife. If this attitude continues in friendship, understanding, it will lead to peace and comfort, and ultimately to self-fulfillment (Tarsali, 2003). But usually this procedure does not exist in a polygamist family. Conflicts and jealousy within the family create an environment full of stress and psychological oppression. In polygamist families, the existence of several subsets of the family, communication and interactions between parents, two spouses, spouses - children, children - children, etc., make the relationships and interactions complicated. Children are the common point of parents and they will react unconsciously to any risks about their children (Etemadi & Ebrahimi, 2010). Breakdown in the family and the possibility of disintegration, causes an insecure feeling in the kid and, if it continues, causes irreparable harm to children. Damages like high anxiety, aggression, depression, and lack of self-esteem etc. may affect their life (Etemadi & Ebrahimi, 2010).

Occurrence of conflict: Different types of conflict, depending on the structure of the family, affect family relationships. According to sociologists, constant conflict in the family provoke the disorder and collapse (Mohammadi & Sheikhi, 2008). Increasing participation rates: In traditional and tribal areas, individuals are engaging in marriages with other people in order to be more solid with other tribes, which is resulting in individuals participating.

2.7. Physical consequences

Increasing the number of houses in villages: Because independent housing for each wife intensifies the conflicts and helps to the social and mental health of family members, the spouses prefer to live separately in favor of reducing the intensity of conflict in the family. In some Islamic scholar's books has been mentioned that a man cannot dwell his two spouses in a room because a separate residential home is one of wife's rights, but if the two spouses are satisfied, it's acceptable, but if there are several rooms in a building. For example, women dwell in different rooms (or floors) (Khomeini, 1987).

Increasing the tendency of staying in the village: There are several factors that make people to stay in rural areas. Regarding the traditional structure of the study area, one of the reasons in making population stay is polygamy, which can increase affinity and thus impede immigration.

3. Research Methodology

3.1 Geographical Scope of the Research

Hirmand County is in northeast of Sistan and Baluchistan province. The county is located at 30° 56' to 31° 23' north latitude and 61° 28' to 61° 50' east longitude. The study area is adjacent to Afghanistan from the east and north and to Zahak and Zabol Counties from the south and west, respectively. The county has 2 districts, 5 rural districts and 303 villages. According to the general population and housing census in 2011, about 14857 households and 65471 inhabitants and an area of 1100 square kilometers are included (Iranian Center of Statistics, 2011). The study of the distribution of villages in Hirmand County confirms that their distribution does not have a monotonous distribution, and the northwestern part of Hirmand County, due to the existence of the Hamoon International Wetland, lacking rural settlements. This wetland during wet periods increases humidity and reduces the temperature in the region. But in periods of drought, the conditions of the region are

completely different. 120-day winds over the region carry micro-deposits from the dry bed of the Hamoon wetland and the Hirmand River and create a lot of dust. According to the estimate that the number of days with storm and dust for a period of 10 years in the country, Sistan region has more than 1500 days in 10 years, has the first ranking in the country (Khosravi, 2008). 120-day winds have an unavoidable impact on all ecological, economic and social aspects, causing critical environmental conditions in the region.

3.2. Methodology

The method of this research is analytic-correlation, which is based on library research, field research and questionnaire completion. In this study, after identifying the influential components of the marriage pattern on the physical-physical development of the village, 23 effective indicators of polygamy pattern on physical-physical development of villages (house area, number of rooms, foundation of houses, household density in building unit, ratio of the number of rooms to the number of households, the number of doors and windows, Wall diameters in the residential unit, the height of the floor of the residential unit, the height of the floor to the ceiling, the shape of the ceiling of the residential unit, the distance of the residential unit with the closest neighbor's location, the size of the kitchen, the shape of the kitchen, the shape of the yard , the size of the yard, the type of surface in yards, occupation types of the residential unit (property, rent, mortmain), density of people in residential unit, the age of the building).

Meanwhile, the statistical population of the study includes all villages in Hirmand County (303 villages). Sample was selected from rural families with emphasis on polygamy (two spouses, three spouses and four spouses). In this regard, firstly, villages with few spouses were identified by consulting and interviewing with rural managers, council members and local experts and interviewing villagers living in different parts of the study area. In the next step, in order to determine the villages, first the distance between the villages of the border is obtained in terms of the radius of the nearest village and the farthest villages to the border. Thus, we selected 14 villages, within a radius of less than 5 km from the border, and 16 villages, above 5 km. we used proportional allocation method (based on the number of villages in each radius and population over 50 households) in a form of sample villages among 108 polygamist households (Figure 2).

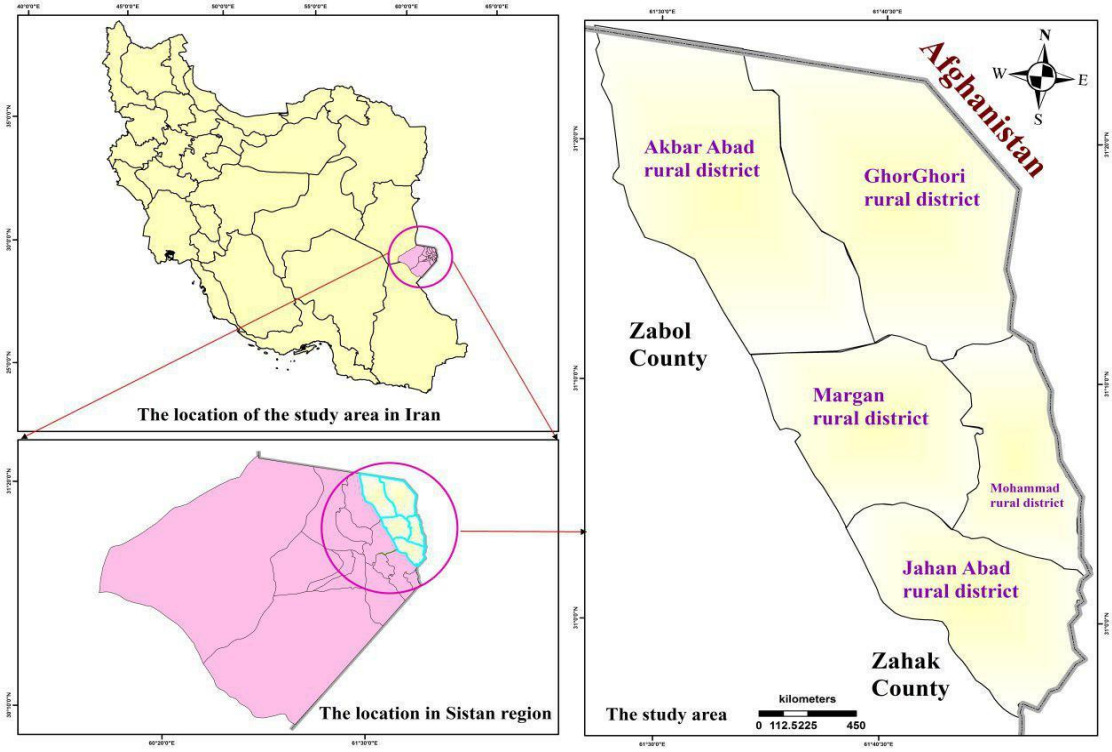

Figure 2. The study location

In the next step, Kendal Correlation Coefficient was calculated using SPSS software. The relationship between the marriage pattern and the physical development of the villages of study was investigated.

4. Research Findings

4.1. Descriptive findings

The average age of the sample population (Parents of 108 households) is 55.4 years, with a minimum of 26 years and a maximum of 78 years, and an average household size is 6.37. The level of literacy, 72.5% of them were illiterate and 27.5% of them were literate. Of the 108 households in the sample population, in 94.4% of them male parent was in charge and the rest were single mother (5.6%). The type of family relationship with the first wife shows that 43.8 percent of respondents have a close family relationship (first cousins), while in 78.5 percent of the spouses, their second marriages are either with a stranger or a distant relative. Moreover, the study of the causes of polygamy in the villages of the study area also shows that the tendency to have more children, religious practice, and family conflicts with 20.38%, 15.75% and 14.82%, respectively, are among the most causes. The need of labor force, the acquisition of social base, and family salvation from poverty were among the least causes of polygamy (Table 1).

Table 1. Polygamy causes from despondence perspective

Row	Causes	Number	Percent
1	Labor need	0	0
2	Improving economic situation	3	2/77
3	family salvation from poverty	3	2/77
4	Mistrust of the first wife	8	7/40
5	Infertility of wife	9	8/33
6	Lack of desire to the wife	11	10/18
7	avoiding the sin	5	4/62
8	Spouse death	12	11/12
9	Having more children	22	20/38
10	religious practice (according to prophet Mohammad life)	17	15/75
11	Family conflict	16	14/82
12	the acquisition of social base	2	1/86

In terms of ethnic-tribal composition, 43.33% of the villages are composed of Persian and Baluch tribes, 33.33% of Fars and 23.33% of Baluch tribes (Figure 3). Accordingly, the distribution of villages of the studied area in terms ethnic-tribal components shows that villages with a majority of Baluch tribes are mostly near the border, and the villages with a combination of ethnic (Baluch, Persian and Afghani) are in the northern towns and villages The majority of Persian are scattered throughout the studied area. On the other hand, the pattern of partnership in the studied villages indicates that 37.5% of the villages have two spouses, 37.5% of the villages have three spouses and 21.87% of the villages have a pattern of more than three-spouses. A survey on the distribution of villages in Hirmand County according to the partner pattern shows that villages with more than three spouses are mainly located in the eastern part of the study area and within a radius of less than 5 km (Figure 4). The results of these calculations indicate that most villages with few spouses are located in adjacent border areas near the border. One can conclude that, with the proximity of the border, the number of villages with more than one spouse rises, and with more distance from the border, the number of villages with polygamist families is reduced. In this group of villages, cultural backgrounds and attention to the fact that the marriage is a way of Prophet Mohammad's life plays the most important role in the tendency toward polygamy.

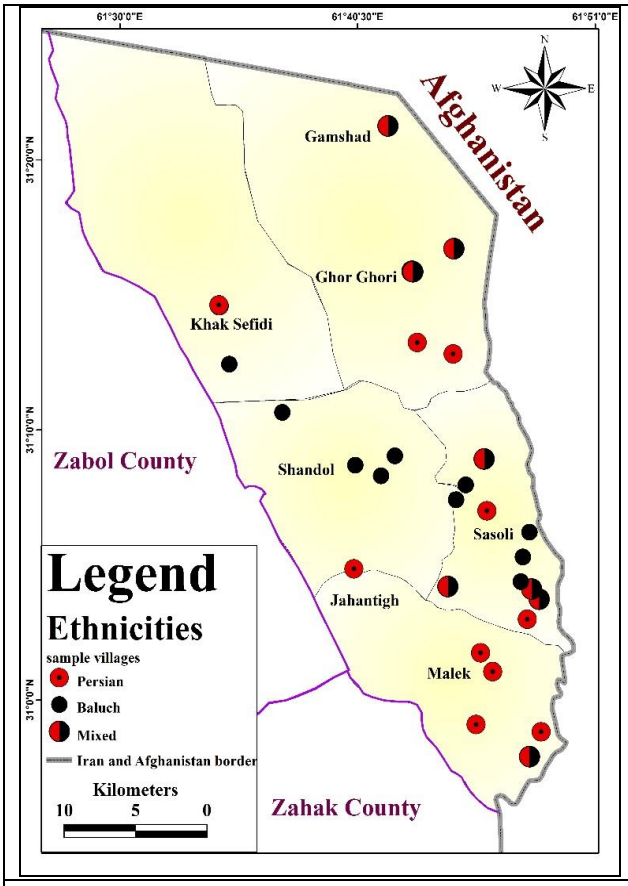

Figure 3. Villages distribution according to ethnicities

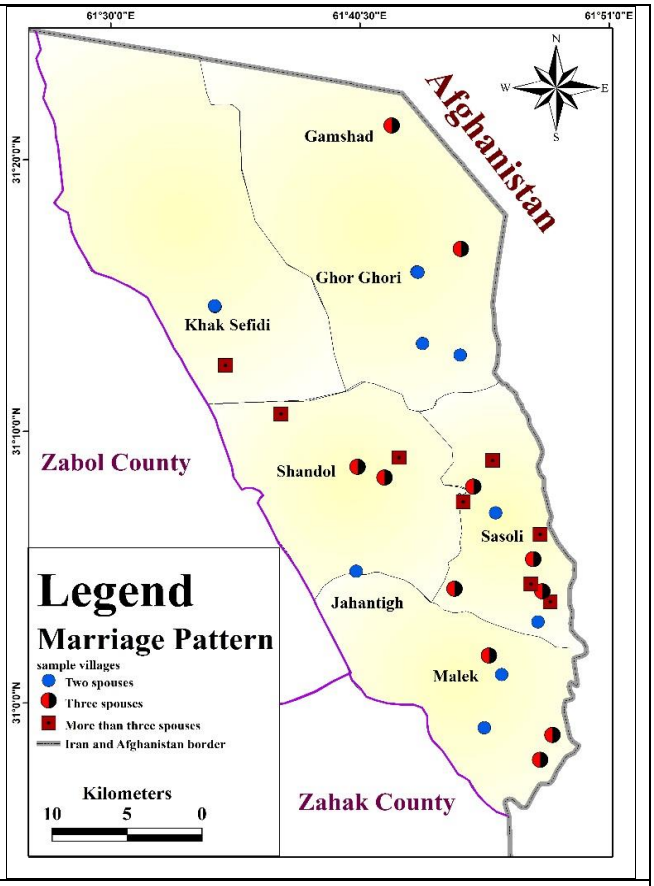

Figure 4. Villages distribution according to marriage pattern

However, based on the findings of the research, the villages of Abdul Rahman Safarzai, Milak, Al Gorg, Mullaazim Rudini, Shandal, and Sassuli have the highest number of polygamist families (Table 2).

Table 2. Rural settlements in household varieties

Village	Number of households	One spouse household		One spouse household child		One spouse households' tenant		Polygamist households	
		Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Gmashad	134	118	88/05	7	5/22	4	2/98	4	2/98
Qerqeri	245	228	93/06	9	3/67	3	1/22	5	2/04
Khaksefidi	239	224	93/72	8	3/34	4	1/67	3	1/25
Borj mirgiol	54	47	87/03	4	7/40	2	3/70	1	1/85
Tapeh kaniz	87	78	89/65	5	5/74	1	1/14	3	3/44
Piran	121	109	90/08	7	5/78	2	1/65	3	2/47
Gale Bache	77	71	92/20	4	5/19	0	0	2	2/59
Moladadi	197	187	94/92	6	3/04	3	1/52	1	0/50
Jahan abad sofla	136	124	91/17	8	5/88	1	0/73	3	2/20
Haj malek	59	54	91/52	4	6/77	1	1/69	2	3/38
Barahui	51	43	84/31	5	9/80	1	1/96	2	3/92

Village	Number of households	One spouse household		One spouse household child		One spouse households' tenant		Polygamist households	
		Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Mir jafar	202	191	94/55	9	4/45	2	0/99	5	2/47
Kharot	109	95	87/15	9	8/25	1	0/91	4	3/66
Sanjarani	446	426	95/51	13	2/91	2	0/44	5	1/12
Abdul Rahman Safarzai	150	134	89/33	6	4	3	2	7	4/66
Milak	474	448	94/51	15	3/16	3	0/63	8	1/68
Begir shahsavar	51	43	84/31	5	9/80	1	1/96	2	3/92
Joma	97	84	86/59	7	7/21	2	2/06	4	4/12
Hakim Rigi	51	41	80/39	5	9/80	2	3/92	3	55/8
Shaghalok	119	110	92/43	6	5/04	1	0/84	2	1/68
Sasuli	144	128	88/88	7	4/86	3	2/08	6	4/16
Rasul qolam	59	56	94/91	1	1/69	2	3/38	3	5/08
Nur mohammad Safarzai	73	67	91/78	3	4/10	1	1/36	2	2/73
Ali hoseina	155	145	93/54	5	3/22	4	2/58	1	0/64
Jahan tiq	144	135	93/75	5	3/47	4	2/77	4	2/77
Al Gorg	156	141	90/38	7	4/48	2	1/28	6	3/84
Mullaazim Rudini	107	92	85/98	8	7/47	1	0/93	6	5/60
Zaroozi	75	63	84	5	6/66	0	2/98	3	4
Shandal	182	162	89/01	13	7/14	1	1/22	6	3/29
Margan	52	42	80/76	7	13/46	1	1/67	2	3/84

As seen in Table 3, in the families of two spouses the area of the house is 270 meters and the building area is 160 meters. In this template, the average number of rooms is 5 with a density of 4.7. But in the families of the three spouses the area of the house is more than this. In this pattern of polygamy, the area of the house is 350 meters and the building area of the houses is 185 meters. Also, the number of rooms is 6.5 and the household density is 6.8. But in the pattern of four spouses, given that the pattern of spouses is higher in this pattern, the area of the house and the number of rooms are more than the previous ones. In this pattern, the area of the house is 360 meters and the building area of the houses is 270 meters. The number of rooms in this pattern is 7.5 and the density of the household is 6.9.

Table 3. Comparison of buildings and marriage pattern

Marriage pattern	Area of house (Meter)	building area of the house (Meter)	Number of rooms	Density of households in building units
Two spouses	270	160	5	7/4
Three spouses	350	185	5/6	8/6
Four spouses	360	270	5/7	9/6

4.2. Information analysis and testing of hypotheses

Hypothesis 1: It seems that the phenomenon of polygamy in the villages adjacent to the border (radius less than 5 km from the Iran-Afghan border) is different from other villages in the County of Hermand.

To investigate the significant difference between the phenomenon of polygamy in adjacent border villages and other villages in Hirmand County, Mann–Whitney U-Test was used. The results of the statistical analysis and Mann–Whitney U-Test on the values of the polygamy phenomenon also indicate a significant difference between the

villages adjacent the border and other villages of this County (Table 4). Accordingly, at 99% confidence level, there is a significant difference between the phenomenon of polygamy in these two groups of villages. In other words, phenomenon in near-border-villages are more common than other villages in this County.

Table 4. Result of Mann–Whitney U-Test on polygamy

Tests	Polygamy Pattern
Mann-Whitney U	263.000
Wilcoxon W	820.000
Z	-2.542
Asymp. Sig. (2-tailed)	0.000

Hypothesis 2: There is a significant relationship between the marriage pattern and the physical development of the village (increasing housing construction).

The result of Kendall rank correlation test between the occurrence of polygamy and the physical development of villages suggests a positive and significant relationship between these two variables. In other words, by increasing the number of couples in the villages of Hirmand County, the physical development of the village with a correlation coefficient of 0.552 and a confidence level of 99% increases (Table 5). Because the increase in polygamist marriage has led to the construction for comfort of families and the reduction of chaos within the families, this has led to the physical development of the villages.

Table 5. Correlation between polygamy pattern and Amount of physical development in villages

			Polygamy Pattern	Amount of physical development in villages
Kendall's tau_b	Polygamy Pattern	Correlation Coefficient	1.000	.552**
		Sig. (2-tailed)	.	.000
		N	30	30
	Amount of physical development in villages	Correlation Coefficient	.552**	1.000
		Sig. (2-tailed)	.000	.
		N	30	30

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

5. Discussion and Conclusion

Throughout history, marriage has existed in three forms of monogamy, polyandry, and polygamy. The most common marriage is monogamy. Polyandry, which a woman can have more than one husband at the same time, didn't exist except in a short time and some communities. Polygamy is a way in which a man can simultaneously have more than one wife and is commonly used in societies like Islamic society. The purpose of this study was to analyze the situation and spatial consequences of the phenomenon of polygamy in the rural areas of Hirmand County. In order to achieve this goal, the extracted data from field observations forms and villagers' supplementary questionnaires on polygamy status and its spatial effects were analyzed. The study of the causes of polygamy in the studied villages suggests that the tendency to have more children, the practice of the Prophet Mohammad, is the most common causes of polygamy among the villagers, which are consistent with the findings of two previous studies such as Nouri (2006) and Ramezan Nargesi (2005).

On the other hand, examining polygamy status in the studied villages shows that 37.5% of the villages have two spouse families, 37.5% have three spouse families and 21.87% of villages have a pattern of more than three-spouse families. The study of the distribution of villages in Hirmand County in terms of polygamist pattern indicates that villages with more than three spouses are

mainly located in the eastern part of the study area and are less than 5 km radius. In this regard, the result of the Mann-Whitney U-test in a confidence level of 99 indicates a significant difference between villages adjacent to the border with other villages in this county. The result of Kendal correlation between the occurrence of polygamy and the physical development of villages suggests a positive and significant relationship between these two variables. On the other hand, the result of Kendall rank correlation test between the occurrence of polygamy and the physical development of villages suggests a positive and significant relationship between these two variables. In other words, by increasing the number of couples in the villages of Hirmand County, the physical development of the village with a correlation coefficient of 0.564 and a confidence level of 99% increases.

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Original Article

تحلیل پیامدهای مکانی–فضایی چند همسری در روستاهای مرزی ایران (مطالعه موردی: شهرستان هیرمند)

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چکیده مبسوط

۱. مقدمه

اصطلاح چند همسری به معنی نوعی ازدواج است که داشتن بیش از یک زن را مجاز می‌شمارد. در ین ارتباط سوالات متعددی قابل طرح است، از جمله اینکه اساسا پدیده چند همسری تابع چه متغیرهایی است؟ اصولا چه علل و عواملی منجر به بروز این پدیده می‌شود؟، وضعیت این پدیده در میان گروه‌های مختلف اجتماعی و به ویژه اهل تسنن و تشیع وضعیت یکسانی دارد یا تفاوت دارد؟ پدیده چند همسری چه پیامدهای کالبدی ـ فیزیکی به سکونتگاه‌های روستایی منطقه می‌گذارد؟ و غیره. به نظر می‌رسد کم و کیف وضعیت چند همسری و نیز علل و عوامل دخیل در آن در بین مناطق مختلف جغرافیایی و حتی در درون نواحی جغرافیایی ایران متفاوت باشد. همچنین پدیده چند همسری در مناطق مختلف پیامدهای کالبدی ـ فیزیکی متعددی را به دنبال خواهد داشت. سوال اساسی این است که اساسا با توجه به وضعیت خاص جغرافیایی و تنوع قومی در منطقه، تعدد زوجه چه پیامدهای کالبدی ـ فیزیکی بر سکونتگاه‌های روستایی شهرستان هیرمند بر جای گذاشته است؟ بنابراین هدف تحقیق حاضر تحلیل وضعیت و پیامدهای مکانی فضایی پدیده چند همسری در مناطق روستایی شهرستان هیرمند دراستان سیستان وبلوچستان ایران می‌باشد.

۲.مبانی نظری تحقیق

برخلاف برخی کشورهای عربی و آفریقایی، که چند همسری در آن‌ها رواج دارد و این پدیده با توجه به فرهنگ آن کشورها می‌تواند اثراتی بسیار سوء به همراه نداشته باشد. در ایران، با توجه به فرهنگ و اخلاق عمومی جامعه، اثرات منفی و حتی مخرب چند همسری بسیار زیاد است. در این جا تنها به برخی از آثار سوء چند همسری که ممکن است در خانواده و یا جامعه روی دهد اشاره می‌کنیم که عبارت‌اند از: ظهور منافع مشترک، توزیع عادلانه منافع ارزشمند، رواج بی‌اعتمادی در خانواده، تغییر ساختار نوعی خانواده، تغییر ساختار عددی خانواده، وجه نامناسب در جامعه، بر هم خوردن آرامش فرد، به وجود آمدن کشمکش، افزایش میزان مشارکت.

در کنار پیامدهای فوق می توان به پیامدهای کالبدی-فیزیکی زیر در پدیده چند همسری در نواحی روستایی اشاره نمود:

افزایش تعداد مساکن روستا: از آنجا که تأکید بر منزل مسکونی مستقل برای هر زن از شدت کشمکش می‌کاهد و سلامت اجتماعی و روانی اعضای خانواده را تضمین می‌کند، لذا همسران ترجیح می‌دهند که جهت کاهش شدت کشمکش در خانواده و داشتن امنیت روانی، هر کدام به صورت مستقل زندگی کنند.

افزایش تمایل به ماندگاری در روستا: در مناطق روستایی عوامل مختلفی باعث ماندگاری جمعیت روستایی می‌گردد، با توجه به ساختار سنتی منطقه مورد مطالعه یکی از موارد ماندگاری جمعیت روستایی چند همسری می‌باشد، این امر می‌تواند باعث افزایش میل خویشاوندی و در نتیجه مانع مهاجرت افراد روستایی گردد.

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۳. روش شناسی

روش تحقیق حاضر، توصیفی– تحلیلی و مبتنی بر بررسی منابع اسنادی، بررسی‌های میدانی و تکمیل پرسشنامه‌های روستا و خانوار بوده است. جامعه آماری تحقیق، ۳۰۳ روستای واقع در شهرستان هیرمند را شامل می گردد که ضمن مشاوره و مصاحبه با دهیاران، اعضای شوراها و خبرگان محلی و مصاحبه با روستاییان ساکن در نقاط مختلف محدوده مورد مطالعه، ۳۰ روستای دارای پدیده قالب رخ داده چند همسری به عنوان روستاهای نمونه بر حسب فاصله از مرز و با روش تخصیص متناسب به صورت تصادفی مورد بررسی قرار گرفت. در تجزیه و تحلیل اطلاعات و تحلیل‌های آماری وپهنه بندی مکانی این پدیده از نرم‌افزارهای SPSS و ArcGIS استفاده شده است.

۴. یافته های تحقیق

نتایج تحقیق موید آن است که با کاهش فاصله روستاهای شهرستان هیرمند از مرز ایران و افغانستان، رواج چند همسری در روستاهای شعاع ۵ کیلومتری حاشیه مرز نسبت به سایر روستاها متداولتر می-باشد. در این راستا نتایج آزمون کندال تایید کننده‌ی رابطه معنادار بین اینگونه از سبک زندگی و تاثیر آن بر توسعه کالبدی- فیزیکی روستاها است.

بررسی وضعیت چند همسری در روستاهای مورد مطالعه نشان می دهد که ۳۷/۵ درصد روستاها دارای دو همسر، ۳۷/۵ درصد روستاها دارای سه همسری و ۲۱/۸۷ درصد روستاها دارای الگوی بیش از سه همسری را دارا می‌باشند. بررسی چگونگی پراکنش روستاهای شهرستان هیرمند از نظر چند همسرداری نشان می‌دهد که روستاهای دارای بیش از سه همسر عمدتاً در قسمت شرق محدوده مورد مطالعه و در شعاع کمتر از ۵ کیلومتر قرار دارند.

۵. بحث و نتیجه‌گیری

بررسی علل گرایش به چند همسری در روستاهای مورد مطالعه نشان می دهد که گرایش به داشتن فرزند بیشتر، عمل به سیره پیامبر بیشترین علل چند همسری را در بین روستاییان تشکیل می دهد که این یافته ها با یافته های ناستی زایی(۱۳۸۵)و رمضان نرگشی(۱۳۸۴) همخوانی دارد. نتیجه آزمون من ویتنی در سطح اطمینان ۹۹ نشان دهنده وجود اختلاف معنی‌دار بین روستاهای مجاور مرز با سایر روستاهای این شهرستان می‌باشد. از طرفی دیگر نتیجه آزمون همبستگی کندال بین وقوع پدیده چند همسری و میزان توسعه کالبدی – فیزیکی روستاها موید وجود ارتباط مثبت و معنی دار بین این دو متغیر می‌باشد. به عبارت دیگر، با افزایش تعدد زوج ها در سطح روستاهای شهرستان هیرمند، میزان توسعه کالبدی – فیزیکی روستا با ضریب همبستگی ۰/۵۶۴ و در سطح اطمینان ۹۹ درصد افزایش می‌یابد.

کلید واژه‌ها: چند همسری، پیامدهای مکانی فضایی، روستا، شهرستان هیرمند، ایران.

تشکر و قدرانی

پژوهش حاضر حامی مالی نداشته و حاصل فعالیت علمی نویسندگان است.

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Original Article

Evaluating the Vulnerability of Agricultural Land Use to the Landslide Risk in Rural Areas (Case Study: Tarom County)

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Abstract

Purpose- Landslides are major hazards to human activities, which often wreak havoc on economic resources, damaging properties and facilities in rural areas. The present study, considering that a perquisite of any development and planning is the recognition of the geographical features in an area, investigated the risk of landslide due to the expansion of agricultural land uses in rural areas.

Design/Methodology/Approach- This is an applied research that sought to examine the research background and select the most appropriate methods. Accordingly, it adopted a mixture of quantitative methods (fuzzy Delphi and fuzzy best-worst method), GIS and remote sensing techniques to achieve the research goal.

Findings- According to the research findings, with increasing height, slope and vicinity to the fault lines, the risk of landslides rises in the study areas. These areas are mostly located in the highlands and the eastern and western regions, where rural areas are chiefly distributed. However, the majority of rural areas are distributed in the middle areas, which have better access to water resources and are in more favorable conditions due to topographic factors. Meanwhile, agricultural lands, due to the use of river water resources, have been distributed in the middle areas, which are classified as low risk areas in terms of landslides. In contrast, due to the limited flat lands in highlands, agricultural gardens have developed in highlands with a moderate slope, which subsequently pose the risk of landslide. Therefore, the regular monitoring of land use development to increase the safety factor in new housing construction and agricultural lands is one of the planning requirements for land use development in mountainous rural areas.

Keywords: Environmental Hazards, Landslide, Fuzzy Best-Worst Method, Tarom County.

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1. Introduction

According to research conducted by the Center for Epidemiology, landslides account for about 17% of all deaths related to natural hazards worldwide (Kanungo et al., 2012; Pourghasemi et al., 2012). Landslides are often recognized as one of the most devastating and widespread natural disasters in the world and a leading cause of death and economic losses (Achour et al., 2017; Chen et al., 2018; Das et al., 2012; Pourghasemi et al., 2012). As Petley (2012) points out, landslide-associated losses and its destructive effects are more prominent in less developed countries, which is mainly rooted in the misconception of landslide hazards and the lack of appropriate resources (Razak & Mohamad, 2015). Landslides are more prevalent in mountainous areas and every year a host of landslides are reported in these areas (Lin et al., 2017; Shahabi et al., 2014). Given the future trends of these regions, as well as growing urbanization and unplanned development, deforestation and growing regional rainfall due to climatic changes, especially in earthquake-prone areas, this natural phenomenon in expected to be intensified in the future (Goetz et al., 2011; Kanungo et al., 2012). It would be of great concern, especially to mountain dwellers.

As regards mountainous areas, it is obvious that the spatial deployment of rural areas in these areas is more affected by natural factors such as access to water, flat land and fertile soil, and therefore scant attention has been paid to factors such as natural hazards. As such, many rural areas are developed in areas that are vulnerable to natural disasters. In this regard, and shown by the research, most of the rural settlements in Tarom city are deployed in mountainous areas (Table 1). In this context, during the past years, due to the prosperity of agricultural activities and the favorable environment of Tarom city for these activities, many agricultural activities and gardens have developed in valleys and the foothills. In some rural areas (Tahm, Chavarzagh, etc.), the sudden onset of landslides wreaks havoc on these agricultural uses. Accordingly, this study, recognizing the importance of land study prior to any planning for land use, investigates the development of agricultural land uses in rural areas of Tarom city with respect to the risk of landslides in these areas.

Table 1. Distribution of residential areas (rural and urban) of Tarom city in natural types

(Source: Statistic Center of Iran, 2011 & field observations, 2020)

Area	District	County	SUM	Frequency	Plain	Frequency	Mountainous	Frequency
Rural	Chavarzagh	Chavarzagh	30	%19.9	3	%10	27	%90
		Dastjerdeh	19	%12.6	6	%31.6	13	%68.4
	Central	Abbar	17	%11.3	8	%47.1	9	%52.9
		Deram	41	%27.2	5	%12.2	36	%87.8
		Gilvan	42	%28.8	10	%23.8	32	%76.2
Urban			2	%1.3	1	%50	2	%50
SUM			151	%100	33	%100	118	%100

Apart from zoning areas for landslides, the importance of addressing this issue is linked to the inadequate development of agricultural land uses, which are one of the main assets of rural households.

2. Theoretical foundations of research

Agricultural lands, which make up 40% of rural areas worldwide (Lesiv et al., 2019) are of the main land uses that have received growing attention due to the rising population and the need for food supply, development and exploitation of lands in rural areas. Meanwhile, despite the importance of land development and exploitation for agriculture in rural areas, it is necessary to recognize the use of land to mitigate the vulnerability of agricultural lands to natural disasters, particularly in mountainous areas that are prone to natural hazards. Landslides are one of the most prevalent natural disasters in mountainous areas. "Slide" is the motion of a mass under the impact of gravity, which is seen as a random process owing to the interaction of complex and unknown geographical, environmental and physical factors (Das et al., 2012). Landslides, unpredicted and destructive, are often considered as a natural hazard. Regarding landslides, risk assessment and zoning are the main measures in disaster risk management (Ambrosi et al., 2018) and one of the essential tools in any program. the main purpose of which is to mitigate the impact of natural disasters in the future (Skilodimou et al., 2019).

Over the past few decades, considering the importance of risk assessment of natural hazards such as landslides, a variety of methods have been developed for hazard mapping worldwide (Achour et al., 2017), among which GIS and remote sensing techniques have been widely utilized to assess areas more susceptible to landslide (Pirasteh & Li, 2017; Pirasteh et al., 2018; Shahabi et al., 2015). GIS (Kayastha et al., 2013; Wan et al., 2010), logistic regression models (Bui et al., 2016; Chen et al., 2019; Das et al., 2010), bivariate and multivariate methods have been introduced in many studies as a suitable method for determining landslide susceptibility (Choi et al., 2012; Meinhardt et al., 2015; Regmi et al., 2014; Zhang et al., 2016). Moreover, one way of evaluating a new approach is using the multivariate decision making methods, which is frequently used in research in combination with GIS method (Feizizadeh & Blaschke, 2014; Kayastha et al., 2013; Trinh et al., 2016). About Iran, this issue has been studied by Arab Ameri et al. (2018), Saffari & Hashemi (2017), Mansouri et al. (2016), Saffari (2014), and Moghimi et al. (2012). The Fuzzy Delphi decision making, AHP, ANP, Boolean logic and entropy methods have been employed to assess landslide risk. However, as the review of these studies suggests, they have primarily focused on zoning areas at the risk of landslide and scant attention has been paid to risk assessment relative to land use development. With this in mind, the present study, by reviewing the research background and selecting the most appropriate methods, aimed at assessing the risk of landslide with respect to the development of agricultural land uses in rural areas.

3. Research Methodology

3.1 Geographical Scope of the Research

The study area was Tarom County in Zanjan province, Iran. According to the latest political divisions of the country, this county comprises two central districts, Central and Chavarzagh. The Central districts comprises three villages of Abbar, Gilvan and Darram and Chavarzagh districts also includes two villages of Chavarzagh and Dastjerdeh. According to the last census (2016), this county had a population of 46641 people, of which 21% lived in urban areas and 79% in rural districts of the county. In addition to the great geographical distribution of rural areas, the topographic type of rural and urban settlements in this city indicates that most settlements are located in mountainous and uneven areas. As regards employment and economic activities, considering the climatic and environmental conditions, horticulture, agriculture, services and industry sectors are the main source of employment, respectively. Figure 1 shows the geographical location of Tarom city.

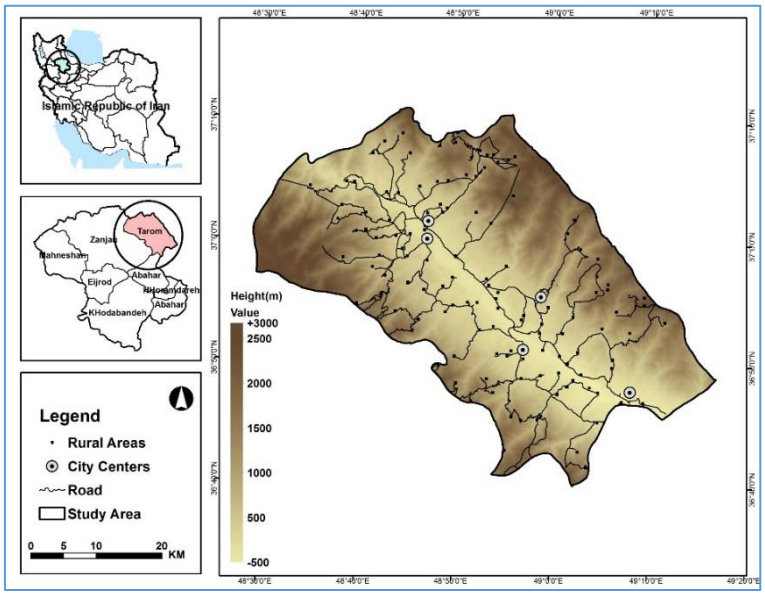

Figure 1. Geographical location of the study area

3.2. Methodology

The adoption of appropriate criteria for the intensity and susceptibility of landslides is a key step in its hazard analysis, on which the accuracy of research results is dependent. Accordingly, in the first step of the research, the criteria affecting the risk of landslides are determined based on similar studies and climatic conditions of the study area, Table 2.

Table 2. Criteria influencing landslides

Factor	Conditions of the study Area	Background of the Research
Height	Highlands in most of study areas	(Blahut et al., 2010; Chen et al., 2017; Ghimire, 2011; Kornejady et al., 2018; Zhang et al., 2015; Akgun, 2012; Bălteanu et al., 2010; Blahut et al., 2010; Chen et al., 2017)
Slope		
Slope directions		
Distance from river	The Ghezel Ozan river running through the study area and natural river flowing in some regions	
Distance from fault	The fault extending across the study area as well as Rudbar and Tarom earthquakes in 1990	(Blahut et al., 2010; Akgun, 2012; Chen et al., 2017; Zhang et al., 2015)
Geology	Geological formation in most of studied areas, low permeability to rainfall	(Bălteanu et al., 2010; Chen et al., 2017; Ghimire, 2011; Zhang et al., 2015)
Rain	Rainfall and high relative humidity in the study area due to highlands and the Ghezel Ozan River	(Bălteanu et al., 2010; Chen et al., 2017; Zhang et al., 2015)
Relative humidity		
Land Use	Most of lands in the study areas are barren and arid lands. Also, highlands in the study areas are devoid of vegetation due to soil erosion	(Bălteanu et al., 2010; Blahut et al., 2010; Ghimire, 2011; Kornejady et al., 2018)
Vegetation		(Blahut et al., 2010; Chen et al., 2017; Ghimire, 2011; Singh et al., 2014)
Distance from road		(Akgun, 2012; Chen et al., 2017)

To screen the criteria, the experts' opinion in fuzzy Delphi method was used. It was intended to draw on experts' consensus regarding the selection of appropriate criteria as the research basis, and to analyze experts' stances more precisely in a fuzzy space. The instrument was a researcher-made questionnaire based on fuzzy Delphi spectrum (Table 3). A total of 10 university professors with a relevant educational background were randomly selected from the target population. The questionnaire first explained the main purposes of the research as well as the importance of accuracy in answering questions. Then, respondents were asked to state another factor related to the research goals besides the specified criteria.

Table 3. Range of linguistic terms and numerical scale of fuzzy Delphi method

Linguistic Terms	Very Low	Low	Median	High	Very High
Fuzzy numbers	(0, 0, 0.25)	(0, 0.25, 0.5)	(0.25, 0.5, 0.75)	(0.5, 0.75, 1)	(0.75, 1, 1)

Appropriate screening criteria were selected and then based on the type of information obtained from each criterion, the zoning maps were drawn in ARC GIS, ENVI. These criteria were weighted using the best-worst method (BWM). This is one of the most effective methods for weighting the criteria, which was first proposed by Rezaei (2015). This method is superior to the AHP hierarchical method due to the compatibility ratio between the evaluation criteria. Given that this method has a lower pairwise comparison, it provides more reliable results (Rezaei, 2015). In this method, first the most and least important criteria and sub-criteria in terms of the highest and lowest scores were determined using fuzzy Delphi method. Then, a pairwise comparison questionnaire was developed (Table 4). The specialized questionnaire was filled out by 15 university professors acquainted with the research subject.

Table 4. Range of linguistic terms and numerical scale of the best-worst fuzzy method

Linguistic terms	Equal importance (EI)	Low importance (WI)	Fair importance*(FI)	Very important (VI)	Absolutely important (AI)
$\tilde{a}_{BW}$	(1, 1, 1)	(2.3, 1, 3.2)	(3.2, 2, 5.2)	(5.2, 3, 7.2)	(7.2, 4, 9.2)

After collecting the questionnaires, the data was fuzzily merged and its codes were weighed in the LINGO. After controlling the adjustment rate, the final weight of the criteria and sub-criteria was calculated. Then, by applying the weight of each criterion to the zoning map, the landslide risk map in the study area was drawn. However, to design a land use map for a 15-year period, Landsat 8 and 7 images were obtained for the study area. After pre-processing the images and enhancing the spatial separation and mosaicization of the satellite images, the land use map was identified using the maximum probability classification method for 6 land uses. After classification, for the verification and calculation of error matrix with terrestrial data, a comparison was drawn between samples of land use map and terrestrial data (GPS) (Figure 2). Finally, after overlapping landslide hazard map and land uses, residential areas and land use development were identified as landslide risk.

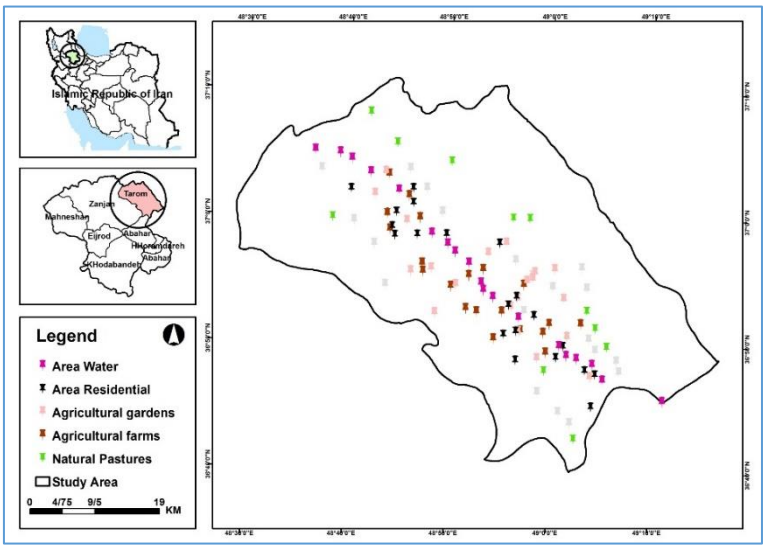

Figure 2. Land harvested points for validation of land use classification map

4. Research Findings

The target population was selected from among academic experts using fuzzy Delphi method. In this method, the questionnaire data was defined as triangular fuzzy numbers for each criterion and then the responses to the questionnaires were integrated according to Equation 1

.

$$a_j = \min\{a_{ij}\} \quad , \quad b_j = \frac{1}{n}\sum_{i=1}^{n} b_{ij} \quad , \quad c_j = max\{c_{ij}\} \quad , \quad Crisp = \frac{a_j + b_j + c_j}{3}$$

Equation 1. Fuzzy Delphi method

The median fuzzy value was set at 0.500 as the minimum fuzzy value to confirm the appropriateness of the criteria Accordingly, only the criterion of distance from main roads was removed as an inappropriate criterion (Table 5). Moreover, in the suggestions section, the experts approved the study criteria without offering any parameter.

Table 5. Fuzzy value of expert opinions and the appropriateness of each criterion

Factor	Answer					SUM	Fuzzy value		Review	Consensus
	5	4	3	2	1					
Height	1	9	-	-	-	10	(0.5, 0.77, 1)	0.757	Suitable	%90
Slope	1	7	2	-	-	10	(0.25, 0.71, 1)	0.654	Suitable	%70
Slope directions	-	2	8	-	-	10	(0.25, 0.54, 1)	0.597	Suitable	%70
Distance from fault	2	7	1	-	-	10	(0.25, 0.76, 1)	0.671	Suitable	%70
Rain	2	5	3	-	-	10	(0.25, 0.70, 1)	0.651	Suitable	%70
Relative humidity	-	3	7	-	-	10	(0.25, 0.56, 1)	0.605	Suitable	50/.
Distance from river	1	2	7	-	-	10	(0.25, 0.58, 1)	0.610	Suitable	70/.
Vegetation	2	2	6	-	-	10	(0.25, 0.62, 1)	0.624	Suitable	60/.
Geology	-	4	6	-	-	10	(0.25, 0.59, 1)	0.613	Suitable	60/.
Land Use	-	2	7	1	-	10	(0, 0.51, 1)	0.502	Suitable	70/.
Distance from main roads	-	-	-	-	2	10	(0, 0, 0.75)	0.250	Unsuitable	40/.
SUM	9	43	51	5	2	-	-		-	-

The highlands are characterized with steep slope and instable foothills. Hence, in mountainous areas, mass displacements, especially landslides, are more probable. In terms of final weight, the physical criterion and land cover were determined as the most and the least important criterion, respectively. As regards physical criterion, the sub-criterion of height and slope directions were the most and the least important sub-criteria, respectively. As for hydrological criterion, rainfall and the distance from the river and as for land cover criterion, vegetation and land use were determined as the most and the least important sub-criteria for the landslide risk, respectively (Table 6).

Table 6. Fuzzy Delphi final weight and determination of the most and the least important criteria by BWM method

Method BWM	Row	Final Delphi fuzzy weight	Sub-criterion	Method BWM	Final Delphi fuzzy weight	Factors
Important	1	0.117	Height	Important	0.424	Physical
-	3	0.107	Slope			
Least important	9	0.091	Slope directions			
-	2	0.110	Distance from fault			
Important	4	0.107	Rain	-	0.298	Hydrogeology
Least important	8	0.092	Relative humidity			
-	6	0.100	Distance from river			
Important	5	0.102	Vegetation	Least important	0.278	Land cover
-	7	0.093	Geology			
Least important	10	0.082	Land Use			
-	-	1	-	-	1	SUM

After identifying important and irrelevant criteria, the paired questionnaire was prepared by the BWM method and filled out by 15 university professors, as shown in Figure 3.

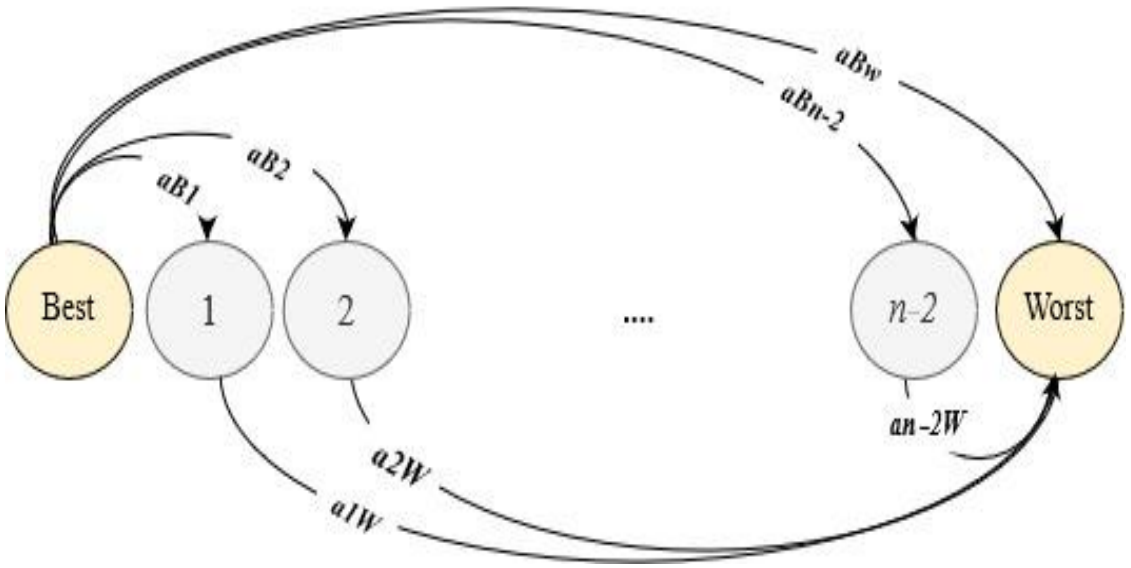

Figure 3. Paired comparison of the best and worst alternatives using the BWM method

From a gender perspective, the majority of experts were male. They were chiefly in the age group of 40-60 years and held the position of assistant professors. As for the field of study, most respondents were specialized in natural geography, as shown in Table 7.

Table 7. Demographic characteristics of the participants in the BWM

Gender	Frequency	Percent	Field of Education	Frequency	Percent
Man	11	%73.3	Rural planning	3	%20
Female	4	%26.7	Geomorphology	4	26.7%
SUM	15	%100	Climatology	4	%26.7
Age Group	Frequency	Percent	Geology	4	%26.7
More than 60 years	4	%26.7	SUM	15	%100
40 to 60 years	7	%46.7	Education	Frequency	Percent
20 to 40 years	4	%26.7	Professor	2	%13.3
Less than 20 years	0	%0	Associate	4	%26.7
Not stated	0	%0	Assistant Professor	6	%40
SUM	15	%100	PhD	3	%20
			SUM	15	%100

Pairwise comparison judgments of criteria and sub-criteria were merged in the form of fuzzy numbers, based on the most and the least important parameters, as shown in Table 8.

Then, according to Equation 2, in the LINGO program, the fuzzy value of each criteria and sub-criteria is obtained.

Table 8. Fuzzy integration of criteria and sub-criteria based on Pairwise Comparison of the most and the least important criteria

Factors	Important	Fuzzy integration	Least important	Fuzzy integration
Physical	Physical	(1, 1, 1)	Land cover	(0.67, 3, 4.5)
Hydrogeology		(0.67, 2, 4.5)		(0.67, 1, 2.5)
Land Cover		(0.67, 3, 4.5)		(1, 1, 1)
Sub-criteria	Important	Fuzzy integration	Least important	Fuzzy integration
Height	Height	(1, 1, 1)	Slope directions	(1.5, 3, 4.5)
Slope		(0.67, 1, 2.5)		(0.67, 2, 3.5)
Slope directions		(1.5, 3, 4.5)		(1, 1, 1)
Distance from fault		(0.67, 1, 1.5)		(0.67, 2, 3.5)

Factors	Important	Fuzzy integration	Least important	Fuzzy integration
Rain	Rain	(1, 1, 1)	Distance from river	(0.67, 2, 4)
Relative humidity		(0.67, 1, 2.5)		(0.67, 1, 2.5)
Distance from river		(0.67, 2, 4)		(1, 1, 1)
Vegetation	Vegetation	(1, 1, 1)	Land Use	(0.67, 1, 2.5)
Geology		(0.67, 1, 2.5)		(0.67, 1, 2.5)
Land Use		(0.67, 1, 2.5)		(1, 1, 1)

$$s.t.\begin{bmatrix} \min k \\ \left|\frac{(l_B^w, m_B^w, u_B^w)}{(l_j^w, m_j^w, u_j^w)} - (l_{Bj}, m_{Bj}, u_{Bj})\right| \le (k^*, k^*, k^*) \\ \left|\frac{l_j^w, m_j^w, u_j^w}{l_B^w, m_B^w, u_B^w} - (l_{jW}, m_{jW}, u_{jW})\right| \le (k^*, k^*, k^*) \\ \sum_{j=1}^{n} R\left(\widetilde{W}_j\right) = 1 \\ l_j^w \le m_j^w \le u_j^w \\ l_j^w \ge 0 \\ j = 1, 2, \cdots, n \end{bmatrix}$$

Equation 2. The best-worst method

$$\begin{bmatrix} \min = k; \\ l_{B1}^w - 0.67 * u_{j2}^w \le = k; l_{B1}^w - 0.67 * u_{j2}^w \ge = -k; \\ m_{B1}^w - 1 * m_{j2}^w \le = k; m_{B1}^w - 1 * m_{j2}^w \ge = -k; \\ u_{B1}^w - 2.5 * l_{j2}^w \le = k; u_{B1}^w - 2.5 * l_{j2}^w \ge = -k; \\ l_{B1}^w - 0.67 * u_{j3}^w \le = k; l_{B1}^w - 0.67 * u_{j3}^w \ge = -k; \\ m_{B1}^w - 1 * m_{j3}^w \le = k; m_{B1}^w - 1 * m_{j3}^w \ge = -k; \\ u_{B1}^w - 2.5 * l_{j3}^w \le = k; u_{B1}^w - 2.5 * l_{j3}^w \ge = -k; \\ l_{j2}^w - 0.67 * u_{B3}^w \le = k; l_{j2}^w - 0.67 * u_{B3}^w \ge = -k; \\ m_{j2}^w - 1 * m_{B3}^w \le = k; m_{j2}^w - 1 * m_{B3}^w \ge = -k; \\ u_{j2}^w - 2.5 * l_{j3}^w \le = k; u_{j2}^w - 2.58 * l_{j3}^w \ge = -k; \\ 0.167 * l_1 + 0.668 * m_1 + 0.167 * u_1 + 0.167 * \\ l_2 + 0.668 * m_2 + 0.167 * u_2 + 0.167 * l_3 + 0.668 * \\ m_3 + 0.167 * u_3 = 1; \\ l_1 \le m_1;\ m_1 \le u_1;\ l_1 \ge 0; \\ l_2 \le m_2;\ m_2 \le u_2;\ l_2 \ge 0; \\ l_3 \le m_3;\ m_3 \le u_3;\ l_3 \ge 0; \end{bmatrix}$$

Equation 4. Land Cover sub-criteria in LINGO

$$, \begin{bmatrix} \min = k; \\ l_{B1}^w - 0.67 * u_{j2}^w \le = k; l_{B1}^w - 0.67 * u_{j2}^w \ge = -k; \\ m_{B1}^w - 2 * m_{j2}^w \le = k; m_{B1}^w - 2 * m_{j2}^w \ge = -k; \\ u_{B1}^w - 4.5 * l_{j2}^w \le = k; u_{B1}^w - 4.5 * l_{j2}^w \ge = -k; \\ l_{B1}^w - 0.67 * u_{j3}^w \le = k; l_{B1}^w - 0.67 * u_{j3}^w \ge = -k; \\ m_{B1}^w - 3 * m_{j3}^w \le = k; m_{B1}^w - 3 * m_{j3}^w \ge = -k; \\ u_{B1}^w - 4.5 * l_{j3}^w \le = k; u_{B1}^w - 4.5 * l_{j3}^w \ge = -k; \\ l_{j2}^w - 0.67 * u_{B3}^w \le = k; l_{j2}^w - 0.67 * u_{B3}^w \ge = -k; \\ m_{j2}^w - 1 * m_{B3}^w \le = k; m_{j2}^w - 1 * m_{B3}^w \ge = -k; \\ u_{j2}^w - 2.5 * l_{j3}^w \le = k; u_{j2}^w - 2.5 * l_{j3}^w \ge = -k; \\ 0.167 * l_1 + 0.668 * m_1 + 0.167 * u_1 + 0.167 * \\ l_2 + 0.668 * m_2 + 0.167 * u_2 + 0.167 * l_3 + 0.668 * \\ m_3 + 0.167 * u_3 = 1; \\ l_1 \le m_1;\ m_1 \le u_1;\ l_1 \ge 0; \\ l_2 \le m_2;\ m_2 \le u_2;\ l_2 \ge 0; \\ l_3 \le m_3;\ m_3 \le u_3;\ l_3 \ge 0; \end{bmatrix}$$

Equation 3. Main criteria in LINGO

$$\begin{bmatrix} \min = k; \\ l_{B1}^w - 0.67 * u_{j2}^w \le = k; l_{B1}^w - 0.67 * u_{j2}^w \ge = -k; \\ m_{B1}^w - 1 * m_{j2}^w \le = k; m_{B1}^w - 1 * m_{j2}^w \ge = -k; \\ u_{B1}^w - 2.5 * l_{j2}^w \le = k; u_{B1}^w - 2.5 * l_{j2}^w \ge = -k; \\ l_{B1}^w - 0.67 * u_{j3}^w \le = k; l_{B1}^w - 0.67 * u_{j3}^w \ge = -k; \\ m_{B1}^w - 2 * m_{j3}^w \le = k; m_{B1}^w - 2 * m_{j3}^w \ge = -k; \\ u_{B1}^w - 4 * l_{j3}^w \le = k; u_{B1}^w - 4 * l_{j3}^w \ge = -k; \\ l_{j2}^w - 0.67 * u_{B3}^w \le = k; l_{j2}^w - 0.67 * u_{B3}^w \ge = -k; \\ m_{j2}^w - 1 * m_{B3}^w \le = k; m_{j2}^w - 1 * m_{B3}^w \ge = -k; \\ u_{j2}^w - 2.5 * l_{j3}^w \le = k; u_{j2}^w - 2.5 * l_{j3}^w \ge = -k; \\ 0.167 * l_1 + 0.668 * m_1 + 0.167 * u_1 + 0.167 * \\ l_2 + 0.668 * m_2 + 0.167 * u_2 + 0.167 * l_3 + 0.668 * \\ m_3 + 0.167 * u_3 = 1; \\ l_1 \le m_1;\ m_1 \le u_1;\ l_1 \ge 0; \\ l_2 \le m_2;\ m_2 \le u_2;\ l_2 \ge 0; \\ l_3 \le m_3;\ m_3 \le u_3;\ l_3 \ge 0; \end{bmatrix}$$

Equation 5. Hydrogeology sub-criteria in LINGO

$$\begin{bmatrix} \min = k; \\ l_{B1}^{w} - 0.67 * u_{j2}^{w} \leq = k; l_{B1}^{w} - 0.67 * u_{j2}^{w} \geq = -k; \\ m_{B1}^{w} - 1 * m_{j2}^{w} \leq = k; m_{B1}^{w} - 1 * m_{j2}^{w} \geq = -k; \\ u_{B1}^{w} - 2.5 * l_{j2}^{w} \leq = k; u_{B1}^{w} - 2.5 * l_{j2}^{w} \geq = -k; \\ l_{B1}^{w} - 1.5 * u_{j3}^{w} \leq = k; l_{B1}^{w} - 1.5 * u_{j3}^{w} \geq = -k; \\ m_{B1}^{w} - 3 * m_{j3}^{w} \leq = k; m_{B1}^{w} - 3 * m_{j3}^{w} \geq = -k; \\ u_{B1}^{w} - 4.5 * l_{j3}^{w} \leq = k; u_{B1}^{w} - 4.5 * l_{j3}^{w} \geq = -k; \\ l_{B1}^{w} - 0.67 * u_{j4}^{w} \leq = k; l_{B1}^{w} - 0.67 * u_{j4}^{w} \geq = -k; \\ m_{B1}^{w} - 1 * m_{j4}^{w} \leq = k; m_{B1}^{w} - 1 * m_{j4}^{w} \geq = -k; \\ u_{B1}^{w} - 1.5 * l_{j4}^{w} \leq = k; u_{B1}^{w} - 1.5 * l_{j4}^{w} \geq = -k; \\ l_{j2}^{w} - 0.67 * u_{B3}^{w} \leq = k; l_{j2}^{w} - 0.67 * u_{B3}^{w} \geq = -k; \\ m_{j2}^{w} - 2 * m_{B3}^{w} \leq = k; m_{j2}^{w} - 2 * m_{B3}^{w} \geq = -k; \\ u_{j2}^{w} - 3.5 * l_{j3}^{w} \leq = k; u_{j2}^{w} - 3.5 * l_{j3}^{w} \geq = -k; \\ l_{j4}^{w} - 0.67 * u_{B3}^{w} \leq = k; l_{j4}^{w} - 0.67 * u_{B3}^{w} \geq = -k; \\ m_{j4}^{w} - 2 * m_{B3}^{w} \leq = k; m_{j4}^{w} - 2 * m_{B3}^{w} \geq = -k; \\ u_{j4}^{w} - 3.5 * l_{j3}^{w} \leq = k; u_{j4}^{w} - 3.5 * l_{j3}^{w} \geq = -k; \\ 0.167 * l_1 + 0.668 * m_1 + 0.167 * u_1 + 0.167 * l_2 + 0.668 \\ * m_2 + 0.167 * u_2 + 0.167 * l_3 + 0.668 * m_3 + 0.167 * u_3 \\ +0.167 * l_4 + 0.668 * m_4 + 0.167 * u_4 = 1; \\ l_1 \leq m_1;\ m_1 \leq u_1;\ l_1 \geq 0; \\ l_2 \leq m_2;\ m_2 \leq u_2;\ l_2 \geq 0; \\ l_3 \leq m_3;\ m_3 \leq u_3;\ l_3 \geq 0; \\ l_4 \leq m_4;\ m_4 \leq u_4;\ l_4 \geq 0; \end{bmatrix}$$

Equation 6. Physical sub-criteria in LINGO

The comparisons between criteria and sub-criteria using the BWM are more consistent than other decision-making methods. The study of its value in our research method indicates its greater desirability.

Table 9. Fuzzy numerical value and compatibility of main criteria and sub-criteria

Factors	Fuzzy Weigh	£	CR	Row	Sub-criterion	Fuzzy Weight	£	CR
Physical	0.290 0.495 0.855	0.045	0.045	1	Height	(0.268, 0.323, 0.323)	0.045	0.045
				2	Slope	(0.147, 0.291, 0.332)		
				3	Slope directions	(0.082, 0.123, 0.209)		
				4	Distance from fault	(0.185, 0.291, 0.332)		
Hydrogeology	0.200 0.225 0.496			5	Rain	(0.344, 0.344, 0.757)	0.068	0.068
				6	Relative humidity	(0.275, 0.275, 0.585)		
				7	Distance from river	(0.207, 0.207, 0.514)		
Land Cover	0.180 0.180 0.367			8	Vegetation	(0.247, 0.356, 0.461)	0.026	0.059
				9	Geology	(0.195, 0.356, 0.409)		
				10	Land Use	(0.174, 0.330, 0.330)		

Physical criteria had the highest weight for landslide risk zoning. Among the sub-criteria, height and distance from the fault were the most important and slope and land use had the least significance for zoning the risk of landslides in the regions (Table 10).

Table 10. Standard weight and sub-criteria affecting the landslide risk

Factors	Weight	Row	Sub-criterion	Weight	Final Weight
Physical	0.521	1	Height	0.314	0.164
		2	Slope	0.274	0.143
		3	Slope directions	0.131	0.068
		4	Distance from fault	0.281	0.146
Hydrogeology	0.267	5	Rain	0.415	0.111
		6	Relative humidity	0.327	0.087
		7	Distance from river	0.258	0.069
Land Cover	0.212	8	Vegetation	0.356	0.075
		9	Geology	0.338	0.072
		10	Land Use	0.306	0.065
SUM	1	-	-	-	1

For landslide riskoning, the final weight of the sub-criteria was applied to the zoning map of each and areas exposed to landslide risk were identified (Figure 4).

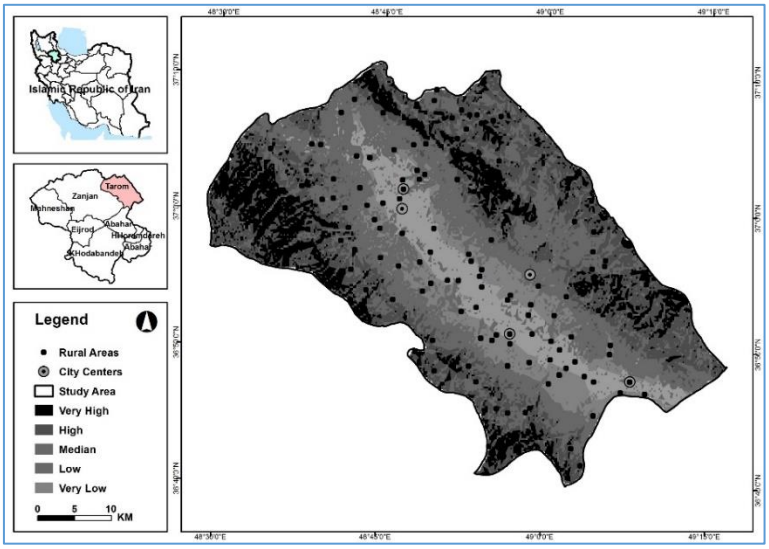

Figure 4. Landslide risk zoning

In rural areas, a larger portion of land uses were dedicated to agriculture. Naturally, these land uses thrive in areas with a desirable access to water resources. Since the Ghezel Ozan river runs through the study area, most of the water areas are located in the middle areas. Residential areas, which are built in low and flat lands, and agricultural lands, due to the convenient access to river water resources, have been developed in the middle areas with a lower height and slope. However, the use of agricultural gardens (mostly olive) in the study period (2005-2009) was more prevalent in areas with medium and steep slopes (Table 11).

Table 11. Land use area of areas classified by the maximum probability method

Land Use	Area (Hec)				Changes	
	2005		2019			
Area Water	245.1	%1.2	1890.9	%0.9	-0.28	Low
Residential Areas	4039.5	%2	4145.2	%2	+0.05	High
Gardens of Agriculture	10647.1	%5.2	11785.8	%5.8	+0.56	High
Agriculture Farmer	16423.1	%8.1	17005.7	%8.4	+0.29	High
Natural Pastures	136936.1	%67.5	132085.1	%65.1	-2.39	Low
Barren Lands	32454.6	%16	36038.8	%17.8	+1.77	High
SUM	202951.5	%100	202951.5	%100	-	-
-	Kapa coefficient: %84		Kapa coefficient: %87.6		-	

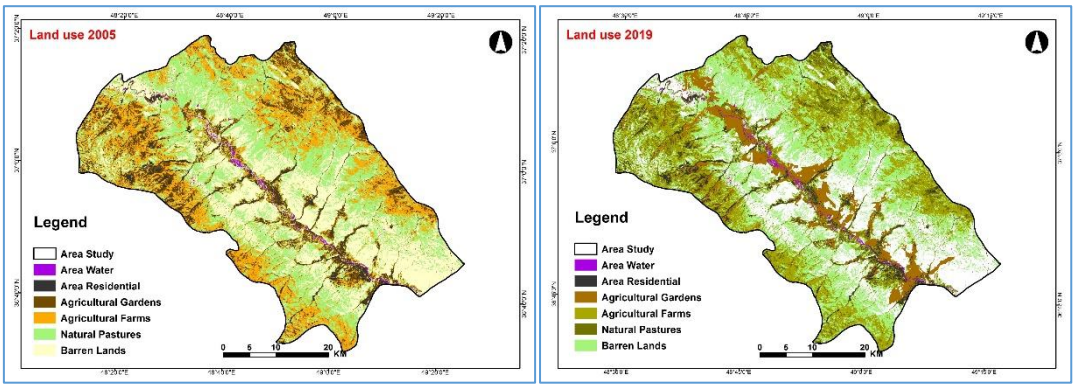

Figure 5. Land use in the study area

Given the overlap between the landslide risk and land use, the residential and agricultural land uses mainly developed in areas with a low landslide risk. The agricultural gardens primarily developed in areas with high risk of landslides, despite the fact that a landslide would damage these areas.

Table 12. Land use development matrix in areas exposed to landslide risk over 2005-2019

Landslide hazard	Area Water	Residential Areas	Gardens of Agriculture	Agriculture Farmer	Natural Pastures	Barren Lands
Very Low	→	*	*	*	*	*
Low	*	→	*	→	*	*
Median	*	*	↓	*	*	*
High	*	*	*	*	→	*
Very High	*	*	*	*	*	→

5. Discussion and Conclusion

Residents of rural areas in highlands often pursue a location-based biological pattern; however, due to the nature of their residence, they have to deal with a plethora of natural disasters in these areas. The rural areas under study sit in a mountainous area and landslides, as one of the natural hazards in rural areas, have always debilitated economic and infrastructural capacities of these areas. Considering that any development and planning requires knowledge and awareness of the geographical features of the region, which is a prerequisite for development, especially in rural areas, this study investigated the risk of landslides in light of the expansion of land uses. Given the purpose of the present study and as stated by Zumpano et al. (2018), this risk is largely ignored despite the fact that rural communities are vulnerable in terms of economic resilience and natural disaster losses. The present study adopted a combination of quantitative methods (fuzzy Delphi and best-worst fuzzy), GIS and remote sensing techniques to pursue the research goals by reviewing research background and selecting the most appropriate methods for zoning landslide risk. According to the results, physical criteria and sub-criteria of height, distance from the fault and slope were the major landslide criteria for the risk of landslides (Arab Ameri et al., 2018; Saffari & Hashemi, 2017; Mansouri et al., 2016; Basharat et al, 2016). That is, with increased height, slope and proximity to fault lines, the risk of landslides surges (Skilodimou et al, 2018). These areas are located to the east and west of the study area. Since most of these areas are highlands, pastures and barren lands are the most common land. Moreover, the distribution of rural and residential areas in these areas is constrained and often temporary. In this context, considering that rural settlements usually develop around flat lands, with favorable soil and water sources, most rural areas have been distributed in the middle areas with a better access to river water resources (Ghezel Ozan) and most favorable topographic factors. Agricultural lands, due to the importance of access to river water, are distributed in the middle areas, which run a lower risk of landslide. In contrast, agricultural gardens, due to constraints related to flat and even lands in rural areas, have usually expanded in high and medium-slope areas. However, given that the analysis and identification of areas for any development and planning is one of the key steps to hamper financial losses on land use in the event

of hazards, it is important to allocate a greater attention to this issue. Therefore, some practical ways are suggested to reduce losses and financial losses associated with landslides for agricultural gardens in rural areas:

- Considering the economic value of agricultural lands and proper development of these land uses in areas with the risk of landslide,
- Evaluating and identifying arable lands in areas with a lower risk of landslides.
- Regular monitoring of land use development to enhance safety in new housing construction and agricultural lands.
- Providing the necessary infrastructure to raise awareness of rural residents about the dangers of landslides.
- Developing rural infrastructure services in low and flat areas to diminish landslide susceptibility.

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Original Article

بررسی آسیب‌پذیری کاربری‌های کشاورزی از خطر وقوع زمین‌لغزش در نواحی روستایی شهرستان طارم

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چکیده مبسوط

۱. مقدمه

آن چه در ارتباط با مناطق کوهستانی بدیهی است، استقرار مکانی- فضایی مناطق روستایی در این مناطق، بیشتر متأثر از عوامل طبیعی مانند دسترسی به آب، زمین هموار، خاک مساعد بوده و لذا کمتر به عواملی مانند مخاطرت طبیعی توجه شده است. به طوری که بسیاری از نواحی روستایی در مناطقی استقرار یافته‌اند که در صورت وقوع هرگونه بلایای طبیعی می‌توانند آسیب‌پذیر باشند. این امر همواره مورد غفلت قرار می‌گیرد و این در حالی است که جوامع روستایی به لحاظ تاب‌آوری اقتصادی و زیان‌های ناشی از بلایای طبیعی از جوامع آسیب‌پذیر هستند. بنابراین، با توجه به خطر وقوع زمین‌لغزش در مناطق کوهستانی، توسعه و برنامه‌ریزی برای کاربری‌ها، نیازمند شناخت و بررسی است.

۲. مبانی نظری تحقیق

زمین‌های کشاورزی که در سراسر جهان تا ۴۰ درصد از مناطق روستایی را اشغال می‌کنند، یکی از کاربری‌های مهم زمین بوده که امروزه به دلیل فراوانی جمعیت و نیاز تأمین مواد غذایی، توسعه و بهره‌برداری از آن را در مناطق روستایی ضروری کرده است.

در این میان اما به رغم اهمیت توسعه و بهره‌برداری از زمین برای کشاورزی در مناطق روستایی، این امر نیازمند شناخت استفاده از زمین برای کاهش آسیب‌پذیری زمین‌های کشاورزی از بلایای طبیعی است که ضرورت پرداختن به آن در مناطق کوهستانی به دلیل رخ دادن بسیاری از مخاطرات طبیعی در این مناطق است.

یکی از این بلایای طبیعی که اغلب در مناطق کوهستانی رخ می‌دهد، زمین لغزش‌ها هستند. "لغزش" حرکت یک جرم تحت تأثیر گرانش زمین بوده که به دلیل اثر متقابل عوامل پیچیده و ناشناخته جغرافیایی و محیطی و فیزیکی، به عنوان یک روند تصادفی مورد توجه قرار می‌گیرد. در ارتباط با زمین لغزش‌ها ارزیابی و پهنه‌بندی خطر، یکی از مهمترین اقدامات در مدیریت ریسک فاجعه و یکی از ابزارهای ضروری در هر برنامه‌ای بوده که هدف اصلی آن نیز کاهش تأثیر بلایای طبیعی در آینده است.

۳. روش تحقیق

معیارهای مؤثر بر خطر وقوع زمین لغزش براساس قضاوت خبرگان به روش دلفی فازی(FDELPHI) و نقشه پهنه‌بندی هر کدام از آن‌ها نیز در ARC GIS, ENVI انجام شد. وزن‌دهی این معیارها در روش بهترین و بدترین فازی(FBWM) که گروه‌های تصمیم‌ساز آن خبرگان دانشگاهی بودند و در برنامه LINGO وزن‌دهی شدند. برای تهیه نقشه کاربری اراضی برای یک دوره ۱۵ ساله نیز از تصاویر ماهواره‌ای لندست ۸ و ۷ برای منطقه مورد مطالعه تهیه شد. نقشه کاربری به روش طبقه‌بندی حداکثر احتمال در ۶ کاربری اراضی شناسایی و برای صحت‌سنجی آن از نمونه‌های برداشت شده زمینی(GPS) استفاده شد. در پایان نیز پس از همپوشانی نقشه خطر زمین لغزش، توسعه کاربری‌های کشاورزی، در خطر وقوع زمین لغزش شناسایی شدند.

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۴. یافته‌های تحقیق

وجود ارتفاعات نقش مهمی در افزایش زاویه شیب و ناپایداری دامنه‌ها دارند، لذا مناطقی که در ارتفاعات بلند قرار دارند، در آن مناطق تعدد وقوع حرکات توده‌ای به ویژه زمین لغزش‌ها خواهد بود. برحسب وزن نهایی، معیار فیزیکی به عنوان مهم‌ترین معیار و پوشش زمین به عنوان کم‌اهمیت‌ترین معیار تعیین گردید. در معیار فیزیکی، زیرمعیار ارتفاع و جهات شیب به عنوان مهمترین و کم‌اهمیت‌ترین زیرمعیار و همچنین در معیار هیدرولوژی، زیرمعیار بارش و فاصله از آبراهه و در معیار پوشش زمین نیز، زیرمعیارهای پوشش گیاهی و کاربری اراضی به عنوان مهم‌ترین و کم‌اهمیت‌ترین زیرمعیار برای تعیین مناطق برای وقوع خطر زمین لغزش تعیین گردیدند. همچنین با توجه به یافته‌های تحقیق و تهیه نقشه خطر وقوع زمین‌لغزش، کاربری باغات کشاورزی(اغلب بهره‌برداران زیتون) در دوره مورد بررسی(۱۳۹۸- ۱۳۸۳) بیشتر در مناطق با شیب متوسط و تند توسعه یافته که بالتبع با توجه به همپوشانی نقشه توسعه کاربری‌ها و خطر وقوع زمین‌لغزش، این کاربری‌ها در خطر وقوع زمین‌لغزش قرار دارند.

۵. بحث و نتیجه‌گیری

با توجه به آن که نقطه پیداش یک سکونتگاه روستایی دسترسی مناسب به زمین‌های هموار، خاک مساعد و آب بوده، بدیهی است که بخش بیشتری از کاربری‌های کشاورزی نیز در مناطقی توسعه می‌یابند که دسترسی مناسب‌تری به منابع آب داشته باشند. در نواحی مورد مطالعه بیشتر مناطق روستایی در نواحی میانی که دسترسی مناسب‌تری به منابع آبی رودخانه(قزل اوزن) و با توجه به عوامل توپوگرافی در شرایط مساعدتری قرار دارند، توزیع شده‌اند. زمین‌های کشاورزی به دلیل استفاده از منابع آبی رودخانه در نواحی میانی که به لحاظ خطر وقوع زمین‌لغزش به عنوان مناطق کم خطر هستند، توزیع شده‌اند و در مقابل باغات کشاورزی به دلیل محدودیت داشتن زمین هموار در مناطق روستایی، غالباً در مناطق مرتفع و با شیب متوسط توسعه یافته‌اند. بدین‌ترتیب بدیهی است که توسعه این کاربری‌ها در مناطق خطر وقوع زمین‌لغزش موجب آسیب‌رساندن به این کاربری‌ها خواهد شد، لذا توجه به ارزش اقتصادی زمین‌های کشاورزی و توسعه مناسب این کاربری‌ها در زمین‌هایی که خطر کمتری برای وقوع زمین‌لغزش دارند و همچنین بررسی منظم توسعه کاربری‌ها به منظور افزایش ضریب ایمنی در ساخت و سازهای جدید مساکن و زمین‌های کشاورزی در مناطق روستایی مورد مطالعه از مهم‌ترین فعالیت‌ها خواهد بود.

کلید واژه‌ها: مخاطرات محیطی، زمین‌لغزش، روش بهترین بدترین فازی، شهرستان طارم.

تشکر و قدرانی

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Original Article

Evaluating Mutual Impacts of Agricultural Growth and Inequality in Iran's Rural Area Divided to Provinces with Amenity and Deprived: Simultaneous Equations of Panel Data Approach

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Abstract

Purpose- Income distribution inequity in low-income societies spreads poverty faster therefore it is essential to indicate the relation between economic growth and income distribution in low-income societies like rural societies which gain income through agricultural activities. On the other hand, recent studies show that societies amenity or deprivation is effective on the relation between growth and income distribution. So, the aim of this study is to indicate the relation between rural income distribution and Iran agricultural sector growth dividing to regions with amenity or deprived.

Design/methodology/approach - Due to economic literature income distribution and economic growth has interactional effect on each other and the relation between them is different in regions with amenity and deprived. To explain the relation between rural income distribution and agricultural sector growth in this study two equations are introduced, the first equation analyzes the effective factors on agricultural sector growth and the second equation examine the factors determining rural income inequality. These equations are estimated by provincial data divided to regions with amenity and deprived during 2008-2016 and simultaneous equations approach of panel data is used.

Finding-The results show that, in low amenity and deprived provinces agricultural sector growth reduces the inequality while agricultural sector growth has no significant effect on inequality in provinces with amenity. Also, inequality increase lead to economic growth in deprived regions, but in regions with amenity the effect of inequality on growth is not significant. Besides, the results of estimation imply that government's expenditure in provinces increase rural income inequality and development expenditure only in deprived and low amenity provinces cause rural income inequality decrease and in other rural is not significant on inequality index.

Practical implications- Based on the results of this study and in order to reduce rural income inequality and the growth of agricultural sector, it is necessary to consider the distribution of public facilities and infrastructure in order to enjoy deprived and low amenity rural regions.

Keywords- Rural income distribution, Agricultural sector growth, Deprivation, Simultaneous equations of panel data approach.

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1. Introduction

Inequality income distribution in low-income societies spreads poverty faster and causes irreparable social harms and side effects. So, in these societies' equal income distribution and economic growth are important. One of the low-income societies is villages in developing countries. Villagers of developing societies are low income and usually gain their income through agricultural sector activities. The statistics show that in Iran 30 percent of the population are rural whereas the agricultural sector share out of total production of the country is 8 percent due to the reports of the Iran statistic center.

On the other hand, the average annual growth of the agricultural sector for the years under review is about one percent, while the figure for the industrial and service sectors is two and three percent, respectively. This information shows that rural income is lower than the average income of the urban population and rural welfare level has gradually decreased compared to the urban population during the period under review. Of course, the emphasis on agricultural sector growth increase does not necessarily lead to rural welfare improvement, but the distribution of benefits from agricultural sector growth among the rural is significant. Unequal distribution of income causes the benefits of growth to dispose to a particular group of the society, and thus inequality can limit the impact of economic growth on poverty. Therefore, one of the most important goals of societies is economic growth along with reducing income inequality.

In the Islamic Republic of Iran, according to principle (3) of the constitution rule, the government is obliged to use all its resources to achieve the goals of the system for matters such as establishing a correct and fair economy according to Islamic criteria to alleviate poverty. In this system economic growth considers with equal income distribution and for this in developing plans after the revolution the growth with equal distribution is emphasized. Also, according to Clause 27 of the sixth development plan, the government is obliged to implement the general policies and resistance economy, identify and exploit the capacities in rural areas and promote the social status of rural and the position of rural in the national economy and to create the necessary basis for the prosperity and development of the justice-oriented villages.

The first step in growth together with income distribution is identifying the mechanisms through which growth and income distribution influence each other. Economic literature review shows that there are different theories about the relationship between growth and income distribution. Classic believes economic growth leads to equal income distribution. While due to recent theories, income inequity decrease, increases economic growth through different mechanisms like Strengthen property rights, economic stability, and increase the number of middle-class households. The studies about agricultural sector growth and rural income distribution for Iran done with emphasize the first group view (Kuznets's view emphasized) but there are no common results. For example, Khaledi et al. (2009) and Khaledi and Sadrolashrafi (2005) shows that agricultural sector growth does not affect rural income distribution improve in Iran because of severe fluctuations and instability while other studies like Hasani Sadr-Abadi (1999), Samadi (1999), Sadr – Naieni- Manochehri (1997), Salami and Ansari(2009) and Khaledi and Haghighatnezhad Shirazi (2012) express that agriculture sector development reduces rural income gap.

One of the points emphasized in new theories like Calderon and Chong (2004) and Valerio-Mendoza (2017) about growth and income distribution is the role of regions' deprivation rate to reach economic growth with equal distribution. Infrastructure creation through the increase of access to main economic activities of deprived regions and providing income opportunities for the poor, increase the deprived regions' income so the income gap reduces.

While the effect of deprivation of societies on the relationship between growth and inequality has been shown in theoretical discussions and empirical studies, but most studies have been conducted on the relationship between growth and rural income inequality of Iran is for the entire economy and regardless of the heterogeneity of different regions in enjoying public facilities. However, the level of deprivation is not the same in different regions of the country and different regions have different facilities for example Shaykh-baygloo (2012) study shows that provinces like Esfehan, Tehran, Shiraz, and

Mazandaran have higher public facilities while provinces like Sistan & Baluchestan, North Khorasan and Hormozgan are among the most deprived provinces in the country in addition to the degree of deprivation due to national accounts and rural household income and expenditure survey of Iran statistic center report agricultural sector growth and rural income distribution is not homogeneous among the provinces. For example, due to national accounts of Iran statistic center report agricultural sector growth for the period 2007-2015 is more than 10 percent in provinces like Hormozgan, Yazd, Semnan and in other provinces is less. Also, the agricultural sector share in some provinces like Mazandaran, Lorestan, Ardabil, and Kerman is a significant share of the province's economy (more than 25 percent) while the agriculture sector share in provinces like Tehran, Booshehr, and Khoozestan is low and is less than 5 percent (The report of national accounts of Iran, statistic center, (2008-2016)). The rural Gini coefficient shows that income in some provinces like Yazd, Markazi, and Hormozgan is much more unequal distributed comparing to other provinces. (Rural Household Income and expenditure Survey, Statistics Center of Iran 2008- 2016)

Considering the above points, in analyzing the relationship between agricultural sector growth and rural income distribution, first it is necessary to pay attention to the interactional relationship between the two variables. Secondly, the heterogeneity of different provinces in having facilities should be considered. In this study, the relation between agricultural sector growth and rural income distribution in Iran is interactional and analyzed divided into deprived and amenity provinces in the form of simultaneous equations Panel data. The aim is to answer the questions "In which provinces are the benefit of agricultural production is distributed equally among the rural?" and "Does the amenity of a province cause the agricultural sector growth to join with equal rural income distribution?"

In order to do this review first theoretical foundations and research background about the relationship between growth and income distribution are investigated. Then with analyzing the country's provinces amenity level, a model is introduced to investigate the relation and after analyzing the amenity of the provinces and model estimation, the relation between agricultural sector growth and rural income distribution and effective factors of each is explained divided to the regions.

2. Research Theoretical Literature

Due to the aim of the study, in this part, the most important perspectives and concepts are provided on the relationship between economic growth and inequality.

In the economic literature, different approaches have been proposed regarding the relationship between economic growth and income distribution. Classic view believed the capital accumulation is the key to economic growth. Due to this view, the rich desire to save more than the poor and the income inequality cause higher economic growth and in the next round, the poor will benefit from the growth result.

In the economic development literature during 1960 and 1970 different mechanisms are analyzed through which economic growth affects income inequality. Kuznets (1955) by analyzing the effect of economic growth on income distribution shows that in the early stages of development, economic growth cause income inequality increases but in the next stages of development the economic growth will lead to income equality.

Kuznets presents economic development as the process of transition from traditional (rural)to the modern (urban) economy and mentions that in the early stages of development the income distribution is unequal because few people can transmit to the modern sector, that's why there is a big gap between the traditional and modern sectors' wage. Due to this theory in the next stages of the development income distribution will improve, because more people can enter the modern center, and gradually due to the scarcity of labor in the traditional center the wage levels are also rising in the traditional center and reach the wage levels of the modern center. Kuznets believe the inequality in the rural sector is low and in urban is high and agricultural sector development reduces inequality. (Aboonouri and Farahani, 2016:4)

Kuznets's theory pays close attention to the urban-rural relationship, which has been greatly facilitated today by the expansion of transportation networks and technological infrastructure and caused a part of the rural income to achieve from activities and investments in the cities. Due to Kuznets's theory, this part of

income cause income inequality to increase between villagers and it is because this part of the income is assigned to some villagers and obtained from an urban section.

While lots of studies like Dastidar (2012), Kahya (2012), and Abounoori and Farahati (2016) have analyzed and confirmed Kuznest's theory in developed and developing countries. But during the second half of the twentieth century, some countries like Hong Kong, South Korea, Singapore, and Taiwan experienced high rates of economic growth with a low-income gap. Also, lots of countries like Latin America had poor economic growth with high inequality. These countries' experiences caused numerous economists to criticize the negative effect of inequality on growth (Myrdal (1973) idea). Aghion et al. (1999) believe the classic theory is contrary to experimental results. Due to the studies some of the important mechanisms through which income inequality affects economic growth is as follows:

- Inequality rise leads to social and political instability, undermines property rights, and leads to economic uncertainty which causes low investment and economic growth. (Alesina & Perotti);
- Inequality rise in the economy with incomplete capital market reduces the ability and motivation of people to invest (Anand & Kanbur,1993);
- Increasing inequality induces birth rates and thus reduces the level of education and ultimately reduces economic growth;
- Increasing inequality reduces demand and economic growth by reducing the number of middle-class households (Todaro,1997 and Murphy et al.,1989).

Some of the economists like Calderon and Chong (2004), Estache et al. (2002), López (2003), and Fleisher et al., (2010) also expressed that infrastructure services improvement reduce income inequality and increase economic growth. The main idea is infrastructure development not only increases average income but also increases the income level and welfare of the poor. Valerio-Mendoza (2017) with the emphasis on infrastructure facilities of different states of china believes that economic growth besides equal income distribution is achieved when deprived regions access the infrastructures. In these studies, infrastructure development improves income distribution while contributing to economic growth.

In most of the studies like the study of Agenor and Moreno-Dodson (2006), it is expressed that, infrastructure by affecting labor productivity, health, nutrition, education, and also investment continuity cause economic growth in deprived regions. But about the effect of infrastructures development on income distribution improvement Estache et al. (2002), Fleisher et al. (2010), and Valerio-Mendoza (2017) state that infrastructure development deprived regions residents access the main economic activities and this increases the income achievement opportunities. Also, Gannon and Liu (1997) believe infrastructures development in poor regions leads to reduce production and Transection costs so the poor people's income will increase.

In some other studies, it is emphasized that infrastructure access in deprived regions, increases the value of the poor people's assets. For example, in recent studies, the value of the assets of poor agricultural regions is assessed due to the distance from their production market so connection and road services reformation, increase poor farms' lands' return and lead to income increase. (Jacoby, 2000).

The theoretical foundations above inferred that economic growth and income distribution have an interactional effect on each other which can be positive or negative means that income inequality helps the economic growth or stops the growth. Also, economic growth due to Kuznets theory can affect inequality. Moreover, according to the mechanisms about the effect of inequality on economic growth and contrariwise relation, the relation between the two factors in traditional societies and modern societies is different and the important point is: this relation in traditional rural societies due to the amount of rural amenity can be different. It is expected growth and income distribution relation give different results when different regions have different amenity levels. Analyzing growth and rural income distribution due to these points clarifies the different reasons of studies results about agricultural sector development and rural income distribution.

Lots of studies analyzed the relation between income distribution and economic growth but few studies are analyzing the relation between rural income distribution and agricultural sector growth and the role of infrastructure facilities amenity. This section first reviews studies that analyze the relationship between income distribution and agricultural sector growth and next the studies that analysis the effect of the region's amenity of infrastructure facilities on growth and income distribution.

To achieve growth together with proper income distribution some studies emphasized agricultural sector growth. Abounoori and Farahati (2016) studied the production structure and income distribution in Iran during (1979-2012) and resulted from the increase of inequality by transferring the share of the added value of the agriculture sector to other sectors.

While transferring added value from other sectors to the agricultural sector reduces the inequality. Dastidar (2012) has researched developed countries (with amenity) and developing countries (deprived) and shows that in none of the countries income distribution inequality don't increase by transferring production from agriculture to industry. Also, Dastidar's findings show that in developed countries transferring production from agriculture to services has no effect on inequality but in developing countries increases the inequality.

The two above studies' result analysis shows that in developing regions agriculture sector development is significant to lower the inequality. But the main point is the rural income distribution of developing countries and raises the question that" Will rural income distribution improves with agriculture sector development in developing societies and total income distribution improvement of all the society? "In this item about Iran there are no common opinions, some of these studies will be reviewed next.

Salami and Ansari (2009) analyze the role of the agricultural sector in creating jobs and income inequality distribution decrease due to the Iranian Social Accounting Matrix and show that agricultural sub-sectors development not only leads to a significant increase in household income but also creates income opportunities for low-income groups and at last causes the income gap decrease. Also, Khaledi and Haghighatnezhad Shirazi (2012) in their research came to the point that during (1960-2007) in Iran investing in the agricultural sector can cause absolute rural poverty to reduce.

While Khaledi et al. (2009) study by seemingly unrelated equations and statistics of (1960-2004) conclude that although investing in the agricultural sector caused that sector's growth but the benefits do not go to rural poor residents Piraee & Ghana'atian (2007) analyzed economic growth effect on poverty and inequality in Iran during 1996-2004 for rural and urban regions and resulted that poverty reduces in both rural and urban regions but the intensity and depth of poverty increased in rural regions. Khaledi and Sadr-Alashrafi's (2005) study about the relation between agricultural sector growth and rural region's income distribution with linear and nonlinear models show that agricultural sector growth did not lead to income inequality decrease in rural regions of Iran.

There can be various causes for the different results above, one of the points which are not considered in these studies but were emphasized in theoretical topics is the two-way and interactional relation of agriculture sector growth and rural income distribution. Moinoddini (2014) with analyzing the interactional effect of agricultural research investment on agricultural sector added value and rural inequity in Iran during (1976-2012) according to simultaneous equations approach shows that agricultural research investment increases agricultural sector added value and rural income inequity reduction but this effect is poor. Hasanvand and Khocheiani (2018) by analyzing the direction of movement of the income inequality index and economic growth for three periods (1975-1985), (1998-2009), and (2009-2013) for Iran shows that the analyzed variables are in the same direction but the last period for the first two periods, the studied variables moved in the same direction, but in the last period, increase inequality was accompanied by economic growth. Also, Kazerooni et al. (2020) by ARDL method showed that with increasing economic growth in Iran, income inequality increases.

The other feature of the studies about Iran is that most of the researchers analyzed the total economy of Iran without considering the heterogeneous of different rural regions' amenity level of infrastructure facilities. While some studies like Torkamani and Jamalimogadam

(2006) introducing effective factors on rural poverty including total productivity of agriculture production factors, wage rate, non-agricultural employment, watering technology, length of constructed roads, literacy rate, and electric power of different rural regions in the form of equations system show that different rural regions amenity is significant in agricultural sector growth and income inequity decrease. And then the result is that investment in rural development, road construction, watering, and agriculture research and promotion respectively has the greatest impact on reducing rural poverty.

It is important to consider the study of Karami et al., (2000) that analyzed the relation between growth and inequity in the amenity province Fars. Karami et al., tried to analyze the impact of sprinkler irrigation technology on the rural poverty and inequity rate in the rural society of Fars province and explained that promoting to use these facilities in regions with amenity cause farmers' social gap to increase because of institutional constraints, the orientation of the organizations involved in the action is towards wealthy members of the social system.

The above studies show that different regions' amenity of facilities affects the quality of the relationship between agricultural sector growth and rural income inequity. So, in the next part, we will study the researches that use the region's amenity level in their study. Valerio-Mendoza (2017) by emphasizing China's different regions' infrastructure facilities, introduces indexes to measure different region's access to infrastructure facilities. Then by analyzing how each of the infrastructures affects inequity concluded that growth together with equal income distribution occurs when deprived regions access infrastructures facilities.

Studying the impact of amenity of infrastructure facilities on rural growth relation and inequity, Fleisher et al. (2010), with the emphasis on communication infrastructures, in a study called "labor, economic growth and China 's region inequality" expressed that if investment in communication infrastructures is made for deprived regions, economic growth improves and inequality reduces.

Also, they show that investing in communication infrastructures for developed regions leads to increased inequality. Xiaolu (2006) in a study called "China inequality and effective factors" with emphasis on transportation facilities and communication infrastructures stated that transportation facilities and communication infrastructures through providing job opportunities for deprived regions, cause the reduction of income inequality. Fan et al., (2002) in a study called "growth, inequality, and poverty in Chinese rural area" studied the role of government investment on growth and inequality in the form of simultaneous equations and show that government credits' increase, agricultural research development, watering system, rural education, and infrastructures (roads, electric power, and communication) not only increase agricultural production growth but also reduce the rural poverty and region inequality.

Analyzing the relation between growth and inequality and the regions' amenity impact in the quality of the relationship is done by Calderon and Serven (2003) for Latin America with time-series data of 1980-2000. They considered the infrastructures' economic effect on growth and distribution. Their results show that infrastructure service improvement can reduce inequality in Latin America and help economic growth. Calderon and Chong (2004) by analyzing the cross-sectional data of 101 countries studied the infrastructure development impact on income distribution inequality and the results show that infrastructure improvement can induce income inequality and increase economic growth.

Analyzing the studies above expresses that agricultural sector growth led to income distribution improvement in developing societies and deprived and to achieve equal income distribution agriculture sector should develop and this is the point emphasized in the studies. But to answer the question " will rural income distribution improve with agricultural sector growth?", there is no common opinion in the studies conducted for Iran. These studies regardless of the level of deprivation present different results. While in studies conducted for Latin America and China the regions' amenity is considered and common results of the relation between growth and inequality are emphasized. Also, in studies conducted for Iran, the two-way relation between growth and inequality was not

considered which can influence the results. That's why in this study we consider the two-way and interactional relation between agricultural sector growth and rural income distribution divided by provinces and with the emphasis on deprived rate and amenity level.

3. Research Methodology

To analyze the relation between agricultural sector growth and rural income inequality divided into provinces with amenity and deprived first the study model is presented and then the equation method is expressed and at last provinces with amenity and deprived are specified.

3.1. Model

Due to the theoretical foundations, economic growth affects income inequality and vice versa. So in analyzing the relation between income inequality and economic growth a two-way relation should be considered between them. In other words, two equations in the form of a system of equations simultaneously, that in one of their economic growth is the dependent variable and income inequality index is the independent variable and in the other equation income inequality index is the dependent variable and economic growth is the independent variable. So implicit equations system is as follows:

$$gru = f(pgdpar, E)$$
$$pgdpar = g(gru, F)$$

In the equations above GRU is the rural income inequality index that the rural Gini coefficient is used to measure it and pgdpar is the agricultural sector real per capita added value, the changes of which shows the agricultural sector growth. E and F include a set of control variables that affect rural income inequality index and agricultural sector growth. The control variables affecting rural income inequality (E) and agricultural sector growth (F) are determined based on empirical studies and theoretical arguments.

According to the theoretical foundation and whatever mentioned above one of the effective factors on rural income inequality is agricultural sector production increase. Also due to the studies, the other effective factors on rural income inequality considered in this study are unemployment and inflation. An inflation increase causes the transfer of wealth and income among the members of the society and affects income inequality. Also with unemployment increase, some people lose their income which affects income inequality. Moreover, government expenditure and tax income are two effective factors in income distribution. The governments transfer income by taxing and re-spending in the society and affect income distribution. Due to whatever was said before the first equation is as follows:

$$Gru_{it} = f(Pgdpar_{it}, inf_{it}, un_{it}, cr_{it}, gc_{it}, tax_{it}, rp_{it})$$

GRU stands for rural Gini coefficient, pgdpar stands for agriculture sector real added value. inf, un, sr, gc, tax and rp show inflation rate, unemployment rate, development credits, government expenditure, tax income, and rural population collected from statistic yearbook by provinces and used with real price in the model. i and t are province and year.

Using the province's unemployment rate instead of the rural unemployment rate was because the total unemployment can show the total economy's recession and its effect on rural income. While rural unemployment just shows rural economy recession and cannot show the rural income changes from other sectors which are effective on rural income distribution. As urban citizens' demand and consumption affect the rural economy and rural income and its distribution is not effective just by rural inflation because the connection between village and city total inflation is used instead of rural inflation.

In the second equation, the effective factors on the agricultural sector added value are considered. As it is mentioned in the theoretical foundation one of the effective factors on production growth is income distribution. So due to the study aim which is trying to find a two-way relation between production and income distribution, one of the main effective factors on agricultural sector added value is rural income inequality. Also according to the production function bases in which production is a function of factors of labor production and capital. The unemployment rate, rural population, and urbanization coefficient are considered in the second equation which indicates provinces' agriculture sector's amount of labor. Moreover, the inflation rate which is the cause of instability in production is introduced as one of the effective factors on production in the second equation. So the second equation is as follows:

$$pgdpar_{it} = g(gru_{it}, inf_{it}, un_{it}, ur_{it})$$

In the equation above, Pgdpar stands for province's agricultural sector real added value per capita, Gru stands for province's rural Gini coefficient, inf, un, ur are for the inflation rate, unemployment rate, and urbanization coefficient which are collected for each province from the statistic yearbook and used in the model. Due to the information above the systematic model is as follows:

$$\begin{cases} Gru_{it} = f(Pgdpar_{it}, inf_{it}, un_{it}, cr_{it}, gc_{it}, tax_{it}, rp_{it}) \\ pgdpar_{it} = g(gru_{it}, inf_{it}, un_{it}, ur_{it}) \end{cases} \quad (1)$$

In this model, the first equation is the effective factors on rural inequality and the second equation is related to agriculture sector growth. Due to the arguments of theoretical foundations in this study, the relation between rural income distribution and agriculture sector growth is analyzed by panel data simultaneous equations for (2008-2016) in 30 provinces divided into regions with amenity and deprivation.

3.2. Estimate Technique

The total form of panel data simultaneous regression equations are as follows:

$$Y_{it} = \alpha Z_{it} + \mathcal{B} X_{it} + u_i + v_{it} \quad (2)$$

In which Z_{it} and X_{it} are the endogenous factors vector (including income distribution factors and agricultural sector growth) and exogenous vector(includes government's expenditure, inflation, tax,…). In the equations system (2) two residual u_i (residuals related to cross-section data)and v_{it} (the residual related to time series) exists that the endogenous factors are correlated with v_{it} but there is no relation between residual sentence v_{it} with exogenous variables. While there is a possibility of correlation between u_i (residuals related to cross-sectional data) and exogenous variables. So the coefficients obtained from the OLS and GLS estimation methods will be inconsistent.

To estimate equation (2) consistently, Balestra & Krishnakumar (1987) introduced a kind of random effect called G2SLS in which instrumental variables are used in model estimation (Panel with instrumental variables with two-stage least square method) to eliminate the relation between residual and explained variables. Thus, the G2SLS method is efficient and consistent for the above panel data. And there is no need for the Hasman test to examine the consistency of random models (random effect). (Rafat and Baigzadeh, 2012 :17) The rank condition for determining simultaneous equations establishes when the number of each equations' exogenous variables are greater than or equal to the number of endogenous variables of the equations. Therefore, equation (1) is estimated with simultaneous panel random effect approach and two-stage least square method.

3.3. Dividing the provinces into provinces with amenities and deprived

In most of the studies, the level of the development of the regions and country's provinces division to deprived or with amenity evaluated with different methods and indexes like Ghadir -Masoum & Habibi (2003), Rezvani & Sahneh (2005), Badri & Akbarian (2006) and Shaykh-baygloo (2012). Shaikh-bagloo's study's classification is used because of its comprehensiveness in using different techniques, comprehensive indexes, and the emphasis on the agricultural sector, foundations, educational and health facilities. The author has used 40 indexes in different dimensions. The evaluation of the level of the development of a province in Shaikh-bagloo's study is accomplished with different methods like taxonomy, Topsis ideal approach, Morris development degree index, and indexing method and at last, a combined factor from the different methods' results is used and the last index is the average resulted from all those methods.

In this study, the last index of Shaykh-baygloo is the criteria of determination of deprived or amenity degree of the regions. So ten first provinces in table 1 are with amenity provinces, the second ten provinces are low amenity and the last ten provinces are deprived. (Table 1)

Table1- Countries provinces' Ranking
(Source: Shaykh-Baygloo, 2013, 17)

provence	Rank	provence	Rank	provence	Rank
Semnan	1	Razavi Khorasan	11	Kermanshah	21
Tehran	2	East Azerbaijan	12	Kurdistan	22
Mazandaran	3	Golestan	13	South Khorasan	23
Isfahan	4	Chaharmahal and Bakhtiari	14	Lorestan	24
Yazd	5	Hamadan	15	Khuzestan	25
Fars	6	Bushehr	16	Kerman	26
Qom	7	Ardabil	17	Ilam	27
Guilan	8	Zanjan	18	North Khorasan	28
Qazvim	9	Kohgiluyeh and Boyer-Ahmad	19	Hormozgan	29
Markazi	10	West Azerbaijan	20	Sistan and Baluchestan	30

4. Research Findings

To avoid pseudo-regression, the variable's stationery was tested before model estimation. Panel data stationary test done through two ways, single root test for common root and single root test for individual root. Levin et al. (2002) believe that for panel data single root test for common root is more effective than a single root test for individual root in every root separately (Baltagi, 2005). So in this study to examine the factors stationary Levin, Lin & Cho test is used. The zero hypothesis for this test shows non-stationary in analyzed variables. To do
the test statistics t is used. The t statistics are larger than the t statistics' standard table value (about one percent residual, equals 2/36) which shows that zero hypotheses are rejected and variables' stationery is confirmed. The results of the stationary test are shown in table (2) according to Levin, Lin & Cho test. Due to the table, t statistics for all the variables is about one percent which is larger than the standard value of the table and shows the stationary of all the variables.

Table2- Stationary Test
Source: Research Findings, 2020

Varaible	T	prob T	Rusult
Rural Gini Coefficient	-18	00	Stationary
Agricultural sector's production per capita	-11.9	00	Stationary
Unemployment	-4	00	Stationary
Inflation	-3.2	00	Stationary
Government Current Expenditure	-15	00	Stationary
Development Expenditure	-3.7	00	Stationary
Tax Revenue	-13.4	00	Stationary
Rural people	-3.6	00	Stationary
Urbanization	-2.9	00	Stationary

After the stationary test, the presented model was estimated with the G2SLS method and using the data of 30 provinces of Iran during 2008-2016 for regions with amenity and deprivation in the form of two equations and the results presented in 5 scenarios in table 3. The first scenario is related to all the rural regions of Iran and includes 30 provinces, the other scenarios are as follows:

A. regions with amenity (first ten provinces of table 1)
B. regions with amenity and low amenity (first twenty provinces of table 1)
c. regions with low amenity and deprived (last twenty provinces of table 1)
d. deprived regions (last ten provinces of table 1)
As in all the 5 scenarios and equations, the number of exogenous variables is more than the indigenous variable so all the equations can be estimated with the ranking condition.
Due to table (3), the results of the first model of the equation for all the rural regions show that agricultural added value per capita has a negative and significant effect on the Gini coefficient, which means that agricultural sector added value increase leads to income gap decrease. This result mostly happens in regions with low amenity and deprivation and is due to Kuznets theory. Due to this theory in regions with low amenities and deprived because of low level of facilities, more villagers immigrate to cities and these villages face a lack of labor so the remained villagers especially the ones with no farm or low-income face more income-earning opportunities for agricultural activities. Therefore, developing the agricultural sector joins with rural income increase and leads to income inequality decrease.
Also, the second equation results for all the regions show that the Gini coefficient has a positive and significant effect on agricultural sector added value, which means by rural income inequality increase agricultural sector added value increases too. This matches the classic theory which is expressed that, by income inequality increase and income aggregation to a specific group the desire to save money increases and leads to investment increase and agricultural sector growth.
The results of the equation about regions with amenity (scenario 2) indicate that there isn't a significant relation between agricultural sector added value per capita and inequality coefficient in none of the equations for regions with amenity. While this relation is significant for regions with low amenity and deprivation (scenario 5). As you see in table 3 by moving from scenario 2 to scenario 5 and from regions with amenity to low amenity regions and deprived, the effect of agricultural sector added value per capita increase to decrease rural income gap is more and significant. Also, the effect of rural income inequality on agricultural sector income per capita is significant just in regions with low amenity and deprivation.
According to the results of the first equation in table (3), the province's inflation increases cause the rural income gap to decrease which can be explained by the results of the second equation of table (3). Due to the results of the second equation of table (3), the inflation causes production increase in rural regions especially in low amenity regions and deprived. since agricultural products need more labor so due to the trade view the increase in these products leads to a demand increase for labor and wages.
Agricultural products price increase causes the wages of the labor increase so the villager's income who awnless farm and stock and work for others increase.
In addition to the inflation rate, the results of Table (3) show that increasing the provincial unemployment rate reduces the income gap between rural. Because with unemployment increase and provincial economy recession most of the villagers who have gone to work in the cities come back to their villages to work in the traditional agricultural sector and as the income of these activities distributed equally between the villagers due to Kuznets theory. So, in a province unemployment rate increases, reduces the rural income gap. As the results of Table (3) for the second equation expresses, with the increase in provincial unemployment and fact the occurrence of recession in other sectors, production in rural regions increases.
Due to the results of table 3, government expenditure increases in provinces cause the rural inequality increase in all of the provinces while the development expenditure only in deprived and low amenity regions reduces rural income inequality and in other regions, it doesn’t have a significant effect on inequality. Gannon and Liu (1997) believe that by government development expenditure increase and establishing some facilities like road, communication infrastructure, rural schools, and health centers, rural production costs reduce and the villagers can connect with the city and generate income for the poor villagers. So increasing development credits reduces the income gap of the villagers and it was significant in deprived or low amenity provinces.

The results of table 3 indicate that provinces' tax income improves rural income distribution. As lots of agricultural sectors activities are tax-free, income distribution improvement due to rural non-agricultural income can be explained. Some villagers earn income from activities in other sectors besides agricultural income, which can increase rural income inequality. Therefore, when more taxes are received from the non-agricultural incomes of the villagers, the rural income inequality decreases.

Table (3), Model (1) estimation results

Variable	All Regions	Regions with amenity	Regions with amenity & low amenity	low amenity & Deprived Regions	Deprived Regions
First equation (depend on variable: Rural Gini)					
Intercept	387	341	373	370	378
sector's agricultural production per capita	⁎-/36	-0.18	⁎⁎-0.25	⁎-0.8	⁎-1.1
inflation	⁎⁎-78	*-80	⁎⁎-86	—	*-151
Unemployment	⁎-3.1	—	-1.6	⁎-3	
Current Government Expenditure	⁎0/02	⁎0/006	⁎0/006	⁎0/02	⁎0/01
Expenditure Development	⁎⁎-4/6	—	-2.6	⁎-7/8	
Revenue Tax	⁎-0/3	—	⁎-0/27	—	
people Rural	⁎-/04	—	-0/02	⁎-0/03	
Second equation(depend on variable: agricultural sector's production per capita)					
Intercept	-0/002	-0/015	-0/005	-0/005	0/002
Gini Rural	⁎⁎0/21	0/7	0/34	⁎⁎0/15	0/13
inflation	⁎⁎0/008	0/13	0/07	⁎⁎0/05	0/06
Unemployment	⁎0/006	0/006			0/003
Urbanization			⁎⁎0/008	⁎⁎0/005	

***significant in 5 percent & significant in 10 percent

Due to the results of table 3 rural population increase in provinces reduces rural income inequality. This result is compatible with Baro's (2000) and Erharth's (2009) argument. They believed rural populations are usually high in deprived regions and these regions according to the Kuznets hypothesis, the income from activities is equally distributed. Table (3) shows that the rural population coefficient is significant for low amenity and deprived regions.

At last urbanization in deprived and, low amenity regions has a positive and significant effect on income distribution improvement because of the increase in city and village communications which makes income opportunity for the poor (people who have no land, farm, stock, or income in the village). But it is not significant in regions with amenities because of their amenity (there is a little difference between city and village facilities).

5. Discussion and Conclusion

Due to the importance of rural income distribution and the role of deprivation level in the relationship between growth and income distribution, in this study, the relation between agricultural sector growth and the distribution of its benefits among rural in provinces of Iran during (2008 -2016) divided by regions with an amenity or deprived and in the form of panel data simultaneous equations is analyzed. The results of the model estimation show that there isn't a significant relationship between the agricultural sector added value per capita and income inequality coefficient in amenity regions.

While by agricultural sector production increases rural income inequality reduces significantly in the deprived and low amenity. The effect of agricultural production increase on income gap reduction becomes more and significant by moving from regions with amenities to semi-deprived and deprived regions. These results are compatible with Kuznets's hypothesis which believes that economic growth in deprived regions reduces the income gap and is in conflict with the hypothesis which indicates that with regions amenity increase both aims (equal income distribution and growth) simultaneous realization is possible. Also, rural income inequality's effect on the agricultural sector added value per capita is significant only in deprived and low amenity regions and causes the growth of these regions.

The above results for deprived regions are compatible with the results of Salami and Ansari (2009), Khaledi and Haghighatnezhad Shirazi (2012) and Torkamani and Jamalimogadam (2005), and about regions with amenity the above results are compatible with Khaledi and Sadr-Alashrafi (2005), Khaledi et al. (2009). Also, this study results about regions with amenities are compatible with the results of Karami et al. (2000) in which the effect of sprinkler irrigation technology on poverty and inequality among rural societies of Fars province is analyzed. Karami et al.'s (2000) findings imply that because of institutional limitations, the orientation of the organizations involved in the process is towards the richer members of the social system.

Considering the results of the present study and comparing the results with the findings of the other studies about the relationship between rural income inequality and agricultural sector growth indicates that the findings of those studies for Iran in different provinces depending on the degree of deprivation can be logical.

In addition to the studies above, the present study's results indicate that price level increase led to agricultural production increase and as production of agricultural products needs more labor than technology so labor wages increase too (the labors are poor rural). So provincial inflation rate causes agricultural sector production to increase and rural income distribution to improve. Shirvanian and Esmaeil (2009) by analyzing the effect of products price variation on rural poverty indicate that food and housing price increase benefits poor rural families but the increase of other products price decreases poor rural welfare. According to the findings of these researchers, the increase of all products price levels (inflation rate) benefits poor rural families and improves rural income distribution. Pourmokhtar and Moghaddas (2017) show that inflation increase leads to farmer's welfare improvement. Also Jorjorzade & Eghbali (2005) concluded that inflation harms the Gini coefficient and causes inequality decrease. Aboonoori et al., (2011) study results indicate that inflation's impact on rural income inequality is less than its impact on urban income inequality and believe the reason for this difference is the rural economy's self–living feature.

According to the results of the present study, the province's tax income improves rural income distribution while the previous studies give different results about tax impact on income distribution. For example, Seifeepour and Rezaee (2011) and Khanzadi et al. (2015) reports the negative impact of direct tax and positive impact of indirect tax on income distribution. Also, Mehrara and Esfahani (2016) came to the point that some taxes like income tax, corporate tax improves income distribution but a tax on production and services make the income distribution worse. Of course, in these studies, the impact of tax on rural income distribution is not discussed and there is no incompatibility in the results of the present study with previous studies.

Due to the present study's results government development credits only in deprived and low amenity regions significantly influences rural income inequality to reduce. This result is compatible with the findings of Fleisher et al., (2010) which indicates that investing in infrastructures of deprived regions decreases inequality but investing in infrastructures of amenity and developed regions intensify the inequality. Also, the results of the present study about the government's expenditure impact on rural income inequality are compatible with the findings of Rezaee et al. (2014) and Nademi and Hassanvand (2015) which indicates that the government's expenditure increase led to income inequality increase.

Due to the results of the study, the agricultural sector's production increase and also government development credits in regions with a low amenity or deprivation improves rural income distribution. Therefore, planning to increase the production of the agricultural sector, as well as public facilities increase and deprivation elimination of deprived and regions with low amenity is one of the strong recommendations of this study for deprived and low amenity regions. As the facility increase causes the income from the agricultural sector growth flow to the low-income groups in deprived rural regions and reduces poverty in deprived regions and the whole community. On the other hand, as the results show in the regions with amenity the increase of government development credits, public facilities creation, and also agricultural production increase does not affect rural income distribution which indicates that in these regions the focus is on creating facilities that benefit most middle and upper-income groups and the existing social institutions do not provide the opportunity to use the facilities equally for all groups of the rural community. In other words, although the regions with amenities have been strengthened in terms of facilities and infrastructure in these regions institutional frameworks do not have the efficiency for distributing the benefits of increasing agricultural production properly. Therefore, in the regions with amenity reviewing the rules and institutions that are effective on distribution is necessary. Otherwise, income distribution inequality, despite production growth, will spread poverty in rural society.

According to the results of the present study and to reduce rural income inequality and to prevent poverty spread especially in low amenity and deprived regions, it is essential to allocate development credits and infrastructure facilities of these regions due to the degree of deprivation and agricultural sector activities boom emphasize by the government required encouragement and creating the required background for fair pricing the agricultural productions. Also in regions with amenities, the method of development credits allocation for rural infrastructures and existing institutional framework for proper income distribution should be rewired.

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Original Article

ارزیابی اثرات متقابل رشد بخش کشاورزی و نابرابری درآمد در مناطق روستایی ایران به تفکیک استان‌های محروم و برخوردار: رویکرد معادلات همزمان پانلی

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چکیده مبسوط

۱. مقدمه

توزیع‌ناعادلانه درآمد در جوامعی که از درآمدپایین برخوردار هستند، فقر را سریع تر از جوامع دیگر گسترش می‌دهد. بررسی آمار و ارقام در این خصوص برای روستاهای ایران حاکی از آن است که به طور متوسط حدود ۳۰ درصد از جمعیت کل کشور را جمعیت روستایی تشکیل می‌دهد. در حالی که سهم بخش کشاورزی از تولیدات کل کشور فقط ۸ درصد است. از طرفی میانگین رشد سالانه بخش کشاورزی برای سالهای مورد بررسی در حدود یک درصد است در حالی که رقم مذکور برای بخش های صنعت و خدمات به ترتیب دو و سه درصد می باشد (گزارش حساب های ملی ایران، مرکز آمار ایران، سالهای ۱۳۸۶-۱۳۹۴). این اطلاعات نشان می‌دهد که درآمد روستائیان کشور به طور متوسط نسبت به درآمدجمعیت شهری کمتر بوده و سطح رفاهی روستاییان نسبت به جمعیت شهری به تدریج طی دوره مورد بررسی کاهش یافته است. این در حالی است که تحقق همزمان رشد و توزیع عادلانه درآمد براساس اصل(۳) قانون اساسی و همچنین برنامه های توسعه بعد از انقلاب در نظام جمهوری اسلامی ایران مورد تاکید قرار گرفته است.

با عنایت‌به مرلتب فوق تبیین رابطه بین رشد اقتصادی و توزیع درآمد در جوامع روستایی ایران ضروری است. از سویی در بررسی های اخیر نشان داده شده است که میزان برخورداری و محرومیت جوامع می‌تواند در نوع ارتباط بین رشد و توزیع درآمد موثر باشد. لذا در این مطالعه تبیین رابطه توزیع درآمد روستایی و رشد بخش کشاورزی ایران به تفکیک مناطق محروم و برخوردار در بین استان های ایران مد نظر قرار گرفت.

۲. مبانی نظری تحقیق

در ادبیات اقتصادی رویکردهای متفاوت در خصوص رابطه بین رشد اقتصادی و توزیع درآمد ارائه شده است. براساس دیدگاه کلاسیک ها، ثروتمندان میل به پس‌انداز بالاتری نسبت به فقرا دارند و نابرابری درآمد به رشد اقتصادی بالا منجر می‌شود در این میان کوزنتس (۱۹۵۵) با بررسی تاثیر رشد اقتصادی بر توزیع درآمد در طول زمان نشان می‌دهد که در مراحل اولیه توسعه، رشد اقتصادی موجب افزایش نابرابری درآمد است، اما در مراحل بعدی توسعه، رشد اقتصادی منجر به برابری درآمدها می‌شود.

در حالی که مطالعات بسیاری نظریه کوزنتس را در کشورهای درحال توسعه و توسعه یافته مورد بررسی و تایید قرار داده‌اند. اما طی نیمه دوم قرن بیستم، اقتصاددانان متعددی با تاکید بر آثار منفی نابرابری بر رشد از طریق افزایش بی ثباتی ،کاهش انگیزه سرمایه گذاری و کاهش تقاضای افراد طبقه متوسط جامعه نتیجه گرفتند که دیدگاه کلاسیک ها با نتایج تجربی مغایر است. در این میان برخی محققین نشان دادند که بهبود در خدمات زیر بنایی می‌تواند نابرابری درآمدها را کاهش داده و رشد اقتصادی را افزایش دهد.

از تحلیل مباحث نظری چنین استنباط می‌شود که رشد اقتصادی و توزیع درآمد اثرات متقابلی نسبت به هم می‌توانند داشته باشند و این اثرات متقابل می‌تواند مثبت و منفی باشد. همچنین با عنایت به ساز و کارهای مطرح شده در خصوص اثرگذاری نابرابری بر رشد اقتصادی و برعکس، چنین استنباط می‌شود که رابطه بین دو متغیر مذکور در جوامع سنتی می‌تواند متفاوت از جوامع مدرن باشد و مهم تر اینکه رابطه مذکور در میان جوامع سنتی روستایی نیز با توجه به میزان برخورداری روستاها از امکانات می‌تواند، متفاوت باشد.

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۳. روش تحقیق

با عنایت به استدلال های بیان شده در مبانی نظری، رابطه توزیع درآمد و رشد اقتصـادی اثرات متقابلی بر هم داشـته و رابطه بین آنها در مناطق محروم و برخوردار متفاوت اسـت، لذا در این مطالعه به منظور تبیین رابطه توزیع درآمد روستایی و رشد بخش کشاورزی، سیستمی مشتمل بر دو معادله به شرح زیر معرفی شد که در معادله اول عوامل موثر بر رشد بخش کشاورزی و در معادله دوم عوامل تعیین کننده نابرابری درآمد روستایی مورد بررسی قرار می‌گیرد.

$$\begin{cases} Gru_{it} = f(Pgdpar_{it}, inf_{it}, un_{it}, cr_{it}, gc_{it}, tax_{it}, rp_{it}) \\ pgdpar_{it} = g(gru_{it}, inf_{it}, un_{it}, ur_{it}) \end{cases}$$

که درآن gru ضریب جینی روستایی و pgdpar ارزش افزوده واقعی بخش کشاورزی است . در معادله اول inf ، un ، cr ، gc ، tax و rp به ترتیب نرخ تورم، نرخ بیکاری، اعتبارات عمرانی، مخارج جاری دولت، درآمد مالیاتی و جمعیت روستایی می‌باشند همچنین در معادله دوم inf،unو ur به ترتیب نرخ تورم، نرخ بیکاری و ضریب شهرنشینی می‌باشند. اطلاعات این متغیر ها به تفکیک استانها از سالنامه آماری جمع آوری شدند.

معادلات فوق با اسـتفاده از داده های اسـتانی به تفکیک مناطق محروم و برخوردار برای دوره (۱۳۸۶-۱۳۹۴) و با اسـتفاده از رویکرد معادلات همزمان داده‌های پانلی برآورد شـدند. برآورد مدل فوق در ۵ سـناریو صـورت گرفت که سـناریو اول مربوط به کل مناطق روستایی کشور و شامل ۳۰ استان است و سـناریوهای بعدی به ترتیب الف- مناطق برخوردار(شـامل ۱۰ اسـتان اول برخوردار)، ب-مناطق برخوردار و نیمه برخوردار(شامل ۲۰ استان اول برخوردار)، ج-مناطق نیمه برخوردار و محروم (شامل ۲۰ استان دارای محرومیت بیشتر) و د- مناطق محروم(شامل ۱۰ استان از محروم ترین استان ها) می باشند.

۴. یافته های تحقیق

بر اسـاس نتایج این تحقیق در اسـتان های محروم و نیمه برخوردار رشـد بخش کشـاورزی منجر به کاهش نابرابری می شـود، در حالی که در اسـتان‌های برخوردار رشـد بخش کشـاورزی اثر معنی‌داری بر نابرابری ندارد. همچنین یافته‌های این تحقیق موید آن اسـت که در مناطق محروم، افزایش نابرابری منجر به رشـد اقتصـادی می‌شـود، اما در مناطق برخوردار تاثیر نابرابری بر رشـد معنی دار نیست. علاوه بر این نتایج حاصل از تخمین الگو نشان داد که افزایش مخارج جاری دولت در اسـتانها موجب افزایش نابرابری درآمد روسـتایی است و مخارج عمرانی دولت فقط در مناطق محروم و نیمه برخوردار موجب کاهش نابرابری درآمد روسـتایی بوده و در بقیه مناطق روسـتایی تاثیر آن بر شـاخص نابرابری معنی دار نیست.

۵. بحث و نتیجه گیری

براسـاس نتایج این مطالعه و به منظور کاهش نابرابری درآمد روسـتایی و جلوگیری از گسـترش فقر به خصـوص در مناطق محروم و نیمه برخوردار لازم اسـت اعتبارات عمرانی و امکانات زیر بنایی مناطق مذکور بر حسـب درجه محرومیت تخصـیص یافته و رونق فعالیت های بخش کشـاورزی از طریق ارائه مشـوق های لازم دولتی و ایجاد زمینه های لازم برای قیمت گذاری عادلانه محصـولات کشـاورزی مورد تاکید قرار گیرد. همچنین در مناطق برخوردار، شـیوه تخصـیص اعتبارات عمرانی برای زیر سـاخت های روسـتایی و چارچوب های نهادی موجود به منظور توزیع مناسب درآمد مورد بازبینی قرار گیرند.

کلید واژه: توزیع درآمد روستایی، رشد بخش کشاورزی، محرومیت، معادلات همزمان داده‌های پانلی.

تشکر و قدرانی

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Original Article

Impact of Targeted Subsidies Implementation on Inequality in Iranian Rural Area (Case Study: Villages of Neishabour County)

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Abstract

Purpose-The implementation of targeted subsidies policy in Iran is among the actions that, have been taken with the aim of reduction of poverty, reducing social class differences between different deciles of society and specially upgrading rural indicators in rural areas. The present study has been conducted with the purpose of evaluating the impacts of targeted subsidies on expansion of inequality in rural areas.

Design/methodology/approach -This fundamental-exploratory research has been done by descriptive-analytical method. The required data were collected through both field and documentary methods. In this study, first, the research indicators were investigated during two six-year courses before targeted subsidies (2005-2010) and after targeted subsidies (2011-2016) at the level of all villages in the country and the average of each indicator was compared between the two periods before and after targeted subsidies and then the obtained results of this part were compared with the results of field research in the study sample. In this study, 22 villages of Neishabour county were selected as a sample by systematic random method using Cochran's formula.

Finding- Findings of this study show that cash subsidies accounted for 7.56% of a household income portfolio in the case study in 2019. But the Gini coefficient in the period after targeted subsidies was higher than the period before the targeted subsidies, while the ratio of 10% 0f the wealthiest to 10% of the poorest population in the rural areas of the sample in 2018 was equal to 20.67. Also, despite the original goal of targeted subsidy plan, the lower deciles are far more pressured by rising energy prices, and household food expenditures are spent on food groups. However, the average caloric intake of each person in the tenth decile is seven times that of the first decile. Also, in 70% of the households of the first decile, there were no employed people. In general, the villages of the country have faced a worsening situation in seven indicators, both in the macro dimension and in a case study, but an improvement has been observed in case of one indicator.

Keywords- Targeted subsidies, Inequality in rural areas, Structural Adjustment policies, Neishabour, Iran.

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1. Introduction

One of the most important goals of government intervention in the economy is to establish justice. Economic and humanities experts have different opinions about justice and equality. Over the past half century, equality has come to the attention of economists in various aspects such as equality of income, welfare, resources and opportunities. Although there are different views on equality of opportunities, equality is clearer in terms of income and welfare. Increasing the welfare of the lower households of the society and improving the distribution of income is one of the most important reasons for the subsidy programs of the countries as one of the tools of government intervention in the economy (Liu & he, 2019). Given the large volume of subsidies paid in Table 1, the main issue in the Iranian economy has always been that, to what extent subsidies are close to their targets. Basically, one of the main reasons for the implementation of the targeted subsidy plan and the arguments of its proponents, has been the unbalanced distribution of these subsidies. Prior to the targeted implementation of subsidies in Iran, due to the continuous devaluation of the domestic currency relative to foreign currency and the policy of controlling prices in the energy and other commodities sectors, the payment of indirect subsidies has been on the rise over the past three decades. In the energy balance sheet of 2005, the share of the wealthiest and poorest deciles of income from subsidies for petroleum products in 2005 was 26.7% and 2.5% respectively (Hosseini & Kaneko, 2012).

Table 1. Volume of subsidies paid before the law on targeted subsidies (Amounts in billion Rials)
(Source: Budget deduction reports, 2005-2010 and authors' calculations)

Sector/Year		2005	2006	2007	2008	2009	2010
Production	Agriculture (percentage)	15.09	13.28	12.09	8.19	10.54	7.02
	Industrial (percentage)	5.12	6.17	9.1	4.07	5.19	4.92
Consumer		24.6	22.5	18.03	24.49	20.55	23.02
Service		55.19	58.05	60.78	63.25	63.72	65.04
Total subsidies paid		411811	583258	739960	791242	985442	1171082
The ratio of total subsidies to the total budget of the country		26	37	39	34	34	32
The ratio of total subsidies to development budget		393	317	435	328	370	306

In this regard, the targeted subsidies bill in Iran was also part of the "economic transformation plan" proposed by the ninth government. In total, the targeted subsidies plan was implemented to achieve the following goals:

- Achieving justice and reducing inequality between income deciles
- Optimal allocation of resources, reform of economic structure to achieve the goals of the country's vision document and implementation of general policies of Article 44 of the Constitution
- Managing consumption to prevent waste of resources (Website of the Research Center of the Islamic Consultative Assembly, Law of Targeted Subsidies, December 6th, 2009)
- According to this law, 50% of the income from targeted subsidies was supposed to be divided among households and 30% for the Manufacturers and 20% to be spent on government costs and at the end of 5 years, the cash subsidy was to become a comprehensive social security system. (The same source). Even the first government bill predicted that with this plan all the families are covered by social security, unemployment, disability, special diseases and medical insurance and each person's share of insurance payment is reduced from 70% to 30%. Even part of the cost of housing and education of low-income people is allocated to social welfare…" (Website of the Library, Museum, and Documentation Center of the Islamic Consultative Assembly, 2008: Session No. 55 of the 8th Assembly).

Prior to the targeting of subsidies, in rural communities most of the subsidies received, were in the form of production subsidies (chemical fertilizers), and in practice low-income or landless and non-agricultural households benefited less from it, while the well-to-do and non-agricultural strata of rural society are more exposed to migration to cities than others (Ziaei, 2002). But after targeting the subsidies, rural communities were announcing to be one of the areas of interests. Therefore, at the time of writing this study, wherever the government has emphasized the need

to reduce the number of recipients of subsidies, villagers, nomads, people covered by support institutions such as the Relief and welfare Committee, retirees and pensioners are always exempt from this law (Khaneh Melat News Agency, 2009).

Table 2. Revenue performance and the cost of targeted subsidies law in the years Of 2010 to 2016 (amounts in thousands billion Rials)

(Source: Annual budget laws of 2010-2016 and budget deduction reports of 2010-2016 and authors' calculations)

	Year		2010	2011	2012	2013	2014	2015	2016	Sum
Income	Forecast (budget)		80	540	660	500	480	480	480	3,220
	Proceeds (Realized)		63	540	441	430	469	433	429	2,805
	Percentage of Realization		79	100	67	86	98	90	89	87
Expense	Article7[1]	Approved Budget	63	400	480	410	425	390	420	2588
		Realized	63	460	414	420	427.4	418	421	2623.4
		Ratio of realized to Approved budget	100	115	86.25	102.44	100.56	107.18	100.24	87.38
		Share of total Approved expenditures	78.75	74.07	72.73	82.00	88.54	81.25	87.50	80.69
		Share of total Realized expenditures	100	85.19	93.98	97.67	91.13	96.54	98.14	94.66
	Article8	Approved Budget	0	100	100	40	100	52	22	59.14
		Realized Budget	0	80	0.759	0.18	23.588	5.8	3.2	113.527
		Ratio of realized to Approved Budget	0	80	0.759	0.45	23.588	11.2	14.5	18.6
		Share of total Approved expenditures	0	18.52	15.15	8.00	20.83	10.83	4.58	11.13
		Share of total Realized expenditures	0	14.81	0.17	0.04	5.03	1.34	0.75	3.16
	Assistance In the Field of Health	Approved Budget	0	0	60	50	48	48	48	144
		Realized Budget	0	0	0	0	28.4	8.7	9.2	46.3
		Ratio of realized to Approved Budget	-	-	-	-	59.17	18.13	19.17	13.78
		Share of total Approved expenditures	0	0	0	0	10.00	10.00	10.00	4.29
		Share of total Realized expenditures	0	0	0	0	6.06	2.01	2.14	1.46

Over time, the impacts of this plan was revealed in various rural economic levels. In a way that, in in September 2013, Statistical Center of Iran reported that, for the first time the inflation rate in rural areas has overtaken the urban inflation. Some consider 41.4% rural inflation in ratio with 39% urban inflation to be unprecedented in recent years and some others compare it with the inflation during years of 1973-1977. Hence, it is necessary to compare the purpose of this huge economic plan which is the reduction of inequality with the results of its implementation. Accordingly, the present study has been conducted to answer this question: Has inequality between different rural deciles decreased after implementation of targeted subsidies?

2. Theoretical literature of research

Adam Smith the founder of classic school was one of the serious opponents of government intervention in economy. This approach ruled over the western economy prior to the world wars, but with the outbreak of war and the emergence of inflation accompanied by severe economic recession of the 1930s, new ideas such as Keynesian economic thoughts gained strength in which the government emerged as one of the most important regulators of economic activities. By

1 Considering the lack of allocation of resources to the three categories of unemployment insurance, subsidies for housing facilities for vulnerable groups and compensation of government expenditures (subject of Article 11)of targeted subsidies law during the desired years, the inclusion of these items in this table has been omitted. Also, the difference in the total expenditures of different years with the addition of expenditures of Articles 7 and 8 and assistance to the health sector, due to debt repayment of the Central Bank, Treasury and Commerce (a total of 61260 billion rials for all years of targeted subsidies) is due to the following cases:

- Payment of 1700 billion rials to the Ministry of Education for the gift of the holy month of Ramadan to the educators in 2015.
- Payment of 311 billion rials to the Ministry of Defense and Armed Forces Logistics regarding paragraph g of Note 20 0f the Budget Law of 2015
- 65456 billion rials which paid to people at the end of 2013 as the festive gift of the new year

2 Article 7 includes cash and non-cash subsidies as in the basket of distributed goods in 2015

implementing this policy and improving the western economy, the control of currency and financial policy making and public sector administration was relinquished to the government (Ganji et al., 2015). Subsidy is one of the supportive tools of the governments to assist vulnerable groups and specific production sectors. In all economic systems the issue of welfare and social security has been significant and part of the government's current expenditures is allocated to transfer payments to assist vulnerable strata. In general, targeting the subsidies of energy carriers is one of the inevitable policies of the governments (Shahnazi et al., 2014), which can affect the indicators such as: income status of low income deciles, Gini coefficient status in rural areas, 10, 20, 40% of the poorest population, etc.. however, in the late 1980s, in order to address the problem of stagflation and the slowdown in capital accumulation in the advanced economies of the United States and United Kingdom, stabilization and adjustment policies were established, also known as the Washington Consensus approach. These policies have an anti-Keynesian orientation. The Washington Consensus's name for these policies is that the drafters of the "Structural Adjustment and Stabilization Policy" of the three institutions of the International Monetary Fund, the World Bank and US Treasury are based in Washington (Jellema et al., 2016). The mentioned policy package includes two components of economic stabilization and structural adjustment. The component of economic stabilization that the International Monetary Fund has been responsible for promoting, mostly emphasizes mostly the exchange rate correction and elimination of price subsidies. Structural adjustment policies also in addition to emphasis on elimination of subsidies, emphasize monetary and financial reforms and trade liberalization. Elimination of subsidies is specifically among the 13 implementation policies of structural adjustment program (Ganji et al., 2015).

Within the theoretical framework of adjustment policies, payment of public subsidies through price controls and also interventional social security system, hinder further economic growth. From this perspective, poverty and inequality and also structural impasses such as supply inelasticity to price is due to cost disturbances that need to be addressed through implementation of policies (Dini Torkamani, 2005).

The stabilization and adjustment policies are mainly contractionary policies to control the budget deficit and current account deficit. The impacts of these policies during 1980s, included on the one hand the reduction of the capital accumulation (due to the reduction of government spending) and on the other hand increasing inequality and poverty due to liberalization of commodity prices and reduction of real wages (Stewart, 1998). Until UNICEF introduced "Adjustment with Human Face" program in 1987. In these programs compensation for the negative effects on poor families during the implementation of mentioned contractionary policies was recommended. Thus, the issue of targeted subsidies was placed within the framework of adjustment policies. Anyway, if in an economy, the distribution of wealth and fixed assets including land is unequal, the primary effect of revenue transfer policies (cash payments) can be neutralized with the secondary effect resulted from rising commodity prices and production services of the owners of fixed assets. Indeed, in the unequal construction of wealth and power, any attempts to increase welfare of the poor becomes counterproductive (UNICEF, 1991). The efficiency of targeted cash subsidies as a tool of income redistribution, requires prerequisites that inflation does not increase with the implementation of adjustment policies. Otherwise, the share of fixed assets owners increases with the rising of commodity prices and services and therefore, the current pattern of income distribution remains unchanged at best. In other words, the secondary negative effect of rising prices and reduction of real wages on the poor households may be equal to the positive effect of cash subsidies paid or neutralize a significant percentage of it. In addition, with rising prices, there is a possibility that households at the bottom of the income group will fall below the poverty line which is not taken into account in the calculations (Hosseini, 2005). The second prerequisite is the almost accurate identification of target households. If this identification is based on income criteria, accurate information about the households' income status is required, which is not usually the case in developing countries. For this reason, the studies show that the policy of targeted subsidies is associated with errors that, depending on its dimensions, the effectiveness of this policy can be evaluated from another angle (Khorsandian, 2010).

In general, the issue of targeted subsidies and its impact on economic and social systems of rural settlements, have been studied from different

aspects in Iran and the world. Hence, some of the related studies to the present study are briefly stated in two parts of internal and foreign research.

Table 3. Research related to the impact of targeted subsidies on inequality in rural areas

Researchers	Results
Sadeghi et al.,2014	The execution of the plan has been effective on income increase, increasing purchasing power, quality of people's lives, but targeting subsidies had little or medium impact on improving access to health facilities, changing the trend of energy consumption (water, gas, etc.), and improving nutrition and consumption pattern.
Toulabi Nezhadet al., 2013	In regard with economic welfare, the greatest impact of subsidies is related to the component of increasing household demand and food consumption. In case of social welfare, the implementation of this plan has the greatest impact on the indicators of access to services and has the desired effects on the improvement of nutrition and diet diversity, but had not much effect on indicators such as health, education, recreation and leisure. Therefore, it can be stated that the targeted subsidies have increased the welfare of rural households.
Nourollahi et al.,2015	The targeted subsidies plan has not been effective in improving the quality of life of rural households, although the average quality of life in the dimension studied before the targeted subsidies plan was assessed as below average, after the implementation of the targeted subsidies plan, the average quality of life and its dimensions have decreased compared to before the implementation of the plan.
Ahmadi et al.,2016	Execution of the targeted subsidies law had positive and significant effect on both economic and social dimensions of the quality of villagers' lives in Urmia city, but its social effects have been higher than the economic effects. Nonetheless, since the quality of life depends on several conditions and factors, not all the changes can be exactly related to the implementation of the law on targeted subsidies.
Azizpour et al.,2017	In the field of rural economy, implementation of targeted subsidies plan has been associated with consequences such as "multiplicity of household expenditure lines and increasing the volume of pre-established payments in the rural economy", "strengthening the income of rural households", "establishing and widening the gap between producers and rural households" and so on. Eventually, it has led to three major categories: "change in income and expenditure of the villagers", "transformation of the system of production and consumption of wealth in the rural economy" and growth of risk-taking in the rural economy".
Shahnazi et al.,2014	The index of ratio of deciles as well as the Gini coefficient for urban and rural communities has decreased in the year following the targeting of subsidies. The results of the calculations with the Atkinson inequality index were also consistent with the results of the Gini coefficient and showed a decrease in inequality, with the difference that by increasing the inequality aversion parameter, the value of the Atkinson inequality index increases. This means that if the policymaker wants the targeted subsidies program to be more effective, more revenue must be transferred from high-income groups to low-income ones.
Fotros & Shahbazi2016	The Gini index calculated in the last year of the first development program shows the reduction of inequality in rural areas of Iran. Inequality has fluctuated during the second five-year development plan, the Third five-year development program shows the reduction of inequality in rural areas of Iran. Inequality has also been associated with slight fluctuations during the Fourth five-year development program and finally, according to the fifth five-year development plan, it can be stated that after the implementation of the law on targeted cash subsidies, income inequality decreased in 2012 and 2011 compared to 2010 and increased again in 2013 and 2014.
Mohammadi&Shari'ati2018	Policies designed to reduce inequality in the country need to pay more attention to the importance and role of inequality between urban and rural areas in exacerbating inequality. In general, the results show that inequality has decreased after the implementation of the targeted subsidies.
Jellema et al.,2016	In Uganda the impact of financial policies such as subsidies is below average. In other words, redistribution costs, such as developing infrastructure of water and electricity in rural areas has increased social spending and to some extent reduced inequality. But imposition of direct and indirect taxes (for instance increase of value added tax to 20%) and its redistribution in rural areas has led to increasing efficiency in rural production sector and as a result the expansion of direct employment in these areas.
Hedaia et al.,2016	In Egypt, the elimination of energy subsidies in 2014, caused direct effects on economic and social systems of rural settlements. The poor and landless villagers in particular suffered the most from the program. In attempt to reduce the damages caused by the elimination of energy subsidies on poor households and the worsening of the situation, Egypt government increased the subsidies on items such as wheat and dairy, education system and public transportations.
Balie et al.2018	The results of this policy are positive for all selected households, as long as the input market structure is competitive, even these results are doubled. Although subsidies ultimately help poor households to mitigate the effects of high costs, much of it is reabsorbed during market transfers by large producers who generally have the necessary liquidity in the market.

Differences and prominence of the present study from other researches, especially internal researches is that, in other studies the results of examining the indicators have not been compared with the studied sample at the macro level of the country's villages. While, in the present study, the results of examining the research indicators in all villages of the country have been compared with the studied sample. It should also be noted that, in the spatial dimension, a comprehensive research on the effects of the implementation of targeted subsidies in all villages of Neishabour city has not been done so far.

3. Research Methodology

In this study in order to examine the effectiveness of execution of targeted subsidies law on expansion of inequality in rural areas, primarily the research indicators were examined at the level of country's all villages using household cost and income plan data during both six-year periods prior to targeted subsidies (2015-2010) and after that (2011-2016) and each indicator's average was compared for both periods before and after targeted subsidies and then the results obtained from this part have been compared with the results of field studies in studied sample. The same indicators were also examined in selected sample from rural community of Neishabour. It is worth mentioning that, due to dispersion and high population of villages with more than 20 households, 22 villages were selected systematically using Cochran's formula. Also, in selecting the villages, an attempt has been made to include all the districts and rural areas of Neishabour in the sample villages so that the dispersion factor can be observed in the selection of villages. Also, the total number of households in the sample villages (8036 households) was sampled by Cochran method and according to the coefficients of p and q equal to 0.5 and d equal to 0.065, the sample size of 221 people (head of household) has been estimated. Based on this, first, all villages were classified into six groups.

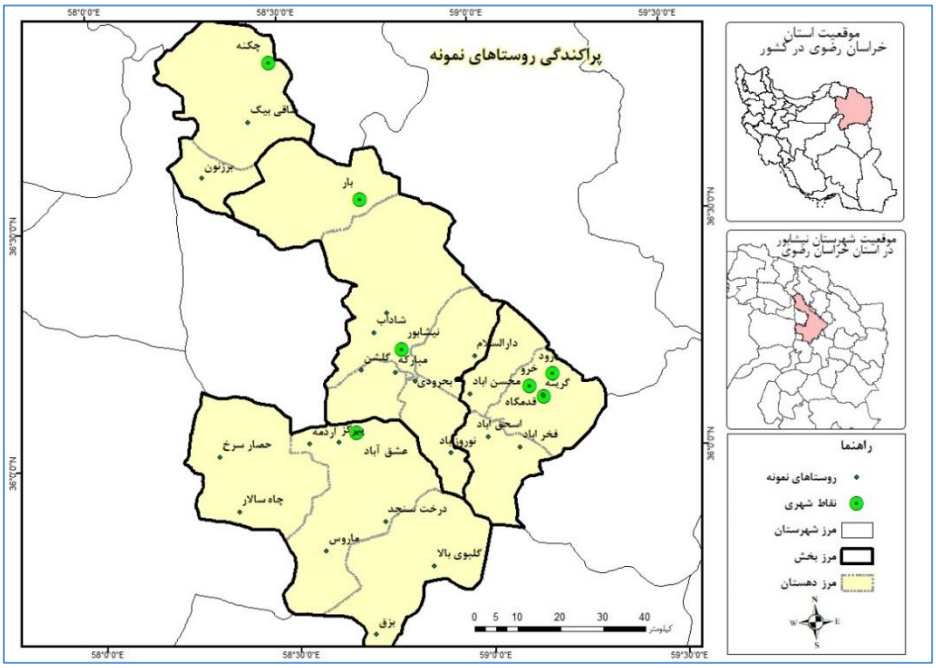

Figure 1. Dispersion of sample villages

Due to large population difference between the lowest rural population and the highest, 7 questionnaires were primarily considered for each village. Otherwise, sparsely populated villages will be decommissioned if only the weight of each village in the sample size is relied on. Finally, the rest of the questionnaires (67 questionnaires) were distributed based on the weight of each village of the total population. Eventually, the highest questionnaires were related to Ishaqabad village and the lowest were related to the group of Derakht Senjed, Robat Qal'eh and Darosalam. Relevant data were collected during the two periods before and after targeted subsidies by documentary and

library methods in villages across the country and then the results were compared with a case study based on experimental observations and completing questionnaires. According to this, in the present study, 50 items were categorized in the form of 8 indicators to evaluate the expansion of inequality in rural areas (Table 4).

Table 4. Indicators of the impact of implementation of targeted subsidies plan on the expansion of inequality in rural areas

(Source: Toulabinezhad et al., 2013; Ali Madadi et al., 2016, Hedaia et al., & UNDP, 2019)

Indicator title	Reference
Income status of Income deciles	Total household income
	Income from freelance jobs (agriculture & non-agriculture)
	Miscellaneous monetary income
	Miscellaneous non-monetary income
	The amount of subsidy received by the household
	Cash subsidy share of total household income
	The effect of cash subsidies on increasing household's income
Gini coefficient status in rural areas	Gini coefficient status in income deciles
The ratio of the Wealthiest to the Poorest	Share of 10% of the wealthiest to 10% of the poorest rural population
	Share of 20% of the wealthiest to 20% of the poorest rural population
	Share of 40% of the wealthiest to 40% of the poorest rural population
Status of non-food Expenditures of deciles	Clothing and shoes, housing, furniture and household services, healthcare, transportations and communications, recreation and entertainment, education and training
	The amount of costs deciles spent on non-food expenditures from cash subsidies
The status of food expenditures of deciles	Flour, noodles, grain and its products, meat, milk and dairy, and bird's eggs, oils and fats, nuts and legumes, sugar and sweets and tea, coffee, and cocoa, spices and flavors and other food ingredients, drinks and fast food and tobacco products
	Deciles' cost spent on household food expenses from cash subsidies
Food consumption status of deciles	Average household cost
	Average price of items (Toman)
	Average annual household consumption per kilo
	Average calories per group (Kilo)
	Average calorie intake per household
	Average calorie intake per person
Literacy status of deciles	Without a literate person, 1 literate person, 2 literate persons, 3 literate persons, 4 literate persons, 5 literate persons and more
	Average literate people in the household
	Deciles' expenses on education costs from cash subsides
Number of employed people in deciles	Average employed people, 1 employed person, 2 employed persons, 3 employed persons, 4 employed persons, 5 employed persons
Indicator	Reference
	The effect of targeted subsidies law on increase of employment of household

4. Research Findings

Prior to targeted subsidies, in rural communities the main part of paid subsidies was production subsidies (fertilizers), and practically, landless or with no land and non-agricultural households benefited less and this is while non-agricultural groups of rural communities are more exposed to migration to cities (Ziaei, 2002). But after targeting subsidies, rural communities are one of the strata of interest. On the other hand, the purpose of paying subsidies is to establish social justice,

public welfare and fair distribution of revenues. In the previous system of subsidy payment, large amounts were paid directly and indirectly and, in most cases, non-targeted, which had no role in promoting the income and welfare of vulnerable groups and its benefits went to high-income groups. In this part, considering the nature and main purpose of subsidies payment system which is the reduction of inequality, various indicators evaluating inequality will be examined based on the formal data first for all the villages of the country and next for the sample villages studied. Also based on the separation of statistical deciles of cost-income plan of rural households of Iran Statistical Center, case study sample was divided into various income deciles. Based on the table, 20.36% of families had an income of 45 to 75 million Rials per year and have been placed in the second decile, while 3.17% had an income of 270 to 360 million Rials and have been placed in 8th income decile.

Also average number of people in the household in studied case is 3.16 people, the average people with job in the household is 1.16 people and the average number of people with income in the household is 1.29 people.

Table 5. Number of households placed in income deciles in studied case sample

Source: research findings, 2019

Income deciles	Decile limit	Percentage of households in the decile	Average number of people in the decile	Average of people with job in the decile	Average of people with income in the decile
First decile	45 million and less	14.03	1.80	0.29	1.00
Second decile	Between 35 to 75 million	20.36	2.35	0.37	1.00
Third decile	Between 75 to 90 million	11.76	2.50	1.00	1.00
Fourth decile	Between 90 to 120 million	11.31	2.68	1.00	1.00
Fifth decile	Between 120 to 165 million	14.93	3.15	1.03	1.05
Sixth decile	Between 165 to 195 million	6.79	3.06	1.00	1.00
Seventh decile	Between 195 to 270 million	6.33	3.57	1.07	1.07
Eighth decile	Between 270 to 360 million	3.17	4.14	2.00	2.00
Ninth decile	Between 360 to 480 million	4.52	4.30	2.00	1.80
Tenth decile	480 million and more	6.79	4.00	1.80	1.93
Average total	221 people		3.16	1.16	1.29

4.1. Income status of income deciles

The most important effect of targeted subsidies is on the income dimension of households. After announcing the implementation of targeted subsidies on December 18, 2010, the amount of 455000 Rials could be withdrawn for each person, and thus a significant amount was added to the income of rural households. Table 6 shows the income status of rural household dimension in the upper income deciles is higher than the lower deciles. Also, the upward trend of income from 2005 onwards is quite tangible. Especially in the first year after targeted subsidies (2011), the income weight of the lower deciles from cash subsidies is very significant, so that in the first decile it has 82%, in the second decile 58% and in the third decile 49% of the household income basket.

Table 6: Average annual income per rural household by decile

(Source: Iran Statistical Center, 2005-2016)

Year	Income decile	Average people in a household (percentage)	Average people with income in the household (percentage)	Get paid (percentage)	Income from freelance jobs (agriculture and non-agriculture) (percentage)	Miscellaneous Monetary income (except cash subsidies) (percentage)	Miscellaneous Non-monetary Income (percentage)	Cash Subsidy (percentage)	Total Income (percentage)
Before Targeted	First Decile	2.12	1.12	15	11	35	31	8	100
	Second Decile	2.32	1.19	32	20	18	25	4	100
	Third Decile	2.95	1.27	35	24	15	23	3	100
	Fourth Decile	3.42	1.42	36	29	12	20	3	100

Year	Income decile	Average people in a household (percentage)	Average people with income in the household (percentage)	Get paid (percentage)	Income from freelance jobs (agriculture and non-agriculture) (percentage)	Miscellaneous Monetary income (except cash subsidies) (percentage)	Miscellaneous Non-monetary Income (percentage)	Cash Subsidy (percentage)	Total Income (percentage)
Subsidies	Fifth Decile	3.75	1.42	35	33	12	18	3	100
	Sixth Decile	4.14	1.47	38	35	11	13	3	100
	Seventh Decile	4.30	1.51	37	37	11	12	2	100
	Eighth Decile	4.49	1.59	39	37	10	11	2	100
	Ninth Decile	4.77	1.67	40	39	9	10	2	100
	Tenth Decile	5.23	1.95	33	49	9	8	1	100
	Average total (in million Rials)	4.36	1.61	103.86	117.65	25.92	32.3	7.44	287.17
	Percentage			36	41	9	11	3	100
After targeted subsidies	First Decile	1.56	1.20	4	4-	24	33	43	100
	Second Decile	3.01	1.17	14	11	18	23	34	100
	Third Decile	3.51	1.25	26	17	12	17	28	100
	Fourth Decile	3.81	1.31	30	18	13	15	24	100
	Fifth Decile	3.94	1.37	30	23	11	14	21	100
	Sixth Decile	3.99	1.85	29	27	12	14	18	100
	Seventh Decile	4.18	1.91	32	28	11	14	16	100
	Eighth Decile	4.29	2.00	33	29	12	13	14	100
	Ninth Decile	4.46	2.13	33	31	12	12	12	100
	Tenth Decile	4.81	2.45	26	45	12	9	8	100
	Average total (in million Rials)	3.84	1.42	223.06	224.4	92.77	103.08	125.74	779.05
	Percentage			29	30	12	13	16	100

Also, the descriptive findings of table 7, which are related to the job of the respondents in the case study, show that only 9 heads of households out of 31 households in the first decile and 17 heads of households out of 45 households in the second decile were employed. Second, the highest number of seasonal workers, which is one of the weakest types of employment, is seen in the first, second, and third deciles. The highest number of simple industrial workers is also seen in the fifth decile. In contrast, in the tenth decile, there are 2 cultural figures, two shopkeepers, one beekeeper and three cattle breeders. In general, the findings of this part of the study indicate the income gap caused by the type of job. Also, the descriptive findings of the case study sample indicate that the highest income (87%) of a household is provided through freelance agricultural and non-agricultural jobs and the lowest annual income of a household is provided through non-monetary and monetary incomes (excluding cash subsidies). Also, cash subsidies accounted for 7.56% of a household income portfolio in the case study sample in 2018). According to the findings of this study, cash subsidies in the first income decile constitutes 28% of the annual income volume and in this respect in the second place of importance for this decile and vice versa in the tenth income decile constitutes only three% of the sample household income and in this respect, it has the lowest level of importance for this decile.

Table 7. Income segregation per household in the study area

Income Deciles	Average income of getting paid (percentage)	Average income from freelance jobs (agricultural & non-agricultural) (percentage)	Average miscellaneous monetary incomes (excluding cash subsidies) (percentage)	Average miscellaneous non-monetary incomes (excluding cash subsidies) (percentage)	Average Cash subsidy	Total Income (percentage)	Average score Of Respondents [2]
First decile	-	9.71	24.94	37.36	28.00	100.00	4.94
Second decile	-	34	8	34	23.79	100	4.89
Third decile	-	83	-	-	16.84	100	4.58
Fourth decile	-	86	-	-	13.96	100	4.60
Fifth decile	-	87	-	-	12.57	100	4.58
Sixth decile	-	91	-	-	9.36	100	4.53
Seventh decile	-	-	91	-	-	8.73	4.21
Eighth decile	-	93	-	-	6.79	100	3.57
Ninth decile	8.92	85	-	-	5.82	100.00	2.90
Tenth decile	7	90	-	-	3.00	100	2.87
Average total (In million Rials)	8,666,667	197,517,086	1,332,710	3,151,685	17,239,663	227,907,810	4.44
Average total (%)	4	87	1	1	7.56	100	4.94

Statistical descriptive findings of the studied sample indicates that, according to the respondents, the lower deciles have rated the effect of cash subsidies on the increasing of household's income significantly higher than the upper deciles. The table shows that, from the first decile to the seventh decile the effect of cash subsidies on the income of rural households is significantly high. While the ninth and tenth deciles have rated this effect as moderate.

4.2. Gini coefficient status in rural areas

Table 8 shows the Gini coefficient status in the years before and after targeted subsidies. According to this, Gini coefficient in the period after targeted subsidies is higher than the period before it and as a result income inequality has increased. The share of the first decile (the poorest groups of rural community) from the total gross rural household's cost in 2005 was equal to 0.024% which has reduced to 0.0059% in 2016. That is, the share of the rural poor in the rural economy has decreased. In contrast, the share of the tenth decile (the wealthiest groups of rural community) from total gross rural household's cost in 2005 has been equal to 0.3063% which has reduced to 0.2662% in 2016, therefore, the share of rural rich has also been reduced.

Table 8. Gini coefficient and share of gross per capita cost per decile (decimal weight)

Component	Average amount before Targeted subsidies	Average amount after Targeted subsidies
Gini coefficient	0.3284	0.3352
Share of first decile	0.0236	0.0257
Share of second decile	0.1477	0.0437
Share of third decile	0.0479	0.0546
Share of fourth decile	0.0580	0.0662
Share of fifth decile	0.0690	0.0760
Share of sixth decile	0.0817	0.0898
Share of seventh Decile	0.0981	0.1019
Share of eighth Decile	0.1222	0.1213
Share of ninth Decile	0.1587	0.1546
Share of tenth Decile	0.3033	0.2662

4.3. Ratio of the wealthiest to the poorest people

According to table 9, share index of 10% wealthiest to 10% poorest population in rural areas in 2005 has

2 Respondents' answers to the questionnaire question were graded into five levels: very high (4 to 5), high (3 to 4), medium (2 to 3), low (1 to 2), very low (zero to 1).

been 12.74. This means that 10% of the rich rural population in the mentioned year have contributed to the country's economy 12.74 times as much as 10% of the poorest class. However, this gap has decreased to 9.25 in 2016, that is, in this year, 10% of the wealthiest people in rural areas have earned 9.25 times more than the poorest people, which indicates that the income distribution situation has increased in the 11th government. The same is true of the share of the wealthiest 20% to the poorest 20% in the rural population. This means that at the end of 2005, the share of 20% of the wealthiest was 7.6 times to 20% of the poorest population, which at the end of 2016, this gap has decreased to 5.78 times. This table shows that in case of the third index, the share of 40% of the wealthiest to 40% of the poorest population has improved. Thus, at the end of 2016, it was equal to 4.11 times, which at the end of 2016 has narrowed in the post period of targeted subsidies.

Table 9. Share of the wealthiest to the poorest rural population
(Source: Iran Statistical Center, 2020)

Component	Average amount before targeted subsidies	Average amount after targeted subsidies
Share of 10% wealthiest to 10% poorest population	12.88	9.11
Share of 20% wealthiest to 20% poorest population	7.56	5.72
Share of 40% wealthiest to 40% poorest population	4.09	3.33

The research findings in case of the study sample indicates that the share of 10% wealthiest to 10% poorest population in sample rural areas in 2019 was equal to 6.13. It means that, 10% of rich rural population in the mentioned year have won the economy of sample villages 6.13 times more than the poorest population. The table also shows that for the third indicator, the share of 40% of the wealthiest to 40% of the poorest population was equal to 20.67 times. In other words, the distance between the rich and the poor in general in the case study is greater compared to the villages of the country and as a result the situation of inequality is worse.

4.4. The status of non-food expenditures of the deciles

The indicator of non-food expenditures of households is one of the important economic indicators to evaluate the living conditions of rural households. Segregation of non-food expenditures shows that, increase of some of them (such as housing costs) during a specific period in the household consumption basket indicates the worsening of economic conditions and the growth of some other costs (travel expenses) if the inflation rate is low, indicates an improvement in the living conditions of households. Table 10 shows the details of non-food expenditures of a rural household. As shown in this table, in the period prior to the targeting subsidies, in average the highest non-food expenditures are related to housing costs. The same is true of the post-subsidy targeting period. Also, the lowest amount of non-food expenditures in the period before the targeted subsidies is related to recreation and entertainment and also education with (4%) of the household basket of non-food expenditures. This is also the case for the post-targeting subsidies period, with recreation, entertainment and education costs being the lowest of the non-food expenditures for this period. Also, the comparison of the costs of the first decile in the period before and after the targeted subsidies, reveals important points. Average housing expenditures in the pre-targeted period account for 58% of non-food household expenditures, while after targeted subsidies, housing expenditures account for 71% of the non-food expenditures of this decile. Also, the costs related to education, entertainment and recreation in the pre-targeted period of subsidies were about 25 and in the pre-targeted period, the costs of this sector were reduced to 1%.

Table 10. Non-food expenditures of household by cost deciles
Source: Iran Statistical Center, 2005 to 2016

period	Cost Decile	Average Number of People Per household	Clothing & Shoes (%)	Housing (%)	Household's Accessories Furniture & Services (%)	Healthcare	Transportation & Communications (%)	Entertainment Recreations Education & Training (%)	Goods Service & Others (%)	Total Non-food Expenditures Of Household (%)
Before Targeted subsidies	First Decile	2.12	7.38	58.42	9.12	18.55	0.08	2.36	4.08	100.00
	Second Decile	2.32	7.25	47.04	9.16	13.19	13.88	1.79	7.68	100.00
	Third Decile	2.95	9.03	38.87	9.70	14.15	16.75	2.62	8.88	100.00
	Forth Decile	3.42	9.50	38.22	9.99	12.26	15.91	2.97	11.16	100.00
	Fifth Decile	3.75	10.18	35.69	9.73	13.21	16.18	2.76	12.24	100.00
	Sixth Decile	4.14	10.33	32.68	10.26	12.98	16.42	3.99	13.33	100.00
	Seventh Decile	4.30	11.67	27.67	11.26	13.48	16.96	3.82	15.15	100.00
	Eighth Decile	4.49	12.44	25.02	11.64	12.73	18.94	5.31	16.09	102.17
	Ninth Decile	4.77	12.14	20.37	11.59	14.13	19.38	4.46	17.94	100.00
	Tenth Decile	5.23	11.64	13.81	11.14	15.11	25.48	5.86	16.97	100.00
	Average Total (Million Rials)	4.36	3.74	8.34	3.53	4.52	6.61	1.16	4.83	32.74
	Percentage		11.42	25.47	10.79	13.83	20.19	3.54	14.76	100.00
After Targeted Subsidies	First Decile	1.56	4.02	71.33	8.44	17.46	(3.93)	1.32	1.35	100.00
	Second Decile	3.01	4.68	50.20	7.95	13.83	15.15	1.55	6.63	100.00
	Third Decile	3.51	5.87	45.18	8.46	13.98	16.37	1.54	8.59	100.00
	Forth Decile	3.81	6.88	41.12	8.26	13.43	17.58	2.31	10.42	100.00
	Fifth Decile	3.94	7.66	37.89	8.35	13.91	17.99	2.58	11.63	100.00
	Sixth Decile	3.99	8.50	35.19	8.60	13.90	18.20	2.90	12.73	100.00
	Seventh Decile	4.18	9.46	32.43	8.67	13.89	18.81	3.22	13.53	100.00
	Eighth Decile	4.29	10.20	28.91	9.12	14.69	18.78	3.45	14.86	100.00
	Ninth Decile	4.46	11.20	24.98	9.40	14.83	20.80	3.69	15.10	100.00
	Tenth Decile	4.81	11.81	16.92	11.15	16.14	23.60	3.78	16.59	100.00
	Average Total (Million Rials)	3.84	7.39	22.09	7.19	11.25	14.97	2.43	10.47	75.79
	Percentage		9.75	29.15	9.49	14.85	19.75	3.20	13.81	100.00

According to table 11, the descriptive findings of the case study indicates that, here with a much lower percentage (28%) compared to the pre-targeted period in rural areas, the highest cost of non-food items is related to housing. But comparing different deciles, we get to the important point that in the first decile, housing costs account for 70% of non-food expenditures, while in the following deciles, this cost decreases significantly, and it includes only 17% of non-food expenditures in the tenth decile. Transportation and communications costs also increase from 4% for the first decile to 26% for the second decile.

As it is also observed in table 11, important results are obtained from case study. First, despite the expectations from the primary purpose of the targeted subsidy plan, the lower deciles bear more pressure due to the increase in energy carriers, because according to this table, 43.23%, 21.22%, and 14.45% of annual non-food expenditures of

household are allocated to water and energy costs for the first, second, and third deciles, while the same figure reaches to 5.20%, 4.45% and 2.90% for the eighth, ninth and tenth deciles respectively. Secondly, the findings of this study show that, as an average 7.29% of non-food expenditures of household and 3.71% of total annual expenditures of household are allocated to water and energy expenses.

Table 11. Non-food expenditures of the household in the studied area

Cost Deciles	Clothing & Shoes (%)	Housing (%)	Accessories Furniture Services of Household (%)	Health care (%)	Transportation & Communications (%)	Entertainments Recreations, & Education & Training (%)	Goods, Services & Others (%)	Total Non-food Expenditures Per Household (Million Rials)	Total Food Expenditures (million Rials)	The Percentage of Non-food Expenditures of the Total	Total Costs (Million Rials)
First Decile	4.07	70.23	7.86	18.47	-4.09	1.29	2.17	11.06	19.94	35.69	31.00
Second Decile	4.14	50.16	7.85	14.56	14.40	1.64	7.25	22.99	35.95	39.01	58.95
Third Decile	5.89	45.01	7.46	14.59	16.67	2.19	8.19	34.09	45.36	42.91	79.45
Fourth Decile	6.96	42.42	7.08	15.60	16.74	2.12	9.09	45.02	52.40	46.21	97.42
Fifth Decile	7.00	38.31	7.54	15.54	17.82	2.64	11.16	56.53	62.43	47.52	118.96
Sixth Decile	9.17	34.90	7.87	15.78	17.04	2.88	12.36	68.99	73.19	48.52	142.18
Seventh Decile	8.35	32.40	8.97	15.47	18.95	3.35	12.78	86.02	78.92	52.15	164.94
Eighth Decile	8.81	28.75	8.39	17.02	19.17	3.16	14.71	110.38	91.40	54.70	201.78
Ninth Decile	10.03	24.80	8.99	16.66	20.55	3.05	15.93	146.16	107.93	57.52	254.09
Tenth Decile	6.15	17.19	11.01	18.57	25.63	3.79	17.67	251.02	164.15	60.46	415.17
Average Total (Million Rials)	6.12	23.46	6.66	12.38	14.30	2.18	10.73	75.85	73.17	50.90	149.01
Average Total (%)	7.64	28.35	9.12	17.00	20.42	3.15	14.27	100	100	-	100.00

4.5. status of food expenditures of the deciles

According to the table below, in the post-subsidy period, costs such as housing, healthcare and transportation in the lower deciles have increased significantly. Meanwhile, the percentage of expenses for entertainment, recreation, education and training in the consumption basket of rural households has decreased to some extent in the post-targeted period, and this category also indicates the deterioration of the economic situation of the household. According to this table in 2005 the highest food expenses for the first decile is related to meat (28%) and its lowest (1%) for this decile is related to fruits, drinks and fast food and tobacco costs. While in 2016 the highest amount of costs (29%) for the tenth decile was related to grain and the lowest amount of costs (3%) is related to spices. In 2005 the highest expenses were respectively related to meat, grain, oils and fats, dairy, sugar, spices, fruits and drinks for the tenth decile while, in 2016 this order was disturbed and changed to grain, meat, fruits, dairy, sugar, drinks and tobacco, oils and nuts respectively.

Table 12. Food expenditures of rural households before and after the targeted subsidies
(Source: Iran Statistical Center, 2004-2016)

Period	Cost Deciles	Average number of people in the household	Clothing and footwear (percentage) (%)	Housing (percentage)	Household appliances, furniture and services (percentage) (%)	Health (percentage)	Transport and Communications (percentage)	Entertainment, education and training (percentage)	Miscellaneous goods and services (percentage)	Total household non-food expenses (percentage)
Before the targeted subsidies	First decile	2.12	7.38	58.42	9.12	18.55	0.08	2.36	4.08	100.00
	Second decile	2.32	7.25	47.04	9.16	13.19	13.88	1.79	7.68	100.00
	Third decile	2.95	9.03	38.87	9.70	14.15	16.75	2.62	8.88	100.00
	Fourth decile	3.42	9.50	38.22	9.99	12.26	15.91	2.97	11.16	100.00
	Fifth decile	3.75	10.18	35.69	9.73	13.21	16.18	2.76	12.24	100.00
	Sixth decile	4.14	10.33	32.68	10.26	12.98	16.42	3.99	13.33	100.00
	Seventh decile	4.30	11.67	27.67	11.26	13.48	16.96	3.82	15.15	100.00
	Eighth decile	4.49	12.44	25.02	11.64	12.73	18.94	5.31	16.09	102.17
	Ninth decile	4.77	12.14	20.37	11.59	14.13	19.38	4.46	17.94	100.00
	Tenth decile	5.23	11.64	13.81	11.14	15.11	25.48	5.86	16.97	100.00
	Average total (in Million Rials)	4.36	3.74	8.34	3.53	4.52	6.61	1.16	4.83	32.74
	(%)		11.42	25.47	10.79	13.83	20.19	3.54	14.76	100.00
After the targeted Subsidies	First decile	1.56	4.02	71.33	8.44	17.46	(3.93)	1.32	1.35	100.00
	Second decile	3.01	4.68	50.20	7.95	13.83	15.15	1.55	6.63	100.00
	Third decile	3.51	5.87	45.18	8.46	13.98	16.37	1.54	8.59	100.00
	Fourth decile	3.81	6.88	41.12	8.26	13.43	17.58	2.31	10.42	100.00
	Fifth decile	3.94	7.66	37.89	8.35	13.91	17.99	2.58	11.63	100.00
	Sixth decile	3.99	8.50	35.19	8.60	13.90	18.20	2.90	12.73	100.00
	Seventh decile	4.18	9.46	32.43	8.67	13.89	18.81	3.22	13.53	100.00
	Eighth decile	4.29	10.20	28.91	9.12	14.69	18.78	3.45	14.86	100.00
	Ninth decile	4.46	11.20	24.98	9.40	14.83	20.80	3.69	15.10	100.00
	Tenth decile	4.81	11.81	16.92	11.15	16.14	23.60	3.78	16.59	100.00
	Average total (in Million Rials)	3.84	7.39	22.09	7.19	11.25	14.97	2.43	10.47	75.79
	(%)		9.75	29.15	9.49	14.85	19.75	3.20	13.81	100.00

The findings of the case study indicates that rural household expenditures are spent on grain, meat, fruits and vegetables, dairy, sugar, nuts and tobacco and spices respectively. These findings also show that in all deciles, the highest cost is spent on grain and in 8 deciles the lowest cost is spent on spices. Also the group of meat, fruits and vegetables in all deciles is in the second and third priority of food expenses. These findings also show an increasing trend of cost for meat from first decile to second decile and vice versa decreasing trend of cost from the first decile to the tenth decile for the grain group.

Table 13. Household's food expenditures in the studied area

Cost Deciles	Grain and Its products (%)	Meat (%)	Dairy & Eggs (%)	Oils & Fats (%)	Fruits & Vssegetables (%)	Nuts & Legumes (%)	Sugar & Sweets (%)	Spices (%)	Drinks & Fast food & Tobacco (%)	Total Food Expenditures (%)
First decile	28.18	16.99	11.57	5.58	16.79	4.53	8.70	3.28	3.80	100
Second Decile	28.69	17.43	11.10	5.60	16.79	4.96	8.66	3.34	5.15	100
Third Decile	28.26	17.66	11.14	5.40	16.05	5.18	7.74	3.17	5.83	100
Fourth Decile	27.25	18.20	10.79	4.55	5.06	16.81	5.25	8.44	3.49	100
Fifth Decile	25.07	18.49	11.46	4.68	17.16	4.96	8.21	3.47	6.53	100
Sixth Decile	23.18	18.86	10.99	4.16	16.70	5.35	7.01	8.24	5.57	100
Seventh Decile	23.74	20.77	11.14	3.90	16.05	5.70	8.25	3.60	6.65	100
Eighth Decile	22.35	21.91	11.02	3.82	16.69	5.88	8.16	3.44	6.40	100
Ninth Decile	22.60	22.46	10.08	3.74	16.01	6.40	7.88	3.51	6.97	100
Tenth Decile	24.89	24.75	8.30	3.00	13.64	5.74	7.11	2.99	9.17	100
Average Total (Million Rials)	18.01	15.38	7.56	2.94	10.98	4.71	5.55	3.06	4.89	73.09
Percent of total	25	20	11	4	15	7	8	4	6	100

4.6. Status of food consumption of deciles

According to the data in the below table, it can be stated that, after targeted subsidies:

- The consumption rate of all food groups has been decreased.
- The average calorie intake per person has also decreased except for grain.
- Allegedly, considering the decrease of consuming food groups such as meat, fruits and vegetables and dairy, etc., the trend of consuming grain has accelerated and as a result the consumption pattern has changed

Table 14. Food consumption status of deciles

(Source: Iran Statistical Center, 2005-2016 and Authors' calculations)

Period	Component	Average Number of people in household	Grain & Its Products	Meat	Dairy & eggs	Oils & fats	Fruits & vegetables	Nuts & Legumes	Sugar & Sweets	Total
Before The Targeted Subsidies	Average household costs (Million Rials)	4.36	4.41	5.45	2.10	1.79	2.63	0.992	1.64	19.004
	Average items price (thousand Rials)		36.4	677.9	234.9	469.4	108.3	173.6	189.7	1890.1
	Average annual household consumption per Kilo		1,239	84	91	40	227	57	88	1,826
	Average calorie per group (Kilo)		2,640	1,803	2,341	8,645	392	3,470	2,373	21,664
	Average household calorie intake (Kilo calories)		3271.3	150.8	212.9	346.4	89.1	198.5	207.7	4476.7
	Average calorie intake per person (Kilo calories)		749.7	34.5	48.8	79.4	20.4	45.5	47.6	1026
After The Targeted Subsidies	Average household costs (Million Rials)	3.84	13.11	10.80	5.39	2.37	6.45	2.68	4.05	44.85
	Average items price (thousand Rials)		120.2	2078	736.5	1094.1	348	610	599.1	5585.91
	Average annual household consumption per Kilo		1,194	56	79	23	198	48	74	1,672
	Average calorie per group (Kilo)		2,640	1,803	2,341	8,645	392	3,470	2,373	3,095
	Average household calorie intake (Kilo calories)		3151.7	100.1	184.1	196.7	77.6	168.1	176.2	4054.6

Period	Component	Average Number of people in household	Grain & Its Products	Meat	Dairy & eggs	Oils & fats	Fruits & vegetables	Nuts & Legumes	Sugar & Sweets	Total
	Average calorie intake per person (Kilo calories)		814	25.9	47.8	51.1	20.1	43.4	45.9	1048.3
Case Study	Average household costs (Million Rials)	3.15	18.007	15.38	7.56	2.95	10.98	4.705	5.55	65.13
	Average items price (thousand Rials)		941.4	4051.9	1994.3	2213.3	723.6	1255.7	482.4	11662.5
	Average annual household consumption per Kilo		191	38	38	13	152	37	115	585
	Average calorie per group (Kilo)		2,640	1,803	2,341	8,645	392	3,470	2,373	21,664
	Average household calorie intake (Kilo calories)		1590.7	215.6	279.5	362.2	187.4	409.6	860.3	3905.5
	Average calorie intake per person (Kilo calories)		505	68.4	88.7	115	59.5	130	273.1	1239,.8

According to case study findings the average calorie intake per person in the sample household is (1,048,298 kilo calories) which is considered a higher figure in ratio with the period after targeted subsidies in country's villages. Also, the average calorie intake per each sample household is 3,905,513 kilo calories which is considered to be a lower figure in ratio with after the targeted subsidies in country's villages. According to these findings the average calorie intake in tenth decile is also 2635145 kilo calories and the average calorie intake in the first decile is 371528 which indicates that the average calorie intake in the tenth decile is seven times more than the first decile.

4.7. Literacy status of deciles

The following table indicates the literacy status in the periods before and after targeted subsidies by income deciles. According to this table the number of households without literate people has increased after targeted subsidies. The number of households with one literate person or more has also had a downward trend in the lower deciles. This issue is accelerated when the average number of literate people also decreases after targeted subsidies.

Table 15. Literacy status in rural households before and after the targeted subsidies

(Source: Iran Statistical Center, 2005-2016)

Period	Cost Deciles	Without Literate People	One literate Person	Two Literate Persons	Three Literate Persons	Four Literate Persons	Five Literate Persons & More	Average Literate People In Household
Before Targeted Subsidies	First decile	54.25	16.69	14.75	7.09	3.80	2.34	0.99
	Second decile	24.12	18.15	26.38	16.38	8.65	4.92	1.87
	Third decile	12.83	14.88	28.20	19.69	14.20	8.60	2.35
	Fourth decile	9.70	12.76	27.38	21.73	15.10	11.70	2.63
	Fifth decile	6.24	10.39	24.29	22.87	19.44	15.02	2.96
	Sixth decile	5.06	8.32	22.88	24.12	19.66	18.20	3.17
	Seventh decile	3.62	6.48	21.93	23.26	21.24	21.63	3.32
	Eighth decile	2.42	5.44	19.53	22.73	21.44	26.54	3.56
	Ninth decile	1.70	5.31	15.41	22.38	23.58	29.68	3.74
	Tenth decile	1.28	4.32	12.90	19.92	24.26	35.32	4.12
	Total average	11.81	10.16	21.28	20.07	17.28	17.69	2.87
After Targeted Subsidies	First decile	59.70	16.96	13.72	6.34	2.44	0.98	0.78
	Second decile	26.87	16.58	25.76	15.46	8.73	3.60	1.72
	Third decile	16.35	17.58	27.53	20.83	12.02	5.68	2.14
	Fourth decile	7.90	12.64	27.57	25.50	17.63	8.76	2.63
	Fifth decile	5.60	10.84	25.44	26.48	20.58	11.08	2.84
	Sixth decile	4.70	8.67	24.70	26.68	22.06	13.20	2.99
	Seventh decile	3.28	7.29	21.98	27.60	23.33	16.52	3.19

	Eighth decile	2.42	6.57	19.35	25.32	25.74	20.60	3.39
	Ninth decile	1.74	6.01	16.45	24.84	25.72	25.50	3.64
	Tenth decile	13.88	10.90	23.15	22.28	17.33	11.30	2.58
	Average total	54.25	16.69	14.75	7.09	3.80	2.34	0.99

Description of the statistical findings of case study indicates that, in average there are 2.5 literate people in each sample family. There is a significant difference between deciles in the studied sample. There are 0.68 literate people in the first decile, while there are 3.42 literate people in the tenth decile. And 63.17% of families in the first decile are without any literate people, while only 2.03% of the families in the tenth decile are without literate people. Table 16 also shows that, families in the tenth decile contain the highest number of literate people.

Table 16. Literacy status in the households of the studied area

Cost deciles	Without Literate People	One Literate People	Two Literate people	Three Literate People	Four Literate People	Fifth Literate People	Average Literate People In Household
First decile	63.17	16.25	12.94	5.5	1.56	0.58	0.68
Second decile	27.95	16.2	25.56	16.11	9.43	4.75	1.79
Third decile	18.72	17.2	22.82	20.28	14.75	6.23	2.16
Fourth decile	11.35	16.08	24.46	26.07	14.94	7.11	2.41
Fifth decile	9.54	11.94	25.65	25.48	18.52	8.87	2.61
Sixth decile	6.71	11.57	21.29	30.46	19.12	10.85	2.82
Seventh decile	4.6	8.75	23.69	28.42	22.83	11.7	2.96
Eighth decile	3.11	8.49	22.2	27.22	24.46	14.53	3.12
Ninth decile	4.5	6.45	19.17	28.71	27.36	13.81	3.15
Tenth decile	2.03	7.2	16.74	29.15	24.47	20.41	3.42
Average total	15.17	12.01	21.45	23.74	17.74	9.88	2.51

It should be noted that, only four respondents stated that one- or two-people's subsidies are spent on tuition fees and in contrast, 98.2% have stated that, they do not pay any tuition fees from cash subsidies.

4.8. Number of employed people in the deciles

The employment status is one of the indisputable indicators of evaluating inequality. Meanwhile, one of the law provisions (Article eight) of the targeted subsidies law has been the assistance to production sector and as a result creating jobs. Therefore, examining the rural employment status in both periods before and after implementation of this law can explain the inequality status and indicate the success or failure of this law. Evaluation of the following table shows that, in total, there have been no employed people in 99% of rural households in the first, second and third deciles before the targeted subsidies. But after the targeted subsidies it increases to 148%. In fact, the data of this table indicate that, it has had a downward trend in each group (one employed person, two employed persons, etc.,) and instead, the number of unemployed has increased. Hence, the evidence shows that, the employment status in rural families has generally gotten worse.

Table 17. Employment status of rural households before and after the targeted subsidies

(Source: Iran Statistical Center, 2005-2016)

Period	Cost deciles	Average literate People in household	Average People With Income in household	Average Employed people	Without Employed people	One Employed	Two Employed	Three Employed	Four Employed	Five Employed
Before Targeted Subsidies	First decile	2.33	1.20	0.53	55.18	31.83	7.45	1.00	10.08	0.03
	Second decile	3.07	1.35	0.99	27.53	47.42	16.24	3.77	13.52	0.39
	Third decile	3.71	1.43	1.22	16.94	52.18	18.81	6.49	14.42	0.72
	Fourth decile	4.06	1.54	1.31	14.08	51.27	19.86	6.88	14.06	0.96
	Fifth decile	4.29	1.54	1.45	9.74	52.98	21.34	8.21	15.51	1.42
	Sixth decile	4.57	1.59	1.52	8.65	50.53	22.49	8.93	14.79	2.01

Period	Cost deciles	Average literate People in household	Average People With Income in household	Average Employed people	Without Employed people	One Employed	Two Employed	Three Employed	Four Employed	Five Employed
	Seventh decile	4.71	1.63	1.65	6.71	47.59	24.35	10.71	13.73	2.83
	Eighth decile	4.83	1.70	1.76	5.89	45.19	24.18	12.08	13.33	3.52
	Ninth decile	5.09	1.76	1.86	5.42	42.21	24.58	12.74	13.02	4.41
	Tenth decile	5.45	1.95	1.95	5.02	38.60	25.93	13.91	11.54	6.43
	Average total	4.36	1.61	1.45	15.56	46.76	21.03	8.74	13.99	2.37
After Targeted Subsidies	First decile	2.02	1.09	0.34	70.68	25.80	3.00	0.38	0.14	0.00
	Second decile	3.10	1.22	0.75	38.87	49.47	9.58	1.71	0.29	0.08
	Third decile	3.51	1.30	4.47	26.26	56.12	13.56	3.16	0.70	0.21
	Fourth decile	3.73	1.35	1.11	17.73	60.53	16.52	4.10	0.91	0.21
	Fifth decile	3.87	1.41	1.20	13.87	61.29	18.23	5.09	1.20	0.33
	Sixth decile	4.04	1.46	1.29	11.94	52.54	19.70	6.33	1.75	0.61
	Seventh decile	4.15	1.50	1.35	10.03	50.48	21.33	6.92	2.26	0.61
	Eighth decile	4.33	1.54	1.43	9.08	49.08	21.92	8.36	2.58	1.08
	Ninth decile	4.48	1.60	1.51	8.19	47.02	23.06	9.51	3.21	1.38
	Tenth decile	4.73	1.77	1.73	7.25	40.40	25.14	12.08	5.02	3.16
	Average total	3.79	1.42	1.17	21.39	52.94	17.20	5.76	1.94	0.77

The following table indicates the number of employed people in the studied sample households. According to obtained results, it is considered that, 29.03% of the respondents in the deciles with 70.97% unemployed people have stated that there is only one employed person in their families. 62.22% of people in the second decile have also mentioned that there is no employed person in the household and 37.78% of respondents have also stated that there is only one employed person in the household. In contrast, 20% of respondent in the tenth decile stated that there is only one employed person in the household, 60% of respondents stated that there are two employed persons in the household, and 20% of respondents also stated that there are 3 employed persons in the household. 46.67% respondents in the tenth decile also stated there is only one employed person in the household, 26.67% of the respondents stated that there are two employed persons in the household and 20% of respondents stated that there are 4 employed persons in the household. The findings of descriptive statistics of the case study also indicate that, the majority of the respondents underestimated the impact of the implementation of the targeted subsidies law on increasing employment in the household. In all deciles, average response was low.

Table 18. Number of employed people per household in case study

Cost deciles	Number of Households In each decile	Percentage of households Without Employed people	Percentage Of households With one Employed person	Percentage Of households With two Employed persons	Percentage Of households With three Employed persons	Percentage Of households With four Employed persons	Percentage Of households With five Employed persons	Average
First decile	31	70.97	29.03	0.0	0.00	0.0	0.0	1.00
Second decile	45	62.22	37.78	0.0	0.00	0.0	0.0	1.11
Third decile	26	0	100.00	0	0.00	0	0	1.23
Fourth decile	25	0	100.00	0	0.00	0	0	1.36
Fifth decile	33	0	96.97	3.03	0.00	0.0	0	1.06
Sixth decile	15	0	100.00	0.00	0.00	0.0	0.0	1.00
Seventh decile	14	0	92.86	7.14	0.00	0.0	0.0	1.00
Eighth decile	7	0	0.00	100.00	0.00	0.0	0.0	1.71
Ninth decile	10	0	20.00	60.00	20.00	0.0	0.0	1.00
Tenth decile	15	0	46.67	26.67	0.0	26.67	0.0	1.33
Total	221	22.62	66.1	8.6	0.9	1.8	0.0	1.14

4.9. Activity and work motivation of the head of the household

The activity status of the head of the household is also an indicator explaining the employment status and consequently the inequality. Given that, 50% of rural households have one employed person and that one is also the head of the household, hence a more detailed study of job status of the head of the household is also important. In fact, due to the fact that most of the household income depends on the job status of the head of the household, any change in the job status of the head of the household can directly affect the living conditions of the household. The table below shows that the percentage of rural households headed by employed people in the first, second, and third deciles has decreased significantly in the post-subsidy period. In contrast, the percentage of rural households headed by unemployed people with no job income (relief committees and cash payments of subsidies, etc.) has significantly increased in the first, second, and third deciles in the same period compared to the period before the targeted subsides.

This indicator also shows that the job status has gotten worse in the post-subsidy period and consequently the rate of inequality has increased in rural areas.

Table 19. Activity status of head of the household
(Source: Iran Statistical Center, 2005-2016)

Period	Cost deciles	Employed	Unemployed	Having income Without job	Student	Housewife	Others
Before Targeted Subsidies	First decile	38.156	3.250	54.346	0.007	2.150	2.093
	Second decile	65.044	2.553	30.005	0.043	0.920	1.433
	Third decile	75.414	2.446	19.984	0.005	0.799	1.351
	Fourth decile	78.337	2.470	17.525	0.023	0.650	0.993
	Fifth decile	83.600	2.128	12.172	0.015	0.765	1.325
	Sixth decile	84.772	1.773	11.790	0.033	0.675	0.958
	Seventh decile	86.499	1.632	9.827	0.094	0.746	1.204
	Eighth decile	86.737	1.273	10.224	0.000	0.485	1.281
	Ninth decile	87.531	0.972	9.467	0.119	0.478	1.431
	Tenth decile	87.414	1.251	9.293	0.025	0.425	1.587
	Average total	77.447	1.969	18.376	0.036	0.807	1.365
After Targeted Subsidies	First decile	26.29	3.73	63.08	0.06	4.05	2.80
	Second decile	55.25	5.60	34.80	0.08	2.24	2.02
	Third decile	67.58	4.19	25.07	0.05	1.35	1.59
	Fourth decile	75.525	2.90	18.76	0.02	1.17	1.63
	Fifth decile	78.92	2.49	16.27	0.02	1.05	1.26
	Sixth decile	81.26	2.20	14.25	0.02	1.02	1.25
	Seventh decile	83.67	1.45	12.78	0.02	0.94	1.14
	Eighth decile	83.57	1.41	12.76	0.03	0.80	1.43
	Ninth decile	84.56	1.40	11.86	0.03	0.57	1.59
	Tenth decile	84.28	1.12	12.46	0.01	0.66	1.46
	Average total	72.09	2.65	22.21	0.03	1.40	1.62

Comparing the figures in the table above with the case sample also shows us other points. First, in the case sample 77.38% 0f the heads of the households were employed and 22.62% of them were unemployed. Secondly, everyone in the deciles had income without jobs (subsidies or income from relief committee, etc.). Comparing these results with country's results indicate that rate of unemployment of heads of the households in case sample (22.62%) is far more than the same rate for the whole country (2.65%).

Table 20. Activity status of head of the household in the studied area

Cost deciles	Number of Households Per deciles	Percentage of Employed People	Percentage of People having Income without Job	Percentage Of students in The households	Percentage Of housewives in The households	Percentage of others	Percentage Of unemployed
First decile	31	11.4	14.03	0.00	0.00	0.45	100
Second decile	45	44.12	20.36	0.00	0.00	1.36	100
Third decile	26	60.53	11.76	0.45	0.45	0.90	100
Fourth decile	25	68.77	11.31	0.00	0.45	2.26	100
Fifth decile	33	77.86	14.93	0.45	0.45	1.36	100
Sixth decile	15	81.21	6.79	0.90	0.90	0.90	100
Seventh decile	14	81.45	6.33	1.36	1.36	0.45	100
Eighth decile	7	83.6	3.17	0.45	0.45	1.81	100
Ninth decile	10	82.52	4.52	1.36	0.90	0.90	100
Tenth decile	15	81.08	6.79	0.00	0.45	0.45	100
Total	221	77.38	100	4.98	5.43	10.9	22.62

It is worth mentioning that, results related to the research case study indicates that, the highest amount of employed people (21) in agriculture sector are observed in the fifth decile. In contrast, the lowest amount (2) belongs to the eighth decile. The highest number of the seasonal workers are also observed in the first, second, and third deciles. Respondents were also confronted with the question of the effect of receiving cash subsidies on reducing work motivation, the results of this question are shown in table 3-107.

Descriptive findings indicate that in the fourth decile, respondents rated the effect of cash subsidies on job motivation as moderate, and in the first decile, they rated this effect as low to moderate. Other deciles have underestimated this impact.

Table 21. The rate of employment in economic sectors in the studied area

Occupational Group	First Decile	Second Decile	Third Decile	Fourth Decile	Fifth Decile	Sixth Decile	Seventh Decile	Eighth Decile	Ninth Decile	Tenth Decile	Total people in Each job
Agriculture, Horticulture And animal Husbandry	3	10	16	17	21	12	12	2	9	10	112
Industry	0	1	6	5	12	3	1	2	0	1	31
Services	6	6	4	3	0	0	1	3	1	4	28
Total employed people per decile	9	17	26	25	33	15	14	7	10	15	171
Number of households per decile	31	45	26	25	33	15	14	7	10	15	221
Average total	2.45	1.93	2.81	3.08	1.88	1.87	1.29	1.43	1	1.13	2.07

5. Discussion and Conclusion

The purpose behind providing subsidies is to establish social justice, public welfare and fair income distribution. On December 10 2010, the 10th Iranian administration implemented the targeted subsidies plan. Rural communities have been one of the target strata regarding the distribution of the benefits of this plan. The present study examined the effect of implementing such a plan on the expansion of inequality across rural areas. Findings showed that during the first year following the implementation of the plan (2011), a considerable extent of the incomes of lower deciles living in rural areas of Iran is provided by cash subsidies; accordingly, 82%, 58% and 49% of household incomes were related to subsides in the first, second and third deciles, respectively. However, considering the fixed amounts of cash subsidies through time, such extent has been decreased year after year. Additionally, the results of the case study suggest that the highest extent of income in a case study household (87%) is provided through agricultural and non-agricultural occupations; meanwhile, the lowest amount of the

annual income of a household is earned through miscellaneous monetary and non-monetary means of income (aside from cash subsidies). Moreover, cash subsidies constituted 7.56% of the income of a case study household in 2018. Having conducted similar studies, Ali Madadi et al. (2016) divided their respondents into five income groups and concluded that subsidies had a large share among the poor classes living in both areas they examined (19.6% share for the first income class in Binaloud region reducing to 5.3% for the fifth class and 24.5% for the first class in Kalat region reducing to 6.1% for the fifth class). As a result, subsidies overall have had a higher effect on increasing the income of underprivileged classes.

Regarding the Gini Coefficient, results suggest a higher Gini coefficient value in the period following the implementation of targeted subsidies compared to the previous period followed by increased income inequality and reduced share of the rural underprivileged class from the rural economy. The findings of Dadgar & Nazari (2011) demonstrates a Gini coefficient of approximately 0.55-0.35 during the examined period, suggesting an unfair income distribution in Iran. Furthermore, given the circumstances such as stagflation, continued economic crisis, absence of necessary infrastructure, the lack of an economic model, etc., not only the targeted subsidies plan will not improve the state of income distribution, but also places the underprivileged classes of the society under pressure and worsens their state of welfare. In addition, the average wealth share of the upper 10% to the lower 10% of the population has been decreased from 12.88 before the plan to 9.11; in other words, the 10% wealthy population of rural communities had a larger share of Iran's economy before the targeted subsidies plan. As for the other two indices of the 20% and 40% wealthiest to the poorest, results show improvements in the period following the targeted subsidies plan. The results of the case study also show that the 10% wealthiest to the 10% poorest in rural areas of the case study was 20.67 in 2018. The study conducted by Shahnazi et al. (2014) confirms this result as well. Having examined two years before and after the targeted subsidies plan, they concluded that the distance between the poorest and the wealthiest has been reduced from 14 to 10, showing the better income redistribution following the implementation of the plan.

Findings reflect several significant implications regarding the comparison between the expenses of the first decile in Iran in the periods before and after the implementation of the plan. There is an increase in the average expenses of different groups such as housing. Subsequently, the circumstances of the lower deciles can be assessed as worse than those of the higher deciles following the targeted subsidies plan. The results obtained from the case study also suggest that contrary to the initial expectation from the plan, lower deciles are under a considerably higher pressure caused by increased energy carriers. This finding is confirmed by the results obtained by Hazeri Nayeri & Hosseini Nasab (2014). According to their research, the modification of energy subsidies in the form of raised energy prices has reduced the welfare of all urban and rural households; and this is especially manifested among low-income deciles in both rural and urban families. Moreover, following the energy subsidies modification, rural households face a higher extent of reduced welfare compared to urban families; on the other hand, stimulus packages and income redistribution due to energy price modification under various redistribution scenarios significantly compensate for the reduced household welfare. In the food group, in 2005, the tenth decile spent the highest expenses for meat, grain, oils and fats, dairy, sugar, spices, fruits and drinks, respectively; meanwhile, the order was changed in 2016 as grain, meat, fruits, dairy, sugar, drinks and tobacco, oils and nuts. The descriptive findings of the case study suggest that the rural household's expenses for providing food is respectively spent on grain, meat, fruits and vegetables, dairy, sugar, nuts, tobacco and spices. Such findings have been confirmed by Khosravi Nezhad (2009), he concluded that following the implementation of the targeted subsidies plan, the effects of increase in the price of bread have always been higher than that of sugars and vegetable oils for the first to third classes. For the fourth and fifth classes, the effect of price regulation of vegetable oil has been higher than that of bread and sugar.

The results of the study on the consumption of foods show that given the reduced intake of groups such as meat, fruits, vegetables, dairy, etc., the consumption of grain has been accelerated which demonstrates a shift in the food consumption pattern.

Table 22. Summary of research results on the impact of targeted subsidies on the spread of inequality in rural areas

Index	Results in the macro rural dimension	Results in the case study	Analysis
The income status of income deciles	↑	↑	Considering the amounts of cash subsidies remaining fixed, the extent of income earned from these subsidies by rural households across Iran has decreased year after year. Results of the case study also suggest that cash subsidies constituted 7.56% of the whole income of a sample household in the case study in 2019.
The Gini coefficient status in rural regions	↓	-	According to the findings, the Gini coefficient was higher in the period following the implementation of targeted subsidies plan than the previous period, resulting in an increased income inequality.
The share of 10%, 20% and 40% of the wealthiest to 10%, 20% and 40% of the poorest in the rural population	↑	↓	Results of examinations show that the average share of the 10% wealthiest compared to the 10% poorest living in Iranian villages has been reduced from 12.88 in previous period to 9.11 – Results of the case study also show that the 10% wealthiest to the 10% poorest among the rural population of the case study was 20.67 in 2019.
The status of non-food expenses in deciles	↓	↓	In Iranian villages, the average housing expenses prior to the plan constituted 58% of the whole non-food expenses of a household; meanwhile, following the implementation of the plan, housing expenses constituted 71% of non-food expenses of the same decile. Findings also demonstrate that contrary to the initial expectation from the plan, lower deciles are under a considerably higher pressure caused by increased energy carriers.
The status of food expenses in deciles	↓	↓	According to the examinations on Iran regarding 2005, the tenth decile spent the highest expenses for meat, grain, oils and fats, dairy, sugar, spices, fruits and drinks, respectively; meanwhile, the order was changed in 2016 as grain, meat, fruits, dairy, sugar, drinks and tobacco, oils and nuts. Results of the case study suggest that the rural household's expenses for providing food is respectively spent on grain, meat, fruits and vegetables, dairy, sugar, nuts, tobacco and spices.
The status of food consumption in deciles	↓	↓	Following the implementation of the targeted subsidies plan in Iran, the extent of rural households' consumption of all food groups in terms of weight has been reduced. The amount of calorie intake per person has been decreased as well, except in the cereal group. Additionally, results of the case study show that the average calorie intake per person in the tenth decile is seven times that of the first decile.
The status of literacy in deciles	↓	↓	In all villages of Iran, the number of households devoid of literate members has been increased following the implementation of the plan. Descriptions of the statistical findings of the case study show that on average, there are 2.5 literate persons in each sample household. Differences between deciles in samples are significant.
The number of employed persons in deciles	↓	↓	In all villages of Iran, the extent of employment has been reduced following the implementation of the plan while the number of unemployed people has been rising. Results of the case study also show that in 2018, 70% of households in the first decile had no employed family members.
The status of activities and work motivation of heads of households in deciles	↓	↓	The number of employed heads of households in the first, second and third deciles has been significantly reduced following the implementation of the targeted subsidies plan in the entire country. In the results of the case study, the respondents from the fourth decile assessed the effect of cash subsidies on employment motivation as average; the assessment of the first decile in this respect was low to average. The remaining deciles assessed the effect as very low.

Moreover, the results obtained from the case study show the average calories received per member of a case study household as 1239845 kcal; meanwhile, the average calorie intake per person in the tenth decile is seven times the intake of a person in the first decile. In another study, Toulabinezhad et al. (2013) concluded that increased income as a result of subsidies has led to the economic welfare of rural households living in their examined region. In other words, the extent of economic welfare of the rural households in the studied area was improved through increased income due to receiving cash subsidies.

Results point to an increase in the number of families devoid of literate persons in the period following the implementation of targeted subsidies in villages throughout Iran. Additionally, the number of households with one or more literate members in low deciles has been decreasing. This is further intensified when the average number of literate persons in a household is also reduced following the implementation of the plan. Moreover, the findings of the case study demonstrated that on average, there are 2.5 literate persons in each sample household. The differences between deciles are significant in the case study samples. In addition, the highest number of literate persons live in the tenth decile households. Importantly, 98.2% of the respondents expressed that they spend no amount of money out of their cash subsidies on education expenses. These findings are confirmed by Nourallahi et al. (2015); in their study, they showed that following the implementation of the plan, the opportunity to continue education at universities has been reduced and the plan has negatively affected academic education.

Based on the results, the number of employed persons in each group has been decreasing following the implementation of the plan while the number of unemployed persons has been on the rise. Consequently, evidence show that employment conditions in rural households has generally worsened. Moreover, findings obtained from the case study suggest that there was no employed person in 70% of households in the first decile. 29.03% of the respondents expressed the presence of only one employed person in their families. On the other hand, in the tenth decile, 46.67%, 26.67% and 26.67% of the respondents pointed to the presence of 4, 2 and 1 employed persons in their families, respectively. Contrary to these findings, Riyahi & Soltanabadi (2018) concluded in their study that the direct distribution of subsidies has been effective in several components such as aiding income earning, increasing employment opportunities, facilitation of savings and reducing dependency on financial resources of intermediaries. The study of the employment and activity status of heads of households show that employment conditions have worsened in the period following the implementation of the targeted subsidies plan; in turn, this has led to higher inequalities in rural regions. Notably, according to the findings obtained from the case study, the highest number of employed individuals in the agriculture sector (21 persons) is observed in the fifth decile. Meanwhile, the lowest number of such individuals (2) is seen in the eighth decile. Additionally, most of the seasonal workers are observed in the first, second and third deciles. When the respondents were asked about the effect of receiving cash subsidies on reduced work motivation, those in the fourth decile assessed such an effect as average while the assessment of the respondents from the first decile was low to average. The remaining deciles assessed the same effect as very low. These results are consistent with the findings of Nourallahi et al. (2015); they concluded that heads of households have lost their occupational diversity following the implementation of the plan and their employment rates have been on the decline as well.

Considering the above explanations to find answers to the research question (Has inequality between various rural deciles reduced following the implementation of the targeted subsidies plan?), it is concluded that while 7 indices have witnessed undesirable circumstances following the implementation of the targeted subsidies plan both in the macro scale of all rural areas in Iran and the case study region, one index has been improved. Furthermore, the results obtained from examining the one index show inconsistencies between findings in the national scale and the case study.

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Original Article

تاثیر اجرای هدفمندی یارانه‌ها بر گسترش نابرابری در نواحی روستایی ایران (نمونه موردی : روستاهای شهرستان نیشابور)

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چکیده مبسوط

۱. مقدمه

یکی از مهمتـــــرین اهداف دخالت دولت در اقتصاد، برقراری عدالت است. صاحب‌نظـــران اقتصـــادی و علوم انسانی نظرات متفاوتی در مورد عدالت و برابری دارند. در نیم قرن گذشـته برابری از جنبه‌های مختلف همانـند برابری درآمـد، رفـاه، منـابع و فرصـــت‌هـا، مورد توجه‌اقتصـــاددلنان بوده‌اســت. هرچند که نظرات متفاوتی در مورد برابری فرصـــت‌ها وجود دارد، امـا برابری از منظر درآمـدی و رفـاه روشـن تر می باشـد. افزایش رفاه خانوارهای فرودست جامعه و بهتر کردن توزیع درآمد از مهمترین دلایل برنامه‌های یارانه‌ای کشـــورها به عنوان یکی از ابزارهای دخالت دولت در اقتصـــاد اســـت. از سوی دیگر مسـئله‌اصـلی در اقتصاد ایران همواره‌این بوده‌است که پرداخت یارانه‌ها تا چه‌اندازه‌ای به‌اهداف خود نزدیک بوده‌است. اساسا یکی از دلایل اصـــلی اجرای طرح هدفمنـدی و اســـتدلال‌های مـدافعان هدفمندی یارانه‌ها نیز توزیع نامتوازن یارانه‌ها بوده‌است.

۲. مبانی نظری تحقیق

آدام اسـمیت بنیانگذار مکتب کلاسـیک‌ها از مخالفان جدی دخالت دولت در اقتصـــاد بود. این بینش تا قبل از وقوع جنگهای جهانی بر اقتصاد غرب حاکم بود اما با بروز جنگ و پدیدار شـدن تورم همراه با رکود شـــدید اقتصـــادی دردهه ۱۹۳۰، اندیشـــه‌های جدید همچون اندیشـــه‌های اقتصـــادی کینزی قوت گرفت که در آن دولت به عنوان یکی از مهمترین عوامل تنظیم کننـده و تعدیل کننـده فعالیت های اقتصـادی مطرح شـد. با اعمال این سـیاسـت و بهبود اقتصـاد غرب، بتدریج کنترل در بخش ســـیاســـتگذاری مالی و پولی و اداره بخش عمومی در اقتصـاد به دولت سـپرده شـد. بطور کلی هدفمندسـازی یارانه حامل های انرژی بعنوان یکی از ســـیاســـت های اجتناب ناپذیردولت ها اســت که می تواند بر شـــاخص‌هایی نظیر: وضـــعیت درآمدی دهک‌های درآمدی پایین، وضعیت ضریب جینی در مناطق روســـتایی، میزان ۱۰، ۲۰ و ۴۰ درصـد فقیرترین جمعیت و ... تاثیر بگذارد. اما در اواخر دهه ۱۹۸۰ در راســتای مواجهه با معضـل رکود تورمی و کنـدشـــدن فرآیند انباشـــت ســـرمایه در اقتصـــادهای پیشرفته‌امریکا و انگلستان، سیاست های تثبیت و تعدیل ساختاری پی ریزی شـد که به رویکرد اجماع واشـنگتنی نیز معروف اسـت. این سـیاسـت ها دارای جهت گیری ضـد کینزی هسـتند. حذف یارانه‌ها بطور مشـــخص یکی از ۱۳ مورد ســـیاســـت اجرایی برنامه تعدیل ساختاری است.

۳. روش تحقیق

روش تحقیق در پژوهش حاضـر توصـیفی - تحلیلی و نوع آن ازنظر هدف، بنیادی است. برای جمع‌آوری اطلاعات از روش‌های اسنادی و میدانی استفاده‌شده است.

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در این تحقیق جهت بررسی تاثیر گذاری اجرای قانون هدفمندی یارانه‌ها بر گسترش نابرابری در نواحی روستایی، ابتدا شاخص‌های تحقیق با استفاده‌از داده‌های طرح هزینه و درآمد خانوار طی دو دوره ۶ ساله پیش از هدفمندی یارانه‌ها (۱۳۸۹-۱۳۸۴) و دوره ۶ ساله پس از هدفمندی یارانه‌ها (۱۳۹۵-۱۳۹۰) در سطح تمام روستاهای کشور مورد بررسی قرار گرفته و میانگین هر شاخص در دوره پیش و پس از هدفمندی یارانه‌ها مقایسه شده و سپس نتایج بدست آمده‌از این بخش، با بررسی های حاصل از پژوهش میدانی در ۲۲ روستای شهرستان نیشابور (بعنوان نمونه) مقایسه شده‌است.

۴. یافته‌های تحقیق

تا قبل از هدفمندسازی یارانه‌ها، در جوامع روستایی بخش اعظم یارانه دریافتی از نوع یارانه‌های تولیدی (کود شیمیایی) بود، و عملا خانوارهای کم زمین یا فاقد زمین و غیر کشاورز روستایی از آن کمتر منتفع می شدند و این در حالی است که خوش نشینان و اقشار غیرکشاورز جامعه روستایی بیشتر از سایرین در معرض مهاجرت به شهرها قرار دارند . اما پس از هدفمندسازی یکی از اقشار مورد توجه، جوامع روستایی است. از سوی دیگر، هدف از پرداخت یارانه، برقراری عدالت اجتماعی، رفاه عمومی و توزیع عادلانه درآمدهاست. در نظام قبلی پرداخت یارانه، مبالغ بالایی به صورت مستقیم و غیر مستقیم در بیشتر موارد پرداخت غیر هدفمند، در ارتقای درآمد و رفاه‌اقشار آسیب پذیر نداشت و منافع آن، نصیب گروه‌های با درآمد بالا می شد. در این بخش با توجه به ماهیت و هدف اصلی نظام پرداخت یارانه‌ها که‌همانا کاهش نابرابری است، شاخص‌های مختلف ارزیابی میزان نابرابری، ابتدا بر اساس داده‌های رسمی برای کل روستاهای کشور و سپس برای روستاهای نمونه مورد مطالعه بررسی خواهد شد. همچنین بر اساس تفکیک دهک‌های آماری طرح هزینه – درآمد خانوارهای روستایی مرکز آمار ایران، نمونه موردی پژوهش نیز به دهک‌های درآمدی مختلف تقسیم گردید. بر این اساس، ۲۰.۳۶ درصد از خانواده‌ها، درآمدی بین ۴۵ تا ۷۵ میلیون ریال در سال درآمد داشته و بنابراین در دهک دوم قرار گرفته‌اند، در حالی که ۳.۱۷ درصد نیز درآمدی بین ۲۷۰ تا ۳۶۰ میلیون ریال داشته و در دهک‌هشتم درامدی قرار گرفته‌اند. همچنین متوسط تعداد افراد در خانوار در نمونه موردی ۳.۱۶ نفر، متوسط تعداد افراد دارای شغل در خانوار ۱.۱۶ نفر و متوسط تعداد افراد دارای درامد در خانوار نیز ۱.۲۹ نفر در خانوار است.

۵. بحث و نتیجه‌گیری

در مجموع یافته‌های این تحقیق نشان می دهد یارانه‌های نقدی ۷.۵۶ درصد از سبد درآمدی یک خانوار در نمونه موردی را در سال ۱۳۹۸ تشکیل داده‌است. اما ضریب جینی در دوره بعد از هدفمندی یارانه‌ها بیشتر از دوره قبل بوده‌است، در حالی‌که ۱۰ درصد ثروتمندترین به ۱۰ درصد فقیرترین جمعیت در نواحی روستایی نمونه در سال ۱۳۹۷ برابر با ۲۰.۶۷ بوده‌است. همچنین برخلاف هدف اولیه طرح هدفمندی یارانه‌ها، دهک‌های پایین به مراتب فشار بیشتری را از افزایش حامل های انرژی تحمل کرده و هزینه‌های مواد خوراکی خانوار نیز صرف گروههای مواد خوراکی می شود. با این وجود متوسط کالری دریافتی هر نفر در دهک دهم هفت برابر دهک یکم می باشد. همچنین در ۷۰ درصد خانوارهای دهک اول هیچ فرد شاغلی وجود نداشته‌است. بطور کلی در بعد از اجرای هدفمندی یارانه‌ها در مورد ۷ شاخص‌هم در بعد کلان روستاهای کشور و هم در نمونه موردی با وخیم‌تر شدن اوضاع روبرو بوده ولی در مورد یک شاخص با بهبود اوضاع روبرو بوده‌ایم.

کلیدواژه‌ها: هدفمندی یارانه‌ها، نابرابری در نواحی روستایی، سیاست‌های تعدیل ساختاری، نیشابور، ایران.

تشکر و قدردانی

پژوهش حاضر برگرفته از رساله دکتری نویسنده اول (مجید حمزه‌ئی)، گروه جغرافیا، دانشکده ادبیات و علوم انسانی، دانشگاه فردوسی مشهد، مشهد، ایران است.

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Original Article

Analyzing the Effects of Rural Economy Diversification on the Livelihood Assets of Rural Households (Case Study: Khavmirabad District of Marivan County)

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Abstract

Purpose- In this applied study, which has been done by descriptive-analytical method, various agricultural and non-agricultural economic activities, and their impacts on the villagers' livelihood assets are analyzed.

Design/methodology/approach- Data collection was both theoretical using documentary method and empirical using interviews, observation, and distribution of questionnaires among 260 heads of households in the villages of the district. The sample size was determined by the Cochran method from a population size of 2736 households. The questionnaires were distributed among random heads of households as well as the sample villages that were selected by a stratified method.

Findings- The analysis showed that the created economic diversity was able to increase the villagers' livelihood capital, and among them, financial capital has had the greatest impact on improving the level of livelihood capital for the villagers.

Research limitations/implications- Among the limitations of the study were the dispersion of a large number of villages in the border area, lack of easy access to these villages, lack of cooperation in providing information, and the villagers' problem with completing questionnaires.

Practical implications- The practical solutions of the study can be: prepare for the development and expansion of tourism (rural, commercial, and nature tourism), Making the necessary legal, administrative, and supportive bases for the development of entrepreneurship and domestic & foreign private sector investment (Iraqi Kurdistan region), Development of trade in goods from the border markets, and Support the formation of fundraising from the micro-savings in the villages for investment and launching production activities in the villages of the district.

Originality/Value- Today, the predominant approach of rural planning to eliminate poverty as the most important obstacle to rural development is to provide sustainable livelihoods for villagers. In this regard, the main strategy of this approach is to diversify the rural economy and to bring about various agricultural and non-agricultural income resources in rural areas, so that the villagers' assets will be increased and/or preserved, which is the core of the sustainable livelihood approach and the main factor of sustainable rural livelihood.

Keywords- Economic diversity, Sustainable livelihoods, Livelihood assets, Khavmirabad District.

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1. Introduction

Diversification of rural economic activities has been emphasized in the sustainable livelihood approach (Chandima, 2010; DFID, 2008). It is defined as the process by which rural households have a variety of economic options to improve their quality of life. The diversity of rural economic activities causes the sustainability of the rural system by removing the main obstacle, poverty, to rural development because it brings more flexibility and resilience to the villagers in the face of sudden crises and economic, social, and natural turbulences. By and large, diversifying the rural economy provides more possibilities and opportunities to change unstable and declining conditions into sustainable conditions (Ellis, 1999). It is, in fact, one of the principles of the human development approach, as it leads to freedom in decision-making for villagers and improvement in their capabilities (Morse, 2013). Bebbington (2010) believes that the main reason for the low livelihood status for villagers is their inability to defend and protect their assets against crises, and this requires the provision and creation of new sources of livelihood (Lax & Krug, 2013). The diversification of the rural economy and its benefits will pave the way for participation and responsibility of local people in relation to environmental protection and political and social participation in both short and long terms, and thus, in addition to eliminating economic poverty, the poverty cycle also disappears (Warren, 2002). The sustainable livelihood approach puts stress on assets, as they determine people's ability to escape crises and shocks. They also present options and strategies to the poor to escape poverty. Thus, it is the number of assets that lead to the required livelihood outcomes, the most important of which is poverty alleviation (Christensen, 2008). Resources in this approach work as assets that include five main dimensions, namely human, physical, financial, social, and natural assets (Ellis & et al, 2004). In this regard, diverse livelihood opportunities are a fundamental principle for the survival of declining rural environments, especially for its role in maintaining and increasing the villagers' assets (Ellis, 1999: 8). Although the history of rural economic diversification policies dates back to the Sixth Plan before the 1979 revolution, the effects of these policies can be pursued to the First and Second Plans after the revolution. The relative growth in rural incomes was felt by villagers, due to economic diversification in rural areas with an emphasis on the development of non-agricultural sectors (Karimzadeh et al., 2016). Many economic diversification programs were designed and implemented in the villages in the study area (Khavmirabad District of Marivan County) as one of the marginal and deprived districts whose inhabitants have a low level of livelihood because of being remote and marginalized. This is reflected in the widespread migration to Marivan City, the evacuation, and the reduction of the population living in the villages of the district in previous years. Therefore, some initiatives were implemented by development planners and officials. In one of these initiatives, they established border markets, due to the major potential of the border region. Now, these markets have become a suitable alternative for informal smuggling activities and have been accepted by local people. In addition to this, the dynamism of another source of livelihood, such as husbandry, set for daily collection of milk from the villages. Relevant organizations of the region have also been working on the economic diversification of the region and promoting activities such as training the villagers for beekeeping, encouraging horticulture by providing facilities, and for land integration and labor-intensive and profitable farming to boost jobs. This way, diversification has helped the agricultural economy in the region. The prosperity of home-based businesses such as carpet weaving among the villagers is another way for economic diversification in the villages of the region, which is now very popular among rural women. These activities have led to the growth of service businesses, including driving, shopping, and even investing in lucrative urban activities. Considering the importance of maintaining and increasing the assets of villagers as the core of the approach to sustainable livelihood and its direct and effective relationship with economic diversification, the main questions of the research are as follows:

Has the diversification of the rural economy of Khavmirabad District improved the assets of the villagers?

Which of the types of livelihood assets of the villagers has had the greatest impact and improvement in changing the level of livelihood capital of the villagers due to the economic diversification?

2. Research Theoretical Literature

Livelihood is all activities that people do to make a living, access and manage assets (Fang, 2014). The sustainable livelihood approach was noted in the late 1980s, and it also demonstrated the convergence of both theoretical and practical arguments about development (Kaag, 2010). Robert Chambers, a well-known rural theorist, was the initiator of this approach. He defines livelihoods as capabilities, assets, and activities required for making a living (Solesbury, 2003). The sustainable livelihood approach inconsistent with the intervention development approach seeks to maximize the effectiveness of development mediations and programs to help the disadvantaged and poor communities (Morse, 2013). Making a living requires access to tangible and intangible assets. In fact, a livelihood is sustainable when it has good access to livelihood capitals (Mphande, 2016). Livelihood assets as the core of sustainable livelihoods have an undeniable role in achieving sustainable livelihoods of villagers. Indeed, the ability of villagers to escape poverty depends on their access to assets. The amount of livelihood capital and the access of local people to them determines the livelihood strategies for earning a living. This is the level of livelihood capital with which the villagers can have constructive and meaningful interaction with the environment and, most importantly, the ability to change it. There are different types of livelihoods; these assets are both tangible, such as cash, land, etc., and also intangible, for instance, labor force health, social ties, interest in the village, etc. (Mphande, 2016). In sum, the notion of sustainable livelihoods is to classify livelihoods into five categories: human, social, physical, natural, and financial capital (Anderson, 2001: 5); their descriptions are presented as follows:

a) Financial capital- Financial capital refers to any mechanism that reflects the wealth of individuals in society (Mphande, 2016). The resources of financial capital can be classified into two groups. First, cash and the equivalent assets such as livestock, land, etc., and the other external financial resources that are received through salaries, and benefits from trades or loans (Lax and Krug, 2013).

b) Human capital- Human capital is a combination of knowledge, habits, social behaviors that help to achieve economic benefits in society. These knowledge and habits are acquired through availability of training and skills and talents. Therefore, education and promotion of knowledge and comprehension are the foremost indicators of human capital. Other indicators of human capital include the level of physical and mental health of individuals and communities (Mphande, 2016). The level of skills, skill variety and the status of the human labor force are other indicators that can be examined in human capital (Lax & Krug, 2013).

c) Social capital- The sociologist Bourdieu defines social capital as a set of resources that enable the formation and perpetuation of social identities and interrelationships (Van Kien, 2011). His focus in social capital is on trust, communication, and social participation. Social capital includes social resources such as the formation of informal networks, membership, and formation of formal groups, trust, and social ties that facilitate economic cooperation. Social capital plays a major role in individual and organizational productivity. Social networks are considered as the result of the social capital of societies which causes the formation of mass communication between individuals and the facilitation and coordination of affairs (Mphande, 2016).

d) Natural capital- Natural capital includes the land, water, air, organisms, and all the ecosystems on earth that humans need for survival and well-being (Mphande, 2016). This type of capital refers to natural resources that can be used by villagers to achieve their livelihood aims (Sojasi Gheidari et al., 2015).

e) Physical capital- Physical capital implies the physical requirements or in other words, the necessary infrastructure to provide a livelihood for the villagers (Lax and Krug, 2013: 10). It is a type of asset that converts raw materials into final products and services (Nakiyimba, 2014). Basic infrastructure, such as roads, water and health centers, schools, information and communication technology, as well as livestock and agricultural tools and equipment are all included in physical capital. In addition to these, it also refers to the

built environment that includes residential homes, public places, industries, dams, anchorages, shelters, as well as facilities such as electricity, water, telephone, and critical infrastructure such as hospitals, schools, etc.

One of the main reasons that villagers fail to improve their livelihood is their inability to maintain their existing capital or create new resources and diversify the earnings (laX & Krug, 2013). Basically, having a variety of activities is a general necessity and not all assets should be used in just one specific activity. In this regard, one of the important ways to increase and improve strategies in the present and future is altering one type of capital to other types or diversifying it (Karimi & Dehkordi, 2015). Given this, the priority of international development organizations that have adopted a sustainable livelihood approach to eliminate rural poverty is diversification of rural economy and livelihood resources (Tanner, 2015). In the sustainable livelihood approach, the ability of rural people to escape poverty depends on access to assets. The more options and assets to select, the easier elimination of rural poverty (Ellis and Allison, 2004). Diversity in rural economy and livelihood means the efforts that rural individuals and households put in to create new sources of income, employment. This will increase choices to reduce the effects of economic, social, and environmental crises (Assan, 2014). Economic diversity can also refer to the activities of family members to improve social status and standard of living. The overarching principle of the sustainable livelihood approach is that a more diverse life is also more sustainable (Morse, 2013). In this regard, economic diversification makes rural livelihood systems resilient to economic shocks, seasonal and natural crises and reduces their vulnerability (Ellis & Allison, 2004). The sustainable livelihood framework is based on the assumption that people need to use a wide range of assets to achieve their life goals, and that no single asset is sufficient to meet the needs of the people (Sarrafi & Shamsaii, 2010). People and livelihood systems need access to livelihood capital to be able to minimize the level of vulnerability (Tanner, 2015) (Figure 1). Diversity of livelihoods and turning to new sources of livelihood is one of the important strategies in rural households to increase the quality of life and reconstruction from potential threats to their livelihood system (Assan, 2014).

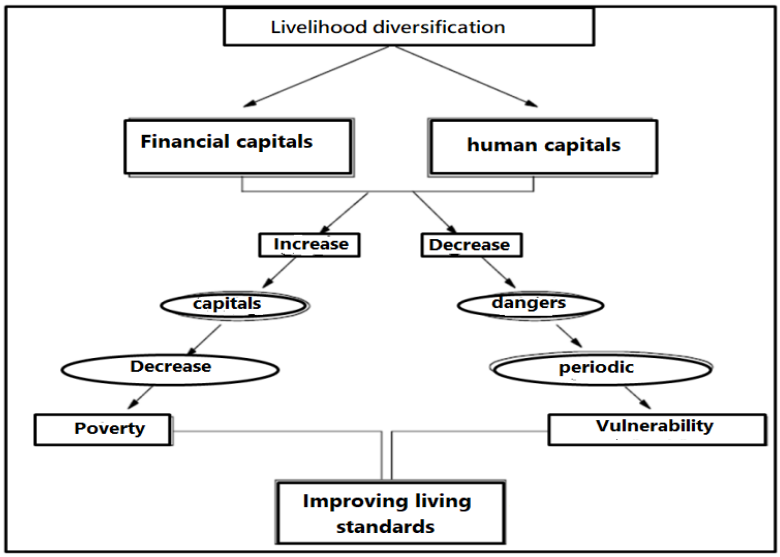

Figure 1: The effect of economic diversification on improving the livelihood level of villagers
(Source: Ellis & Allison, 2004: 13).

As shown in Figure 2, unvaried livelihood or single product systems are based solely on agriculture. These systems cannot overcome natural and human crises, and thus because of high vulnerability, they will not be able to maintain their assets and reconstruct their livelihood.

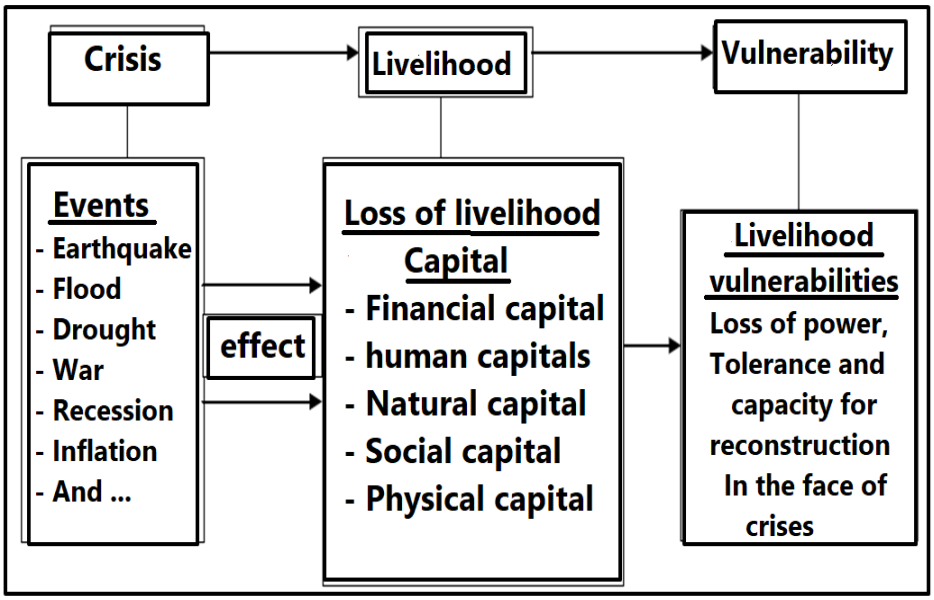

Figure 2: The relationship between crisis and livelihood vulnerability because of loss of assets
(Source: Sadeka, 2013: 98)

In general, the emphasis is placed on the diversification of rural economic activities to solve the problem and increase the assets of local people (Chandima, 2010; DFID, 2008). A diverse rural economy will provide more opportunities for the rural poor to reach living standards by creating more opportunities and taking advantage of them. As a more diverse rural economy expands the strength of rural capital as a result of their empowerment, which in turn increases the flexibility and resilience of the villagers, and on the other hand, reduces the vulnerability and waste of rural capital (Christensen, 2008; Ellis, 1999; Morse, 2013).

Studies in the literature indicate that:

Fang. et al. (2014) in a study entitled "Sensitivity of livelihood strategy to livelihood capital in mountain areas" come to the conclusion that natural and human resources drive the villagers to the agricultural economy, and those social and financial assets drive the farmers to diversify the off-farm economy and play a facilitating role. The suggested implication is increasing the ways and economic opportunities to access assets and their sustainability in the long run. Manwa (2014) in a study entitled "Poverty alleviation through pro-poor tourism: the role of Botswana Forest" concludes that Botswana's forest area is fully capable of expanding tourism as a complementary activity, a new source of income, and attracting poor villagers. Hence, tourism development, directly and indirectly, reduces poverty in the study area by sustaining the livelihood of the villagers. Adams (2002) also shows that increasing the benefits of rural economic diversification in Egypt has played an important role in the process of equality and reducing class differences. Bart et al. (2005) emphasize that in rural Africa, individuals who are dependent on agriculture as a single product, mostly trapped in poverty. However, rural households with diverse livelihoods have more income and mobility. Escobal (2011) states that 51% of the income of rural households in Peru comes from off-farm activities. His findings show that diversifying the rural economy in a non-agricultural environment is an effective solution to alleviate poverty, and to develop villages as well. The most important research implication is improving the access of rural households to service and educational infrastructure by economic diversification, which paves the way for increasing and maintaining assets (Chun & Watanabe, 2011).

Karim zadeh et al. (2016) in an article entitled "The role of diversification of activities in the sustainability of rural economy (Case study: Merhamat Abad Miyani village. Miandoab County) assert that diversification of economic activities caused improvement in employment opportunities, motivation to expand the employment situation and investment, and reducing rural migration.

Sojasi Gheidari et al. (2016) in another article entitled “Measuring the level of livelihood assets in rural areas with a sustainable livelihood approach (Case study: Villages of Tayebad County)” conclude that the share of social assets is higher than other assets among the studied villages. Human assets are also ranked last to confirm the migration of active human resources in the village. The most important research implication is how diversifying the village's economy with low levels of assets and also trying to use and maintain these assets.Karimi & Dehkordi (2015) in a study entitled “Rangeland utilization and the necessity of diversifying the livelihood of rural households (Case Study: Mahneshan County)” conclude that horticulture, beekeeping, aquaculture through education and promotion are alternatives or complementary to husbandry to improve the level of assets and livelihood of villagers in the study area. This approach will reduce the pressure on natural resources and prevent the waste of livelihood and natural capital. Shahraki & Sharifzadeh (2014) a study investigated aquaculture in sustainable livelihoods of villagers in Zahedan County. Aquaculture farmers have become more comparable to other farmers, and in fact, diversifying agricultural activities has improved the livelihood of the villagers. Tayyabnia & Baradaran (2014),) in an article entitled "a study of factors affecting the diversification of economic activities in border villages of Marivan County" conclude that economic, social, environmental, and border area factors affect the diversification of rural economies in the study area. Javan et al. (2011) in their study entitled “The role of diversification of economic activities in sustainable rural development of Semirom County” show that those rural households whose job opportunities and income are more diverse have less vulnerable income stability, and eventually a better quality of life than rural households without economic diversity.Javan & Makarri (2011). a study entitled “The role of wells in rural economic diversification (Case Study: Zahak County)” considers drilling wells in the region as a factor to deal with drought and diversify agricultural products. According to the findings of this study, in some areas of Zahak County where people have access to water in summers through wells, there is a variety of agricultural products and a relatively high level of income, and their residents are optimistic about their future careers.

3. Research Methodology

3.1 Geographical Scope of the Research

Khavmirabad District is one of the three districts of Marivan County in Kurdistan Province which is occupying an area of 338 square kilometers, with 30 inhabited villages, and is located along the borderline area next to Iraq.

Figure 3: Area of study

There is a border market in this district due to its strategic position and communication-trade potential. It has a favorable situation of animal husbandry (daily sale of milk) and agriculture (direct sale of products to urban residents, employment in collecting and cultivating products, labor-intensive agriculture such as strawberries, etc.) thanks to its natural situation. In recent years, educational and extension activities for handicrafts and workshops have become popular in this district, and this has paved the way for a variety of economic activities in the district.

3.2. Methodology

This applied study, which has been done by the descriptive-analytical method. Data collection is done through documentary and field survey by using some tools, i.e. distributing questionnaires and then observation and semi-structured interviews with villagers to explain the answers for the research questions. The statistical population of this study includes 2736 households living in Khavmirabad District. Using Cochran's formula, we estimated 260 heads of households as the sample size and used a stratified sample method determining 15% (5 villages) of all villages in the district (30 villages). The questionnaires were distributed randomly among the heads of households in the sample villages.

Table 1: Stratified distribution of questionnaires among sample villages

Village	Number of households	Number of assigned questionnaires
Kiken	54	23
Derah varan	60	26
Seyf Sofla	128	55
Sad Abad	90	38
Saveji	280	118
5	612	260

The face and content validity of the measurement instrument was confirmed by experts and specialists who had conducted similar studies, and the reliability or internal correlation of the answers was confirmed by calculating the Cronbach's alpha coefficient of 0.76. The independent variable of this study is the executive strategies of economic diversification in the villages of the district (establishing a border market, collecting villagers' milk, integrating lands and producing profitable and labor-intensive products, promoting service sector employment, investment in urban economic activities, expanding horticulture, beekeeping, and handicraft production). Villagers' livelihood assets are also dependent variables of this research which are summarized in the following table.

Table 2: Variables to measure changes in the level of livelihood assets

(Source: Dastvar, 2016; Sojasi Gheidari et al., 2016; Morse, 2013; Ellis, 1999; Belcher, 2012)

	Dimensions	Indexes	Variables
Livelihood capital	Human capital	Nutrition and health	Possibility of providing health facilities (personal, family), weekly consumption of protein nutrition, nutritional satisfaction, ability to provide and pay for health care, consumption of fruits and vegetables, house quality, occupational health
		Skill and knowledge	Diversity of skills, level of education, the literacy level of females, use of new media and innovations
		Employment	Employed people, ease of finding jobs, female employment
	Social capital	Participation	Cooperation in village development activities, participation in decision making, joint economic activities, participation in charitable affairs
		Sense of belonging to the village	Preferring to live in the village over the city, preferring to invest and start a business in the village over the city, Returning rural migrants to the village
		Security	Reducing crimes and quarrels, hope and interest in living (future), job security (non-

		(individual, social)	seasonality) and income, reducing daunting public spaces in rural areas by increasing construction
		Social solidarity and cohesion	Village integrity, a spirit of cooperation and collaboration, increasing altruism feeling to fundraising, increasing trust
		Institutional	Having a rural development plan with emphasis on non-agricultural jobs, government support for launching rural production jobs, family support for starting a new business, coordination of rural development institutions, continuous monitoring of regional development process, community-centered institutions, balanced distribution of benefits
	Financial capital	Income and expenses	Average household income, ability to pay household expenses, ability to invest and start a business, income
		Savings	Household savings
		Loans	Ability to receive and repay loans
	Physical capital	Housing	Ability to have personal housing, the strength of housing, qualified rental housing, multi-functional housing
		Services and amenities	Access to transportation infrastructure, access to educational facilities, leisure facilities, access to energy (water, electricity, gas) and mobile phone services and access to the Internet, markets to buy the required products, and places to sale manufactured products
		Machinery	Personal automobile, agricultural machinery (tractor, combine, electric pump, etc.)
	Natural capital	Agriculture	Harvesting of agricultural lands, improving horticultural and livestock
		Natural landscape	The beauty of the natural landscape of the village, no destruction of natural lands

4. Research Findings

4. 1. Human capital

As the results in table 3 show in terms of human capital, villagers in all indicators measured with averages greater than 3; economic diversification at the village level is identified as the main factor in improving and increasing the level of this category assets. Among these, the health quality index of rural housing which is calculated at 3.78 has the highest calculated average, or in other words, it has been the most improved and upgraded situation. Villagers responded with an average score of 3.06 and 3.56 to the increase in consumption of protein and fruits and vegetables in their household food basket, so as a result, their satisfaction from the nutritional status is the calculated average of 3.54. With an average measure of 3.52, villagers believe that working environments are healthier due to the variety of jobs created. Villagers assert that the duration of work has been reduced due to the increase in income from various jobs, and with the provision of tools and facilities, things are done more easily. Also, there has been a reduction in excessive fatigue or physical and mental injuries. For two health indicators of the ability to pay for health care and health facilities in rural housing, respondents with averages measures of 3.20 and 3.78, believe that the situation of these two indicators will improve the economic diversification of the region. As responses show, the villagers with a measure of 3.08, assessed the increase in the diversity of job skills in the region. The reason is the lack of new industrial jobs. The villagers believe that most of the current jobs are the jobs that have existed before such as husbandry and horticulture, but economic and social developments have caused them to be forgotten. Furthermore, villagers are recruited only for carrying the stuff in border markets. In terms of education, the score of 3.35 for the education level index and 3.06 for the females' literacy index show that the educational status of the villages in the district has improved, which can be explained by the ability to pay for education (especially school commuting services) and the reduction in the need for child labor due to increased rural incomes. Table 3 shows the status of employment indicators and their impact on economic diversification in the villages of the region. It illustrates that in the three indicators i.e. the number of employed people, ease of finding jobs, and female employment the averages, have been calculated at a satisfying level with the scores of 3.91, 3.83, and 3.62, respectively. Therefore, economic diversification has had a significant impact on improving the status of these

indicators. In this regard, the villagers stated that now the people of the district can easily work in the border markets and earn a relatively appropriate income. On the other hand, the re-emergence of the husbandry and especially the collection of milk from the villages of the district, along with some handicraft production activities and daily labor on farms helped women also become active and income-generating labor in the villages and provide income for their households. In general, the statistical significance is less than the alpha level of 0.01. The t-test and the favorable value of means used in the test (3) show that economic diversification improved the measured components.

Table 3: The impact of economic diversity on changes in the level of human assets and livelihoods of villagers

Components	Indicators	Mean	T-test statistic T	Significance	95% confidence interval		Result
					Under	Above	
Nutrition and health	Possibility of providing personal health facilities (individual, family)	3.45	9.12	.001	.352	.546	Confirmation
	Weekly consumption of protein nutritions	3.06					
	Nutritional satisfaction	3.54					
	Ability to provide and pay for health care,	3.20					
	Consumption of fruits and vegetables	3.56					
	House sanitation quality	3.78					
	Occupational health	3.52					
	Total	3.44					
Skill and knowledge	Diversity of job skills	3.08	6.52	.002	.245	.456	Confirmation
	Education level	3.35					
	Females' literacy	3.06					
	Use of new media and innovations	3.81					
	Total	3.33					
Employment	Number of employed people	3.91	15.95	.000	.666	.851	Confirmation
	Ease of finding jobs	3.83					
	Female employment	3.62					
	Total	3.75					
Human capital		3.51	14.92	.000	.451	.588	Confirmation

4.2. Social capital

Examining the impact of the social capital of the villagers (Table 4) in the participation index shows that the index of joint economic activities with a score of 3.65 has the highest effectiveness and improvement. Providing the necessary income to carry out economic activities is the stated reason by the villagers. The economic diversity of the region has a positive effect on other indicators of participation: cooperation with each other in development activities and participation in decision making, with the score of 3.38 and 3.31, respectively. The mentioned reason for this was having the financial ability to pay for engagement in development activities, as well as having more time and opportunity to participate in development activities and decisions related to the village. The villagers, with an average score of 3.35, believe economic diversity in the villages of the region and the positive consequences resulting from it, have increased the participation of villagers in charitable affairs. For the index of preferring to live in the village over the city, the situation has been declared satisfying by the villagers, so that the villagers with a score of 3.59 prefer to live in their village in order to create diverse jobs for the village. The villagers, with an average of 3.52, have expressed their desire to invest and prosper their villages. The result of these findings can be seen in the favorable and satisfactory situation of the return index of migrants who once migrated from the villages and have now returned to the villages with an average of 3.19. Field observations indicated that many rural households once migrated from rural areas to Marivan city due to lack of jobs and income and

low quality of life, but they were doing jobs such as retail in difficult living conditions. They were now returning to their homes in search of economic diversity and job and income opportunities in the villages, and even many people built new houses, and as a result, many abandoned and vacant lands in the villages were used to build houses. Indeed, it should be mentioned that the implementation of rural guide plans in the region and its positive effects. In fact, the combination of physical development and economic development has created favorable conditions and living space for the villagers in the study area. Villagers' responses to individual and social security indicators show that the greatest improvement and impact of economic diversity in the region was on reducing crime and conflict, with a score of 3.75. Certainly, in explaining this, we can mention job creation and reduction of poverty and unemployment as the main objective for rural development and the main causes of social crises such as conflict and crime. Accordingly, the villagers also responded to the increase in job security with a score of 3.78. The return of rural migrants to the villages along with the increase in the income of the villagers, in addition to the implementation of rural guide plans, are all reasons that persuaded the villagers to respond positively to the reduction of vacant, unbuilt, and scary rural space with a score of 3.34. The results of these findings can also be seen in the index of increasing life expectancy and interest in living (future) among the villagers with a score of 3.30. In the indicators related to social solidarity and social cohesion, the situation was assessed as satisfying following the jobs created and economic diversification in the villages of the region, so that in two indexes, increasing trust in each other and increasing altruism feeling to fundraising, the average scores were estimated 3.58 and 3.88, respectively. The villagers mentioned things such as having more time and income to help each other in agricultural chores, carrying out village development activities, joint economic activities and participating in each other's ceremonies as examples of increasing social cohesion and integration. The average score for all of them was calculated at 3.63. As the distribution of respondents shows, the villagers indicated that the economic diversification in the district has been created by a rural development plan with an emphasis on non-agricultural occupations (sores of 3.78), and/or government support for starting manufacturing jobs (score of 3.83). Meanwhile, the index of family support for starting new businesses in rural areas with a score of 2.73 shows that economic diversification has not been able to be effective in improving this index. We can point to the limited and conservative view of the villagers, which limits their risk power to carry out new activities and entrepreneurship endeavors. Scores above the average by the respondents show that they have taken government initiatives into account for the economic prosperity of the region. This, in return, improved the coordination of rural development institutions, continuous monitoring of the development process in the region, people-centered performance Institutions. Another indicator that shows satisfaction, which is expressed to be crucial in rural areas, is a balanced distribution of benefits from development activities among the villagers. This was estimated with a score of 3.38. In conclusion, the estimation of statistics of both high and low limits along with the significance of averages is greater than the numerical desirability of the tested components, which implies that the status of these components have been improved by diversifying the rural economy (Table 4)

Table 4: The impact of economic diversity on changes in the level of social assets and livelihoods of villagers

Dimensions	Indicators	Mean	T-test statistic T	Significance	95% confidence interval		Result
					Under	Above	
Participation	Cooperation in village development activities	3.38	6.87	.000	.303	.548	Confirmation
	Participation in decision making	3.31					
	Joint economic activities	3.65					
	Participation in charitable affairs	3.35					
	Total	3.42					
Sense of belonging to the village	Preferring to live in the village over the city	3.59	7.16	.000	.310	.546	Confirmation
	Preferring to invest and start a business in the village over the city	3.52					

	Returning rural migrants back to the village	3.19					
	Total	3.43					
Individual and social security	Reducing crimes and quarrels	3.75	10.41	.000	.439	.644	Confirmation
	Hope and interest in living (future)	3.30					
	Job security (non-seasonality) and income	3.78					
	Reducing daunting public spaces in rural areas by increasing construction	3.34					
	Total	3.54					
Solidarity and cohesion	Village integrity	3.63	11.52	.000	.490	.692	Confirmation
	Spirit of cooperation and collaboration	3.26					
	Increasing altruism feeling to fundraising	3.58					
	Increasing trust in each other	3.88					
	Total	3.59					
Institutional	Having a rural development plan with emphasis on non-agricultural jobs	3.78	9.58	.000	.316	.480	Confirmation
	Government support for launching rural production	3.83					
	Family support for starting a new business	2.73					
	Coordination of rural development institutions	3.40					
	Continuous monitoring of the development process in the region	3.37					
	Community-centered institutions	3.28					
	a balanced distribution of benefits from development activities	3.38					
	Total	3.39					
Social capital		3.47	13.58	.000	.409	.545	Confirmation

4.3. Financial capital

The status of capital related to income and expenses shows that with a satisfying average of 3.76, villagers believe in the impact of economic diversification on increasing rural household incomes. The villagers, with a high score of 4, have also responded to the verified impact of the region's economic diversity on their ability to support their families. A promising indicator of a satisfactory status in this study is considered a management matter such as income generation of rural areas and their financial resources active role for rural management.

Table 5: The impact of economic diversity on changes in the level of financial assets for the livelihood of villagers

Components	Indicators	Mean	T-test statistic T	Significance	95% confidence interval		Result
					Under	Above	
Income and expenses	Increase household income	3.76	12.37	.000	.536	.738	Confirmation
	Ability to cover household expenses	4					
	Ability to invest and start businesses	3.57					
	Rural municipality income	3.22					
	Total	3.63					
Savings and loans	Amount of household savings	3.66	16.66	.000	.758	.955	Confirmation
	Ability to receive and repay loans	3.98					
	Total	3.82					
Financial capital		3.75	15.47	.000	.662	.851	Confirmation

In the present study, the villagers acknowledge the increase in rural incomes. The reason for this is the increase in the municipal budget for the villagers and the allocation of a part of the income of the border markets by the government to the villages. The responses provided by the villagers

to two indicators of "receiving loans" (score of 3.66) and "the amount of savings of rural households" (3.98) shows that the villagers believe that economic diversity is considered as a factor in increasing the savings of the villagers and also their ability to receive and repay loans. In conclusion, the significance of two scores of 3.82 and 3.63 for the components of financial capital in the t-test illustrates that the villagers' livelihood capital has also improved (Table 5).

4.4. Physical capital

As table 6 demonstrates, the villagers believe in improving their situation in the rural housing indicator as a result of economic diversification. As the findings show, economic diversification in the region has led villagers to confirm increasing access to private housing by an average score of 3.57. In addition, villagers evaluated another indicator concerning the impact of economic diversity at a positive and satisfactory average level is the quality of housing strength index. This is clearly reflected in the newly built housing of migrants who have returned to the villages. One of the salient features of rural housing, which is a reflection of the rural economy and their livelihood, is the multi-functionality of housing.

Table 6: The impact of economic diversity on changes in the level of physical assets for the livelihood of villagers

Dimensions	Indicators	Mean	T-test statistic T	Significance	95% confidence interval		Result
					Under	Above	
Rural housing	access to private housing	3.57	7.56	.001	.303	.516	Confirmation
	House physical quality	3.19					
	Qualified rental housing	3.38					
	Multi-functionality of housing	3.45					
	Total	3.40					
Services and amenities	Improving and accessing transportation infrastructure.	3.66	18.10	.000	.597	.743	Confirmation
	Access to educational facilities	3.76					
	Leisure facilities	3.30					
	access to energy (water, electricity, gas) and mobile phone services, and the Internet	3.77					
	Shops for buying household consumer products, and places to sell manufactured products	3.84					
	Total	3.67					
Machinery	Personal automobile	3.33	11.32	.000	.522	.742	Confirmation
	Agricultural machinery (tractor, combine, electric pump, etc.)	3.93					
	Total	3.63					
Physical capital		3.56	21.32	.000	.518	.623	Confirmation

They said that due to the economic diversity in the region and the jobs that now exist, many of the old spaces of rural houses (warehouses, stables, etc.) have been re-used along with the prosperity of husbandry and agriculture. New housing as well has considered such spaces in the design. For the access to services and facilities index, with a score of 3.66, the villagers believe that economic diversity created in the region is an effective factor in improving and access to transportation infrastructure. In this regard, the villagers stated that the completion of commuting roads to the markets has improved the quality of transportation routes to the villages close to these routes. On the other hand, more private cars and drivers are considered as factors affecting economic diversification are the transportation of villages in the region. The villagers stated that because of the increase in income from the diversification of the economy in the region, the villagers had more financial ability for the schools and the educational facilities (the average score is 3.76). On the other hand, the growth in the financial capacity of the villagers, which is the result of engaging in various occupations, has led to spending their leisure time in activities and purchase habits such as: traveling, having a personal car, new phones, and computers, urban shopping spree, and sports centers, etc. In order to confirm this, the villagers have assessed the improvement of the situation and leisure facilities with a satisfying score of 3.30. In addition, the villagers acknowledged (with a score of 3.84) that the number of shops selling agricultural products

and shops buying household consumption products has risen following the economic diversification in the region. The reasons can be the return of immigrants to the villages, the rise in consumption due to the increase in income and the number of villagers, and practicality of starting retail businesses in the villages, as well as the benefits for the villagers to sell agricultural and horticultural products directly to the urban consumers. The villagers confirmed the impact of economic diversification and various sources of income on increasing the villagers' personal automobiles, with an average score of 3.33. The availability of using machinery in the agricultural sector is another indicator on which the impact of economic diversification in the region with an average of 3.93 has been assessed at a satisfactory level. In short, the results of the t-test show the favorable effect of economic diversity on improving the status of the components measured by the physical capital of the villagers at a significant level of 0.001.

4.5. Natural capital

Connected with the economic diversity in agriculture, husbandry and rural nature of the area looking, villagers' respondent shows that the harvest amount from agricultural land and prospering horticultural crops index is in good status with a score of 3.64. A similar situation can be seen in the husbandry expansion. In explaining this, the villagers used the additional income for buying agricultural tools, new agricultural and horticultural products, and using new methods of irrigation and protection of crops, which were sometimes costly, so they can do these after gaining income from other activities. Furthermore, expanding the ability of villagers to buy light and heavyweight livestock, along with collecting milk from the villages and their direct and effective income for families are other factors that grow the diversity and number of livestock. Animal husbandry should also be considered as a side job for many villagers who once did not do animal husbandry when it was the only income resource for the family. Overall, villagers stated that creating jobs and incomes in the rural areas has created many jobs that damaged the environment in the past, such as producing charcoal from trees or over-exploitation of agricultural land, and lack of fallow periods. Moreover, diversity in economic activities has caused a reduction in animal waste disposal and better sanitation systems through municipal budgets provided by villages. New, long-lasting housing, vertical building construction, together with removing the poverty and deprivation look from the building and sparsely populated villages, are also things that have led to the preservation and aesthetic elements of the natural landscape of villages.

Table 7: The impact of economic diversity on changes in the level of natural assets for the livelihood of villagers

Dimensions	Indicators	Mean	T-test statistic T	Significance	95% confidence interval		Result
					Under	Above	
Agriculture	Harvesting of agricultural lands, promoting horticulture	3.64	9.24	.000	.505	.779	Confirmation
	Promoting animal husbandry (amount and diversity of livestock)	3.64					
	Total	3.64					
Natural landscape	Aesthetic element in natural landscape	3.70	7.10	.000	.350	.619	Confirmation
	Natural lands conservation	3.26					
	Total	3.48					
Natural capital		3.56	8.64	.000	.435	.691	Confirmation

To this end, the villagers responded positively to the effect of creating various sources of income and various jobs on reducing the destruction of the natural environment of the village with an average score of 3.26, and the beauty of the rural landscape with an average score of 3.70. Finally, these scores for components of the landscape and natural and agricultural environment are higher than the cardinal utility at a significant level of 0.001, which shows the improvement of rural livelihoods following diversifying the economy in the region.

To sum up, the score of 3.57 is higher than the cardinal utility at a significant level of 0.001 and the t - statistics, which shows that the economic diversity created in the villages of Khavmirabad

District improves the level of livelihood capital for the villagers

Table 8: The impact of economic diversity on increasing the level of livelihood assets of villagers in Khavmirabad District

Cardinal utility in the test= 3								
Dimensions	The difference from the optimal limit	Degree of freedom	Significance	T-test statistic T	Mean	95% confidence interval		Result
						Under	Above	
Total livelihood capital	.577	259	.000	23.74	3.57	.529	.625	Confirmation

Then, a hierarchical path analysis test was used to determine the most effective dimension in improving the livelihood capital of the villagers from the impact of economic diversity in the region. At first, a combined sum of the dimensions of livelihood capital in the title of villagers' livelihood as a dependent variable, and on the other hand, all dimensions of livelihood capital as an independent variable were entered in the model to measure the direct effects. Then, after entering and replacing each dimension as a dependent variable by multiplying all the paths to the desired dimension, and lastly adding all the multiplied paths to the desired dimension, the number of indirect effects is determined. Ultimately, the overall load and the final impact of each dimension (livelihood capital) on the current livelihood of the villagers were determined by the impact of economic diversity and the benefits derived from it. As shown in Table 9, the financial dimension with a total load of 799., is the most effective in improving the livelihood level of the villagers in the region due to the impact of economic diversity. This dimension not only has a direct impact on improving the livelihood of the villagers but also improves the level of other assets.

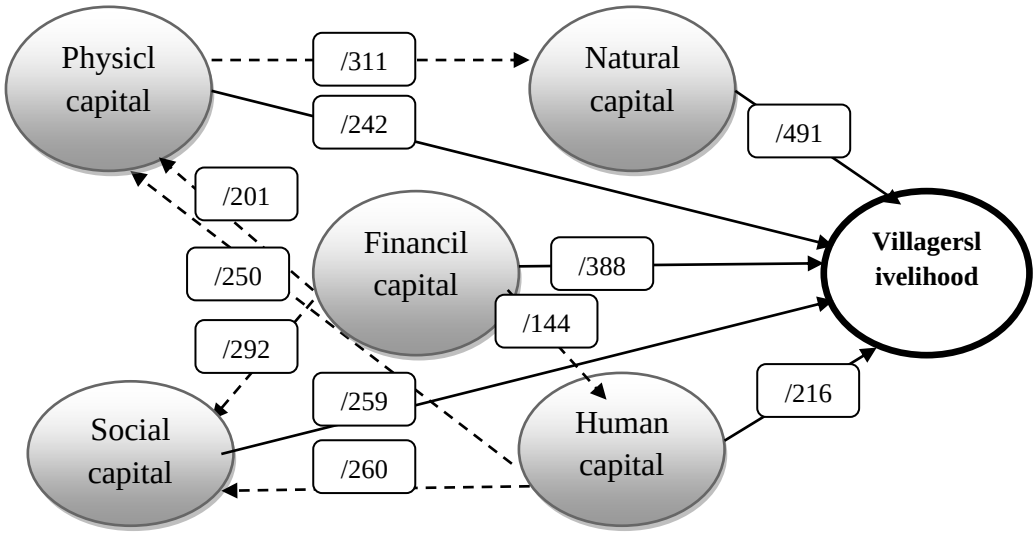

Figure 4: The final model of the relationship between the dimensions of livelihood capital in improving the livelihood level of villagers due to economic diversity in the region

Table 9: The direct, indirect, and total effect of each effective dimension on improving the livelihood assets of the villagers

Assets	Direct impact	Indirect impact	Total load
Financial	.388	.411	.799
Human	.216	.136	.352
Socially	.259	---	.259
Natural	.491	---	.491
Physical	.242	.152	.394

5. Discussion and conclusion

The present study investigated the effects of diversifying economic activities on changes in the livelihood capital level of villagers in Khavmirabad District of Marivan County. Has the diversification of the rural economy of Khavmirabad District improved the livelihood assets of the villagers? According to the average score of 3.57, which is higher than Cardinal utility in the test (3) and a significant amount calculated as 0.000, it can be stated with 99% confidence that diversifying the region's economy improved the rural livelihood capital. More particularly, financial assets with a score of 3.75, physical assets with a score of 3.56, natural assets with a score of 3.56, human assets with a score of 3.51, and social assets with a score of 3.47, respectively, have the highest improvement and changes from the economic diversification of the region. Among the components of rural livelihood capital, and also human capital, the employment index with an average score of 3.75 has had the most improvement. This result demonstrates the capacity of economic diversification to reduce unemployment for villagers, who once faced unemployment due to the elimination of smuggling of goods. In the dimension of social capital, the social solidarity, and cohesion index, with an average score of 3.59, has the most dependence on the created economic diversity. In this regard, it can be said that following the growth in income of villagers, their ability to participate in village development projects and in charitable affairs, lend money to each other, participate in each other's ceremonies, and as a result feel a sense of belonging to the village have increased. In the financial capital dimension, the ability to receive loans and growth of villagers' savings with a score of 3.82 has the most dependence on the diversification of the region's economy. In this regard, it can be said that increasing the income of the villagers along with their ability to pay their lives expenses have led to growth in villagers' savings. Thus, they are able and willing to receive more loans that are no more seen in housing construction in rural areas. Among the indicators of physical capital, access to services and amenities with a score of 3.67 has the greatest improvement. Access to better transportation due to the creation of service jobs such as driving, construction of transportation routes towards markets, in addition to the implementation of rural guide plans, access to more leisure facilities (purchase of new electronic devices, and urban leisure) are the most important reasons. Among natural capital indicators, improving agriculture with an average score of 3.64 has the most positive dependence on economic diversification in the rural area. The economic diversity has improved the income of the villagers and this has also raised the ability of the villagers to buy more light and heavyweight livestock. In addition, collecting milk from the villages of the region has been another factor in improving the husbandry business. In agriculture, the promotion of horticulture is quite tangible in the villages of the region, as the villagers are now reviving their gardens, while gardening was impossible at a time of recession and unemployment and villagers wouldn't have done such an activity. The possibility to provide new agricultural equipment, the ability to invest in the cultivation of costly crops, are other factors improving the agricultural status in the region.

The second question of the research: which of the types of livelihood assets of the villagers has had the greatest impact and improvement in changing the level of livelihood capital of the villagers due to the economic diversification? The results of path analysis showed that financial capital has both a direct impact on improving the livelihood level of villagers and also an indirect effect on the assets of villagers by affecting human, social, and physical capital in the study area. It also has the most indirect impact, with a total load of 799. This has the greatest impact on improving the livelihood level of villagers after economic diversification in the region. This confirms the important principle in rural development planning that any action to transform the rural system, especially in remote and deprived border areas, should be aimed at improving the economic and financial situation of the villagers. When favorable economic assets are obtained, other aspects of livelihood assets will indirectly change and improve if properly managed.

Recommendations- Lastly, according to the findings and field study of the current status, the following strategies are proposed to have a more favorable effect of economic diversity on improving the livelihood capital of the villagers:

- Taking advantage of the location of the main and important commercial route in the country, such as Baneh/Marivan, and the proximity to the international border to create and launch service businesses, the lack of which is quite evident at the district.

- Prepare for the development and expansion of tourism (rural, commercial, and nature tourism) in the region to create sustainable jobs and improve employment and income levels
- Making the necessary legal, administrative, and supportive bases for the development of entrepreneurship and domestic & foreign private sector investment (Iraqi Kurdistan region due to high social and cultural similarities and proximity of distance) according to the capabilities of the region.
- Development of trade in goods from the border markets with an emphasis on the products of the villagers, and on the exports instead of imports
- Support the formation of fundraising from the micro-savings in the villages for investment and launching production activities in the villages of the district, which is proposed to create agricultural industries according to the potentials of the region.

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Original Article

تحلیلی بر اثرات متنوع سازی اقتصاد روستاها در تغییرات سطح دارایی های معیشتی خانوارهای روستایی(مورد مطالعه: بخش خاوومیرآباد مریوان- غرب استان کردستان)

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چکیده مبسوط

۱. مقدمه

متنوع سازی اقتصاد روستایی و منافع حاصل از آن، زمینه ساز جلب مشارکت و مسئولیت پذیری مردم محلی در ارتباط با حفاظت از محیط زیست و مشارکت های سیاسی، اجتماعی در کوتاه مدت و بلندمدت می‌گردد و بدین ترتیب در کنار رفع فقر اقتصادی، فقر فرهنگی هم از بین می‌رود. در این راستا نیز، برنامه های متنوع‌سازی اقتصادی زیادی در سطح روستاهای کشور طراحی و اجرا گردیدند در منطقه مورد مطالعه، یعنی بخش خاوومیرآباد شهرستان مریوان به عنوان یکی از بخش های مرزی و محروم کشور که به دلیل دورافتاده و در حاشیه بودن، روستاییان ساکن در آن دارای سطح نازل معیشت بوده و بازتاب آنرا نیز می توان در مهاجرت های گسترده به شهر مریوان و تخلیه و کاهش جمعیت ساکن روستاهای بخش در سال های قبل دید، این مساله مسئولان و برنامه ریزان توسعه را مجاب نمود که در راستای تحول معیشت روستاییان اقداماتی را انجام دهند. این اقدامات موجب رونق مشاغل خدماتی از جمله رانندگی، مغازه داری و حتی سرمایه گذاری در فعالیت های سودآور شهری نیز گشته است. حال باتوجه به اهمیت حفظ و افزایش دارایی های روستاییان به عنوان هسته مرکزی رویکرد معیشت پایدار و ارتباط مستقیم و موثر آن با متنوع سازی اقتصادی، سوال های اصلی پژوهش بدین گونه مطرح می شود:

-آیا تنوع بخشی به اقتصاد روستاهای بخش خاوومیرآباد، موجب بهبود سطح دارایی‌های معیشتی روستاییان شده است؟

-کدامیک از انواع دارایی های معیشتی روستاییان، بیشترین تاثیر و بهبود را در تغییر سطح سرمایه‌های معیشتی روستاییان بواسطه متنوع سازی اقتصادی روستاها داشته است؟

۲. مبانی نظری تحقیق

در سال‌های پایانی دهه ۱۹۸۰ بودکه رویکرد معیشت پایدار، شروع به شکل گرفتن کرد و ظهور آن نیز، نشانگر همگرایی بحث های نظری و عملی در باب توسعه بود. رابرت چمبرز نظریه‌پرداز مشهور عرصه روستایی فردی بود که آغازگر و اثبات کننده رویکرد معیشت پایدار به شمار می آید. وی امرار معاش را شامل قابلیت‌ها، دارایی‌ها و فعالیت‌های مورد نیاز برای گذران زندگی تعریف می‌کند. دارایی های معیشتی به عنوان هسته اصلی معیشت پایدار، نقش غیرقابل انکاری در تحقق پایداری معیشت روستاییان دارند. بواقع توانایی روستاییان جهت گریز از فقر به میزان دسترسی شان به دارایی ها بستگی دارد. میزان سرمایه های معیشتی و دسترسی مردم محلی به آنها است که تعیین کننده استراتژی های معیشتی جهت گذران معیشت می باشد. سطح و میزان سرمایه های معیشتی است که با استفاده از آنها روستاییان، می توانند تعامل ثمربخش و معنی داری با محیط پیرامون داشته و از همه مهمتر، توان تغییر آن را به دست آورند. سرمایه های معیشتی انواع مختلفی دارند این دارایی‌ها هم ملموس هستند؛ مانند: پول نقد، زمین و ... و غیرملموس؛ مانند: سلامت نیروی کار، پیوندهای اجتماعی، علاقه به روستا و.. (. در مجموع، ایده اصلی معیشت پایدار، سرمایه‌های معیشتی را در پنج دسته: سرمایه‌های انسانی، سرمایه‌های اجتماعی، سرمایه‌های فیزیکی، سرمایه‌های طبیعی، سرمایه‌های مالی دسته بندی می‌کند.

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۳. روش تحقیق

پژوهش کاربردی حاضر به روش توصیفی – تحلیلی انجام گرفته است و اطلاعات آن در بخش نظری با استفاده از منابع اسنادی و در بخش میدانی با بهره گیری از پیمایش میدانی و ابزارهای آن یعنی توزیع پرسشنامه و سپس مشاهده وضع موجود و مصاحبه نیمه ساختار یافته با روستاییان، به منظور تبیین پاسخ‌های ارائه شده انجام گرفته است. جامعه آماری این پژوهش را ۲۷۳۶ خانوار ساکن در بخش خاوومیرآباد در بر می گیرد که با استفاده از فرمول کوکران تعداد ۲۶۰ سرپرست خانوار به عنوان حجم نمونه تعیین و پس از تعیین ۱۵ درصد(۵ روستا) از کل روستاهای بخش(۳۰ روستا) به روش قرعه کشی، به روش توزیع طبقه ای سهم روستاهای نمونه از تعداد کل پرسشنامه ها مشخص شده و سپس پرسشنامه ها در میان سرپرستان خانوار روستاهایی نمونه توزیع گردید. لازم به ذکر است در انتخاب افراد مورد مطالعه با مشورت شوراها و دهیاریها خانوارهای انتخاب شده اند که بیشترین تنوع معیشتی را تجربه کرده اند روایی صوری و محتوایی ابزار اندازه گیری با تایید آگاهان و متخصصانی که سابقه مطالعات مشابه را داشتند و نیز پایایی و یا همبستگی درونی پاسخ ها نیز با محاسبه ضریب آلفای کرونباخ ۷۶/ مورد تایید قرارگرفت. خاوومیرآباد به عنوان یکی از سه بخش شهرستان مریوان در استان کردستان دارای ۳۰ روستا دارای سکنه و در منطقه صفر مرزی در همسایگی کشور عراق، واقع گردیده است

۴. یافته های تحقیق

یافته های پژوهش با استفاده از آزمون تی تک نمونه ای نشان داد که دارایی‌های مالی با میانگین ۳.۷۵، دارایی‌های فیزیکی با میانگین ۳.۵۶، دارایی های طبیعی با میانگین ۳.۵۶، دارایی‌های انسانی با میانگین ۳.۵۱ و دارایی‌های اجتماعی با میانگین ۳.۴۷ به ترتیب دارای بیشترین بهبود و اثرپذیری از تنوع بخشی اقتصادی منطقه بودند. در مجموع کل با توجه به میانگین حاصله برابر ۳.۵۷ که بیشتر از مطلوبیت عددی مورد آزمون(۳) به دست آمد و مقدار معنی داری محاسبه شده برابر ۰.۰۰۰؛ با ۹۹ درصد اطمینان می توان گفت که تنوع بخشی به اقتصاد منطقه موجب افزایش سرمایه‌های معیشتی روستاییان بخش شده است. همچنین یافته ها با استفاده از مدل تحلیل مسیر نشان می دهد؛ بعد مالی با بارکلی برابر ۷۹۹.، موثرترین بعد در ارتقای و بهبود سطح دارایی های معیشتی روستاییان منطقه بواسطه تاثیرپذیری از تنوع اقتصادی ایجاد شده می‌باشد

۵. بحث و نتیجه گیری

نتایج نشان دادند تنوع بخشی به اقتصاد منطقه موجب افزایش سرمایه‌های معیشتی روستاییان بخش شده است این نتیجه نشان دهنده توانایی تنوع اقتصادی ایجاد شده در کاهش بیکاری روستاییانی دارد که زمانی به دلیل حذف قاچاق کالا که بسیار به آن وابسته بودند با بیکاری گسترده روبرو شدند.. در این ارتباط می توان گفت که به دنبال افزایش درآمد روستاییان، توانایی‌های آنها جهت شرکت در کارهای عمرانی روستا، انجام امور خیریه، قرض دادن پول به یکدیگر، شرکت در مراسم‌های یکدیگر و در نتیجه احساس تعلق خاطر به روستا و روستایی بودنشان بیشتر شده و همه این عوامل موجب افزایش انسجام و همبستگی روستاها گردیده است. در این ارتباط می توان گفت که افزایش درآمد موجب شده که پس اندازهای روستاییان افزایش یابد و آنها توانایی و تمایل بیشتری جهت دریافت وام هایی داشته باشند. همچنین افزایش درآمد، توانایی روستاییان را برای خرید دام های سنگین و نیمه سنگین و افزایش تعداد آنها بیشتر نموده است در کنار این امر، جمع آوری شیر از سطح روستاهای منطقه هم محرک دیگری بوده که موجب بهبود وضعیت دامپروری منطقه شده است. همچنین نتایج تحلیل مسیر نشان داد که سرمایه های مالی علاوه بر تاثیر مستقیم بر بهبود سطح معیشت روستاییان و افزایش دارایی های روستاییان به صورت غیرمستقیم نیز با اثرگذاری بر سرمایه های انسانی، اجتماعی و فیزیکی در منطقه مورد مطالعه توانسته است؛ بیشترین تاثیر در بهبود سطح سرمایه‌های معیشتی روستاییان به دنبال متنوع سازی اقتصادی در منطقه باشد.

کلیدواژه‌ها: تنوع اقتصادی، معیشت پایدار، دارایی های معیشتی، بخش خاوومیرآباد.

تشکر و قدرانی

پژوهش حاضر حامی مالی نداشته و حاصل فعالیت علمی نویسندگان است.

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Original Article

Regeneration of the Culture of Rural Areas of Iran in Order to Direct the Communication of Villagers with Urban System with the Approach of Sustainable Rural Development

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Abstract

Purpose- The aim of this study is to upgrade the capabilities in cultural field to direct the communication of villages with urban system to reinforce the sustainable rural development. In this way, the necessary grounds should be provided in the villages so that the population density and variety of activities and sufficient facilities for education and accumulation of wealth, etc. reach a certain level in order that sustainable rural development is formed through recreating the culture of rural areas in villages.

Design/methodology/approach- The present study is conducted with applied purposes using the descriptive-analytical method. For data collection, field survey was performed using a questionnaire tool and data analysis method was performed using SPSS software. Statistical population includes 74 villages of the cities of Khoramabad, Kermanshah, Tabriz, Shadgan and Shiraz. Using Cochran formula, sample size was determined 380 households from selected villages and sample selection method is random.

Findings- Data analysis was done through factor analysis and cluster analysis tests and the results of this study, based on the factor analysis method with correlation coefficient of over 5% between the research variables, indicates that, three (socio-cultural, economic and environmental) factors explain 73.629% of variance and show the satisfaction of the factors and the field of research. Using hierarchical clustering analysis (WARD) have been estimated as cluster 1: socio-cultural developed, cluster 2: economic developing, and cluster 3: environmental less developed and ANOVA analysis with a significance level of less than 0.05 indicates the existence of significant relationship between clusters in all four components of cultural regeneration and communication between urban and rural, socio-cultural, economic and environmental criteria .

Research limitations/implications- One of the problems ahead of this research was the different cultural levels of people of the study area, which was a kind of requirement for certain conditions and behaviors, without which there would be no misunderstanding.one of the most important limitations of this research is the lack of cooperation of relevant organizations to provide studies on cultural changes affecting rural-urban areas.

Practical implications- Among the practical solutions, the following can be mentioned: provide patterns and solutions for cultural development and sustainable development based on culture and socio-cultural attachment for regional development projects .

Originality/value- This study encompasses many innovations including careful review of cultural relationships with rural-urban communication patterns and the effects of sustainable rural development on both of them .

Keywords- Culture, Cultural regeneration, Rural-urban communications, Sustainable rural development, Iran.

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1. Introduction

The city and the village as a geographical space, despite various similarities in urban and rural fields (Shaei et al., 2018), cause change in attitudes of village and rural community according to the policy system and one-sided top-down procedures in the form of policies and patterns of development and centralized rent in rural-urban communications (Jom'ehpour, 2016). Therefore, the communications between the city and the village can be beyond the sphere of influence of urban-rural areas (Mohammadi Yeganeh & Sanaei Moghadam, 2017) and cause spatial connections and sectorial connections that are often overlapping (Jelisavka and Goran, 2017).

Now, this question arises that, what is the role of villages in regional development? While urban and regional development have focused on urban centers as forces of growth and development, they have left the villages inactive and dominated by cities (Ward & Brown, 2009). The interactive communication between urban and rural areas at the local level is determined by different factors such as geographic, demographic, agricultural systems and communication networks, and also socio-cultural components (Ghasempour & Zebardast, 2019). The cultural, social and economic capacities and capabilities of rural communities are formed to fulfil basic material and spiritual needs and effective control on the forces that shape the local housing system (ecological, cultural, social, economic, institutional and territorial), also the development of human capital has grown and excelled by taking advantage of internal opportunities in rural areas (Maleki et al., 2019), which ultimately determine a clear policy to improve rural culture and consequently economic, social and cultural development of rural areas which are under the dominance of life improvement (Winkelstein et al., 2008). Rural areas had specific traditions, ethics, values, customs, cultures and identities in themselves and they were intertwined with such features (Blaga, 2008). In other words, recognizing the cultural concepts emphasizes the interdependence between culture and society, such that the culture constructs and generates the social communications (Naghavi et al., 2012). And humans are representatives of various cultures and their face-to-face contact of the representatives, is the face to face contact of the cultures and the cultural richness is achieved through this face to face contact (Esmaeil Nezhad et al., 2017). Hence the indigenous knowledge is part of a unique culture of each ecosystem or land which has been achieved through experience in order to adapt to the specific environment conditions of the ecosystem (Bouzarjomehri et al., 2018). This knowledge is the result of integrity of indigenous knowledge, cultural and moral principles which has been adapted with local community, local culture and the environment (Bayat, 2018). And by utilizing this strategic knowledge and sustainable rural development improves the quality and wellbeing of villagers' lives especially the socio-economic life of a specific group of people i.e. poor villagers and in fact sustainable rural development is multipurpose mutation in rural planning which aims at improving the quality of low income people through cultural, civil, therapeutic, technological, political and economic, etc. actions (Karimi E'temad & ya'ghoubi, 2016). According to this, the present study was conducted with the aim of investigating and analyzing regeneration of the culture of rural areas to direct the villagers' communications with urban system in order to enhance sustainable rural development through cultural investigation of five nations (Lor, Kourd, Turk, Arab, and Fars) randomly in five cities (Khoram Abad, Kermanshah, Tabriz, Shadgan, and Shiraz). We put our efforts into upgrading different levels of sustainability, by using the criteria of sustainable rural development as the independent variable and influential cultural manifestations and effective criteria on the communications between city and village as dependent variables of the study. Thereby, this study is seeking for proving or rejecting the following theories:

1. The sustainable rural development can be realized through indicators of creating change in attitudes and values, promoting education and awareness of traditional skills and knowledge, dissemination of knowledge, changing consumption pattern, models of production and costs models, employment, economic and development structure, financial sources and their mechanisms, regulating agriculture and animal husbandry in rural in rural areas, preventing environmental degradation and the quality and quantity of water.

2. The tools of sustainable rural development in (socio-cultural, economic and environmental) areas can improve the cultural regeneration and communications between city and village.

2. Research Theoretical Literature

2.1. Background

investigating the research background shows that, the previous studies have a relative alignment in relation with the subject of the study in line with sustainable rural development, indigenous knowledge, cultural manifestations and rural-urban communications and the results are as follows:

Sarban and Javid (2019) in a study titled "Analysis of the effects of creating social capacities on improvement of rural development management, Case: Germi town" found out that, creating capacities is considered to be one of the main pillars of management and sustainable rural development management; and results in people's self-reliance, access to economic, social and cultural rights, self-sufficiency in providing strategic food, access to revenues, assets and credit facilities, access to knowledge and technology and a participatory atmosphere in all aspects of human efforts. Vaziri et al. (2018) in a research titled," Investigating and evaluating socio-cultural sustainability components in order to achieve sustainable development, Case: Karaj city", found out that, with expansion and growth of technology and turning the world into a global village, it seems necessary to develop the infrastructure and proper utilization of all resources and facilities and concluded that all the social and cultural indicators are interrelated together and the growth of each one depends on the growth of the adjacent indicator. Bandani et al. (2015) in a study titled, "investigation and analysis of the role of indigenous knowledge in sustainable rural development, case study: (Ghaemabad rural district in Sistan area)", realized that indigenous knowledge is a natural knowledge which villagers use their experience and observations to connect with people around and the environment which eventually leads to a way to achieve sustainable rural development. Vosoughi et al., (2014) in a study entitled "Indigenous knowledge; a step towards localization of rural development and improving villagers' capabilities", found out that rural development must be adaptable to environmental, cultural and social conditions of a community. Realization of rural development is a step towards self-sufficiency and improving rural society status. Hence, local fields should be taken into account. Taking indigenous knowledge and its features into consideration such as holistic, accumulative, dynamic, and immersed in the culture of a nation and also its practical implications not only lead to rural development compatible to local conditions of a society, but also, it can achieve endogenous development. Sharafodin & Cheraghi Koutiani (2014) in a book entitled "The role of culture and cultural structures in demographic changes" realized that, cultural elements such as literacy and education, religion, identity and attitude changes, the idea of sexual preference, the value of child rearing influence the fertility. On the other hand, mortality is also affected by cultural dimensions such as level of education, the amount of information, religion level, training patterns, lifestyle, and ethnic and racial subcultures of parents. This study also emphasizes the role of religion and insight and value changes in the migration process. Oliaei & Karimian (2011) in a study, investigated the approach of rural development programs in Iran with the emphasis on the role and position of indigenous knowledge. The results of the study show that the mentioned programs do not pay attention to the knowledge and participation of villagers who are the main beneficiaries of these programs. The programs are generally derived from non-native patterns and arranged regardless of the will and opinion of the people and the operation of these programs has brought several problems to Iran' rural community. However, in order for the rural development programs to be successful, rural planning authorities should necessarily take actions for rural planning based on the culture and insight of people of rural community. Acemoglu and Robinson (2008) in a book named "sustainable rural systems" which is a summary of the sessions of sustainable rural development commissions, has investigated the issues such as monitoring and participation in the sustainable development in environmental programs of Canada, economy, culture and tourism and its role in sustainable development based on documents and evidence from west of Ireland, land use and protecting nature in Britain's protected sights, agriculture and livestock in rural communities, motivation and effects of leaving organic farming by farmers in the UK. Bohringer et al. (2007) in book named "analysis of evaluation methods of sustainability" has investigated the most important sustainability indicators and models and methods of

evaluation of sustainability. In this study using the analytical-competitive method and the information of 130 countries, the relation of each measurement method which was presented in the form of combined indicators, was determined using the correlation coefficient between each of the methods using SPSS software and was analyzed and their common features and differences were determined. Based on the conducted studies in this research, investigating all the influential cultural elements in rural-urban communications was done in the form of patterns of indigenous knowledge and sustainable rural development.

2.2. Rural-urban links:

studying the rural-urban links and city and village communications is one of the important issues in urban and rural planning (Rokhsarzadeh et al., 2016). The manner and scope of the existing relations between the city and the village in different ways affect the formability, growth and development of rural settlements and also their internal and external relations (Tamimi et al., 2017). Therefore, in 2004, United Nations called cities the engines of rural development, because each region is not just a scattered and unconnected settlement system, but an interconnected network of social, economic and physical relations which form through the relationship between rural areas and the urban network (Khoubfekr Barabadi & Qureshi, 2012) and it can be said that economic and social criteria are the criteria that form the basis of definitions of urban and rural areas (Mardi Zarnaghi, 2013). Therefore, by examining the attitude of urban and rural system, which is a set of elements or subsystems between which networks of interactions flow and their purpose is to achieve a kind of social life for human, (Raeisi Shiviari, 2014) the link and investigation of urban and rural settlements and the interactions between them have changed from a linear relation to multilateral, complicated, and in various fields relations (Amanpour & Navasari, 2017), as Prince Walz in the idea of village-city, has mostly paid attention to human and social values (Biddulph, et al., 2002). Hence, examining the studies of rural sustainability in various economic, social and environmental aspects is necessary (Qasemi, 2016).

2.3. Sustainable rural development and indigenous knowledge:

Sustainable rural development is among important issues in each country's development and it has an extremely important and basic position in economic, social and cultural development programs (Whitfield, 2015). Sustainable rural development is a multipurpose mutation in rural planning with the aim of improving the quality of low-income people's lives through agricultural, civil, therapeutic, technological, political and economic etc. actions (Karimi E'temad & Ya'ghoubi, 2016). Human community is one of the dimensions of sustainable development: Article 1 of the Rio declaration: Attention to man in sustainable development: Humans should be the focus of sustainability issues. Healthy and productive life in harmony with nature is human's right (Mohammadijou & Ahmadi, 2013). Sustainable rural development can be considered as a process within the framework of which, the capabilities of rural communities achieve growth and excellence in order to meet the material and spiritual needs along with balancing the components of rural settlement system (Ecological, social, economic, and institutional) (Ghanimat et al., 2016) (Figure 1).

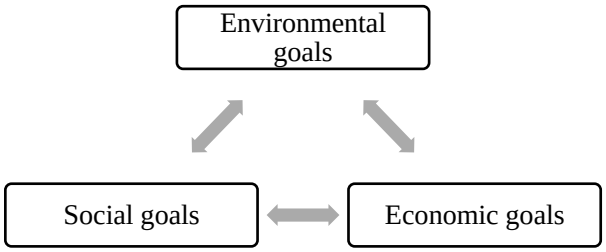

Figure 1. The relations between environmental, economic, and social factors in sustainable rural development
(Source: Ghanimat et al., 2016: 902)

Utilizing "The accumulated and historical empirical wisdom" of local operators, so-called indigenous knowledge, makes it possible to practically participate the local people and their knowledge in the route towards balanced and sustainable development (Samadi Sankhasti, 2018). The indigenous knowledge collection is a precious treasure of methods and tools, experimented through time, which will be useful in all community's sustainable development. Since

the knowledge is resulted from the interactions between individuals and their environments, the indigenous knowledge is also the result of such interaction between natives and their environments (Shah Hoseini, 2019). Therefore, the strategies of indigenous knowledge generally come along with cultural and social considerations (Tahmasb, 2012). The indigenous knowledge is considered to be among the tools of sustainable development and although this development is conceived and emerged in the domain of rural communities, it will have positive effects from the national perspective too and it can directly lead to employment and prevents the migration of nomads to cities and this knowledge can be used through utilization of resources tailored to the ecological, cultural and social circumstances of the environment which natives use to meet their needs (Saeedi Garaghani et al., 2016). Culture and its impacts on the village: most countries today known as developing or relatively developed countries, encounter cultural issues and challenges (Naghavi et al., 2012). Therefore, exchanging information and new communicative technologies and human thoughts has unintentionally affected geographical boundaries, so that, even the simplest information is exchanged within a short period of time, accordingly each day more information is transmitted to the world which can have a major impact on transfer of indigenous culture and its change (Vaziri et al., 2018). Because during the process of absorbing ideas, the consideration of changing and evolving concepts inevitably leads to deep astonishment and bewilderment (Maham, 2018). Culture means learned behavioral patterns that are transmitted from one generation to another or from one group to another and are formed based on mental and social realities (Naghavi et al., 2012). Culture has three significant components: 1. Cognitive dimensions such as values; 2. Organizational dimensions such as norms; 3. Material dimensions such as art, architecture, and other embodied manifestations (Sharafodin & Cheraghi Koutiani, 2014). Therefore, in this study we present various theories about cultural and social structures that have depicted the impact of culture and cultural categories on various aspects of social and economic life of individuals (Mardani et al., 2014).

Table1. Literature Review

Theorist	Description
Montgommery	In dealing with culture in urban policies and urban planning, he considers culture as one of the most difficult words in English and has stated it as a complicated existence, a process and also a product, a lifestyle, a state of production and a state of consumption (Salaripour & Kardar, 2017)
Anthony Giddens	He considers culture to consist of two types, material and spiritual, and believes that it is composed of three important elements that are formed in the context of time: 1. The single values and ideas that members of the social group believe in. 2. Definite social norms and principles that members must observe and follow. 3. Material goods with special characteristics that the members of the group produce (Naghavi et al., 2012).
Singh	The studies of this scholar indicate the truth that the existence of appropriate administrative and organizational structure, educational amenities and facilities and the amount of villagers' awareness and making rural society as the center of attention, are among effective social and cultural factors which affect the improvement of rural development management (Heidari Sarban & Javid, 2019).
Roodhouse	He believes that, culture as a comprehensive framework, gives us a mechanism to make our activities meaningful at the society, regional and national level and describes culture as consisting a material dimension including various arts, architecture, libraries, etc. and a value dimension including communications, identity, and common memories (Salaripour & Kardar, 2017).
Edward Taylor	He considers culture and civilization as a complex set of knowledge, beliefs, morals, laws, customs and traditions and all capabilities and habits that a human accepts as a member of the society (Naghavi et al., 2012)
Buris et al.	These scholars presented the interactive acculturation model for analysis of the migration phenomenon which considers a comprehensive and useful framework. This model emphasizes both the role of acculturation dissemination of the host society and cultural orientations adopted by immigrants (Maleki et al., 2019).
Raymond Williams	Understanding the concepts of culture puts emphasis on the dependence between culture and society and states that culture gives form and structure to social relations (Salaripour & Kardar, 2017).
Goodman	Culture is the functional role taking and development of history of a nation and aroused from customs, traditions, habits and values of a society (Goodman, 2009).
Rogers & McClelland	The views of these modernist theorists on cultural change are worth pondering. According to Rogers, the acceptance of innovation depends on culture, because in some cultures there is more ground for innovation than other cultures (Naghavi et al., 2012).

In general, the development of cities adjacent to surrounding villages, and reduction of the distance between city and village and the increase of traffic, eventually leads to the penetration of urban culture among the villagers, especially the youth (Raeisi Shiviari, 2014). Hence, we are going to examine the various native cultures and villagers' relations in cities of (Khoram abad, Kermanshah, Azarbayjan Sharghi, Ahvaz, and Fars) using sustainable rural development.

3. Research Methodology

The geographical scope of this study, which was randomly selected based on extensive indigenous cultures, is:

1. The city of Shiraz which is known from a long time ago among Iranian and people of the world due to its rich culture and civilization and also its historical monuments and tourist attractions. Therefore, in order to study the culture in the central part (Bidzard, Darian, Drak, Siakh Darnegoun, Qarabagh, and Kaftarak) from a total of 79 villages with a population of more than 100 people, 18 villages have been selected as a sample using 16364 households and population equivalent to 56471 people.
2. The city of Khoram Abad with the culture and customs and traditions of the Lor tribes, is one of the richest, the most original and obvious parts of cultural treasure of Iran's nations and according to the archeologists' findings Lorestan is one of the oldest human habitats and cultural creations. Accordingly, for the study of the Papi section (Sepiddasht, Tong haft, Keshvar, Cham Sangar and Garit) from a total of 26 villages with a population of more than 100 people, 12 villages have been selected as a sample using the rule of division which include 737 households and a population of 2781 people.
3. Shadegan city is surrounded by vast palm fields and is known for poetry in Khouzwstan. The people of Shadegan are mostly Arab, so they have a distinct culture. The central part includes districts of (Hoseini, Jafal, Abshar, and Bouzi) and from total of 89 villages with a population of more than 100 people, 20 villages were selected using the division rule, which include 5569 households and a population of 21833.
4. Many great people in literature, art, history and politics have come from the city of Kermanshah. The residents of Kermanshah are Kourd which is considered as one of the oldest Iranian nations. In this study Mahidasht section (Choghanarges and Mahidasht) was selected as area under study and includes 69 villages with a population of more than 100 people. Using division rule 13 villages have been selected and include 1408 household and a population of 5029 people.
5. And finally, the city of Tabriz is one of the large and thriving cities in northwest located in Azarbayjan area and in fact this city has always been an important center of Turkish speaking areas of Iran, which from its central part (Aji chay, Asperan, Meidan chay, and Sard sahra) with a total of 50 villages with a population of more than 100 people, using the division rule, 11 villages have been selected as sample villages.
6. Research method: This study has been conducted through descriptive-analytical method. Among 307 rural settlements (more than 100 people) of the stated cities, based on the volume of sample settlements in each class were determined by the rule of division by proportion and 74 villages were selected as the sample villages of the study randomly using an approximation in estimating the community parameter as 0.17. Then, to determine the sample size, Cochran's formula was used and 380 households were randomly selected from 41359 people.

$$n = \frac{\frac{z^2 pq}{d^2}}{1 + \frac{1}{N}\left[\frac{z^2 pq}{d^2} - 1\right]}$$

In order to evaluate sustainable rural development, 12 indicators (promoting education and awareness, changing behaviors and values, skills and traditional knowledge, dissemination of knowledge/ employment, production and costs models, economic and development structure, changing consumption pattern, financial resources and their mechanisms, quality and quantity of water, preventing environmental degradation, regulating agriculture and animal husbandry in rural areas) were selected and were categorized in 3 socio-cultural, economic and environmental groups. Before the data analysis and interpretation of the results obtained from examination of hypothesis, the reliability of the questionnaire should be examined. The Cronbach alpha of questionnaire's pre-test has been 84%, which is accepted compared to the reliability which is 70%.

Table 2. Reliability Test

Reliability Test	
Cronbach Alpha	Number of Questions
.840	33 questions except for 11 general questions raised

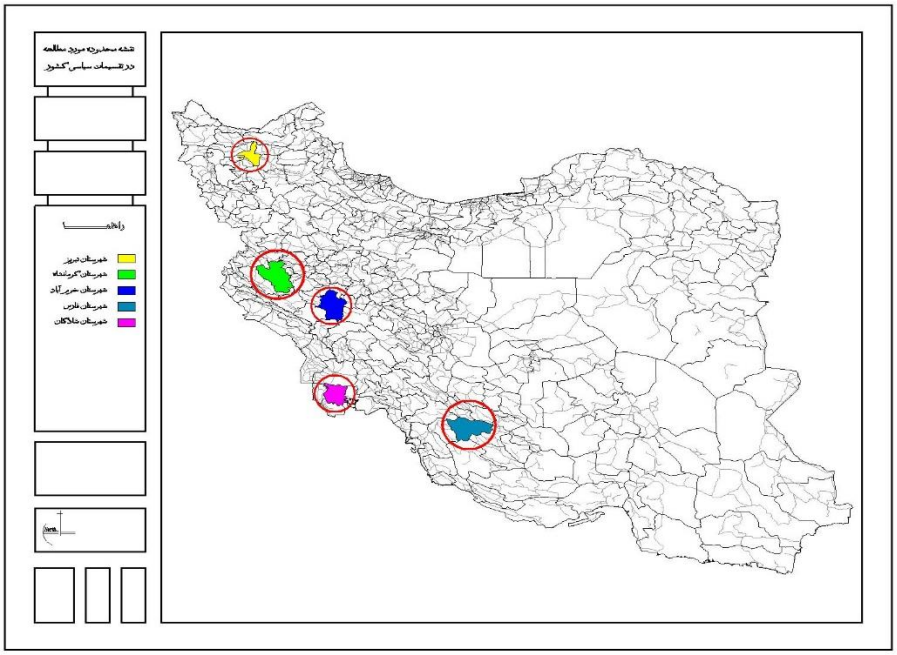

Figure 2. Location of the studied areas based on the political divisions of the country

4. Research Findings

4.1. Application of factor analysis in spatial-locative evaluation of the rural areas of the studied cities

In order to achieve the goals of the study, in this part, the studied criteria of the rural areas of cities under study are evaluated using factor analysis technique.

Data matrix formation: the mentioned variables including: socio-cultural, economic and environmental variables in the matrix are placed in columns and rural areas of 5 cities (Shiraz, Shadegan, KhoramAbad, Kermanshah and Tabriz) are placed in rows.

Factorization: because indicators and variables that are internally related, prefer to be grouped together around an axis or factor, therefore, factors are constructed through aggregation and the degree of positive and negative correlation. Also, factors with an eigenvalue of less than one are excluded from the analysis because they do not determine the variance.

Calculation of the correlation matrix: the calculation between the performance of each test and other tests in the same group can be arranged in a rectangular array (matrix) called the correlation or R matrix. Matrix is a start point of various statistical procedures, one of which is factor analysis and it facilitates the determination of effective factors on different functions.

Factors extraction: in this part the correlation between indicators (variables) and factors is examined and the main factors are extracted using correlation matrix. Therefore, correlation matrix is calculated and the factors are extracted. In order to create a logical and proper relationship between indicators (variables) and factors, indicators with correlation coefficient above 5% are used. Accordingly, in the present study, 3 factors explain 73.629% of variance and indicate the satisfactory factor analysis and indicators studied.

Table 3- Extraction of final factors of data analysis

List of factors	Eigenvalue	Variance percentage	Cumulative variance Percentage
1	25.499	59.123	53.123
2	4.870	10.146	63.269
3	3.532	7.359	73.629

Matrix rotation: the interpretation of factor load variables is not without rotation and therefore the factors are rotated to increase the interpretation capability. In matrix rotation, the factors are alternately rotated around a fixed spot to enfold the indicators (variables). This method is called (the rotated matrix factor). In this study a simple structure is obtained which many indicators accumulate around one factor which according to table 3, the extracted factors explain 73.629% of the changes resulted from previous variables. As observed in table 4, the first factor has the highest role in the total changes (variance).

Table 4. The rotated factors

List of factors	Eigenvalue	Percentage of variance	Cumulative Variance Percentage
1	20.027	41.723	41.724
2	6.631	20.065	62.788
3	3.890	8.103	73.629

Naming factors: the factors are named according to the content and nature of the indicators studied in each factor. In this study also the factors are named as follows.

1. Socio-cultural factor

The eigenvalue of this factor is 20.027 which singly is capable of explaining 41.723% of variance and has the highest impact among four factors. This factor includes 4 indicators of promoting education and awareness, changing behaviors and values, traditional skills and knowledge, dissemination of knowledge (table 5).

Table 5. Indicators of first factor

Row	Indicator	Correlation
1	Changing attitudes and Values	97%
2	Promoting education and awareness	95.6%
3	Traditional skills and Knowledge	89.7%
4	Dissemination of Knowledge	74.6%

2. Economic factor:

The eigenvalue of this factor is 6.631 which calculates and interprets 20.065% of the variance. This factor encompasses 5 indicators including employment, production and costs models, economic and development structure, changing the consumption pattern, financial resources and their mechanisms. (Table 6) this factor has a positive relation with agricultural benefit. The rural areas of Derak, Siakh Darnegoun, Tang haft, Abshar, Choghanarges, and Meidan chay, have the grounds for expanding related activities due to their proper geographical location and good climate conditions. The government and people can sync together to participate in the growth and flourishing and making more and better use of these potentials.

Table 6. The indicators of second factor

Row	Indicator	Correlation
1	Changing the consumption pattern	90.4%
2	Production and costs models	89.9%
3	Employment	89.4%
4	Economic and development Structure	70.2%
5	Financial resources and Their mechanisms	69.1%

3. The environmental factor

The eigenvalue of this factor is 3.890 which calculates and explains 8.103 of variance. This factor encompasses 3 indicators related to environment (Table 7), which include quality and quantity of water, preventing from environmental degradation, regulating agriculture and husbandry in rural environments. This factor has a positive

relation with agriculture in the gardens, agricultural lands and husbandries.

Table 7. The indicators of third factor

Row	Indicator	Correlation
1	Regulating agriculture and husbandry in rural environments	81.3%
2	Preventing from environmental degradation	71.4%
3	Quality and quantity of water	65.7%

4.2. Applying cluster analysis method in determining rural areas from the perspective of sustainable rural development

After deciding to use distance criterion and calculating distances on this base, the next step is how to classify topics based on these distances which is called clustering technique. In this study the hierarchical clustering method (WARD) has been used.

1. The indicators of sustainable rural development include 3 dimensions of socio-cultural (promoting education and awareness, changing attitudes and values, traditional skills and knowledge, dissemination of knowledge), economic (employment, production and costs models, economic and development structure, changing consumption pattern, financial resources and their mechanisms) and environmental (quality and quantity of water, preventing the environmental degradation, regulating agriculture and animal husbandry in rural environment).
2. Improving cultural recreation (lack of immigration of residents, promoting a sense of belonging to the village, revival of old traditions and customs, promoting modern rural culture)
3. Communication between city and village (physical and temporal distance of the villages to the nearest city, city center and district center, improving the services including educational, therapeutic, cultural, etc. services and providing rural financing)

According to table 8, cluster 1 includes the villages of Bidzard Sofla, Tafhian, Ghalat, Darreh, Eslamabad, Ghal'eh Choubi, Soltan abad, Shapourjan, Tang panj, Istgah tang haft, Sangtarashan, Istgah Keshvar, Istgah cham sangar, Gharibeh, Albuna'eem, Albohesar, Beit davoud, Badrani, Jahangiri Sofla, Basirabad, Gowharabad, Choghanarges, Namivand Olya, Choghazard, La'labad Hoseingholikhani, Samereh Olya, Ghal'eh Najafalikhan, Rizeh vand, Lighvan, shadabad, mashayekh, Kondroud, karkaj. Cluster 2 includes the villages of Dodaj, Tarbar Ja'fari, Kalestan, Gachi, Korouni, Gazeh, Larkeh, Nayangiz, Mansoureh Olya, Shah vali, Beit Ashour, Nahr Hosein, Nahr Vasleh, Bozi seif, Nahr Moslem, Ghaleh Darabkhan, Chahar Zebar Sofla, Jameh shouran Olya, Cheshmeh sefid, Malek Kian, Asanjan, and Cluster 3 includes the villages of Shahrak Ghadir, Kadanj, Barmashour Olya, Kaftarak, Mah firouzan, Pasil, Kouloy, Baraftab Aliasgar, Chenar gerit, Alboabid, Jofal, Joghal ouyeh, Sa'di, Khoeins, Deimeh Ya'ghoub, Seh Chogha, Kajvar, Alvar Sofla, Ana khatoun, Yengi Asperan, Sefidan, Jadid, Zeinjenab. Also in this table, two comparison has been done for each indicator, one is about the sustainable rural development in each cluster and the other is about the cultural recreation and the communication between city and village.

Naming the clusters: in the cluster interpretation section of the cluster analysis process, the most important step is to determine the appropriate name or label for the clusters. To name the clusters, the scores of the research variables between the clusters and the rank of each variable in the total of the variables of each cluster according to table 9 were used. As a result of the study, three clusters of sustainable rural development are presented in the following order:

- Cluster 1: socio-cultural development

By comparing the average of indicators in each cluster, it is clear that cluster 1 in three indicators, cultural recreation and communication between urban and rural, socio-cultural and economic criteria has a higher score than the environmental group, which is why it is considered among the three developed groups. Also, in comparing indicators with measures such as promoting education and awareness, making changes the attitudes and values, traditional skills and knowledge, knowledge dissemination is the first priority. Hence, this cluster was named "socio-cultural development".

- Cluster 2: Economically developing

The second cluster among the three clusters was named "Economically developing".

As it can be seen by comparing the average of indicators in each cluster, this cluster is in the second priority in both physical and socio-cultural indicators among the three groups and has the highest score in the economic index among all indicators in all clusters. In other words, in comparing the indicators in cluster two, the economic index with measures such as employment, production and cost models, economic structure and development, changing consumption patterns, financial resources and its mechanism has priority.

- Cluster 3: ecologically less developed

The third cluster is called "ecologically less development". In this cluster, the three indicators of cultural recreation and communication between urban and rural areas, economic criteria and environmental criteria have the lowest score among other groups, and only the socio-cultural index ranks second in clustering. Hence it is considered less developed. Also, in comparing the rank of indicators in the third cluster, it was stated that the environmental index is in the lowest score with measures such as water quality and quantity, prevention of environmental degradation, regulation of agriculture and animal husbandry in rural areas. Also, ANOVA analysis to show significance between clusters in each component was determined according to table 9. Hence, this cluster was named "Ecologically less developed".

The result indicates that there is a significant relationship between every four components of cultural recreation and communications between city and village, socio-cultural, economic and environmental criteria. In other words, the tools of sustainable rural development in (socio-cultural, economic, and environmental) fields improve the cultural recreation and communication between city and village in the villages.

Table 8. ANOVA analysis to compare different clusters in components of Sustainable rural development and improvement of cultural recreation and the communications between city and village

Component	Cluster		Error		*F*	*g*
	Average Square	df	Average Square	Df		
Cultural recreation and Communications between Village and city	0.096	2	0.014	11	6.746	0.001
Socio-cultural criteria	0.043	2	0.042	11	4.037	0.005
Environmental criteria	0.47	2	0.31	11	3.833	0.002
Economic criteria	0.065	2	0.007	11	9.768	0.000

Table 9. Clustering 74 villages under study based on the indicators of sustainable Rural development effecting the improvement of cultural recreation and communications between city and village a= indicators' rank in each cluster b= rank of each cluster in indicators

Cluster Number	Cluster's Name	Members of the Cluster	Average indicators in Clusters			
			Cultural Recreation and Communications Between city and village	Socio-Cultural Criteria	Environmental criteria	Economic Criteria
Cluster 1	Socio-cultural Development	Bidzard Sofla, Tafhian, Ghalat, Darreh, Eslamabad, Ghal'eh Choubi, Soltan abad, Shapourjan, Tang panj, Istgah tang haft, Sangtarashan, Istgah Keshvar, Istgah cham sangar, Gharibeh, Albuna'eem, Albohesar, Beit davoud, Badrani, Jahangiri Sofla, Basirabad, Gowharabad, Choghanarges, Namivand Olya, Choghazard, La'labad Hoseingholikhani, Samereh Olya, Ghal'eh Najafalikhan, Rizeh vand, Lighvan, shadabad, mashayekh, Kondroud, karkaj	(2)$_b^a$ 2.73 1	(1)2.74 2	(4) 2.63 1	(3) 2.69 1
Cluster 2	Economically Developing	Dodaj, Tarbar Ja'fari, Kalestan, Gachi, Korouni, Gazeh, Larkeh, Nayangiz, Mansoureh Olya, Shah vali, Beit	(2)2.70 2	(3)2.54 3	(2)3.44 1	(4) 2.41 2

		Ashour, Nahr Hosein, Nahr Vasleh, Bozi seif, Nahr Moslem, Ghaleh Darabkhan, Chahar Zebar Sofla, Jameh shouran Olya, Cheshmeh sefid, Malek Kian, Asanjan				
Cluster 3	Ecologically Less Developed	Shahrak Ghadir, Kadanj, Barmashour Olya, Kaftarak, Mah firouzan, Pasil, Kouloy, Baraftab Aliasgar, Chenar gerit, Alboabid, jofal, joghal ouyeh, Sa'di, Khoeins, Deimeh Ya'ghoub, She Chogha, Kajvar, Alvar Sofla, Ana khatoun, Yengi Asperan, Sefidan, Jadid, Zeinjenab.	(2) 2.51 3	(1)2.60 2	(3)3.24 3	(4)2.23 3

5. Discussion and Conclusion

Examining the rural cultural relations and sustainable rural development in rural-urban relations among villages with different nations determine that, these relations have had mutual correlation. Since, the existence of each criterion cannot solely be the necessary and sufficient condition for the realization of the relationship and there is a need to apply a significant relation which improves the rural cultural recreation through sustainable rural development. In this study, the socio-cultural, economic, and environmental variables are put in matrix columns and the rural areas of the 5 cities of (Shiraz, Shadegan, Khoramabad, Kermanshah, and Tabriz) are put in rows. Then, in order to create a logical and proper relation between indicators (variables) and factors, the indicators with correlation coefficients above 5% are used. Accordingly, in the present study, 3 factors explain 73.629% of the variance and show the satisfactory factor analysis and indicators under study. Based on the hierarchical clustering analysis, cluster 1 includes the villages of Bidzard Sofla, Tafhian, Ghalat, Darreh, Eslamabad, Ghal'eh Choubi, Soltan abad, Shapourjan, Tang panj, Istgah tang haft, Sangtarashan, Istgah Keshvar, Istgah cham sangar, Gharibeh, Albuna'eem, Albohesar, Beit davoud, Badrani, Jahangiri Sofla, Basirabad, Gowharabad, Choghanarges, Namivand Olya, Choghazard, La'labad Hoseingholikhani, Samereh Olya, Ghal'eh Najafalikhan, Rizeh vand, Lighvan, shadabad, mashayekh, Kondroud, karkaj. Cluster 2 includes the villages of Dodaj, Tarbar Ja'fari, Kalestan, Gachi, Korouni, Gazeh, Larkeh, Nayangiz, Mansoureh Olya, Shah vali, Beit Ashour, Nahr Hosein, Nahr Vasleh, Bozi seif, Nahr Moslem, Ghaleh Darabkhan, Chahar Zebar Sofla, Jameh shouran Olya, Cheshmeh sefid, Malek Kian, Asanjan, and Cluster 3 includes the villages of Shahrak Ghadir, Kadanj, Barmashour Olya, Kaftarak, Mah firouzan, Pasil, Kouloy, Baraftab Aliasgar, Chenar gerit, Alboabid, Jofal, Joghal Ouyeh, Sa'di, Khoeins, Deimeh Ya'ghoub, Seh Chogha, Kajvar, Alvar Sofla, Ana khatoun, Yengi Asperan, Sefidan, Jadid, Zeinjenab. Also, in this table, two comparisons have been done for each indicator, one for indicators of sustainable rural development in each cluster and another for cultural recreation and communications between city and village. Accordingly, the results are clustered as follows. ANOVA analysis also indicates the significant relations between clusters in every four components of cultural recreation and communications between city and village, socio-cultural, economic and environmental criteria. In other words, the tools of sustainable rural development in (socio-cultural, economic, and environmental) fields improve cultural recreation and communication between village and city. On this base, some of the proposed suggestions in line with cultural recreation of rural areas in order to direct rural relations with urban system to enhance sustainable rural development are as follow:

1. Develop strategies, sustainable cultural models to protect indigenous and local cultural identity of rural families;
2. Provide educational patterns and acceptance of innovational, technical, and organizational patterns from cultural and social dimensions at the rural level;
3. Design cultural programs to reproduce basic concepts of rural culture such as (the value of working, production, the functional value of goods, continuity, positive traditions, compliance with natural requirements, etc.);

4. Implementation of cultural programs for the protection and cultural reproduction of the indigenous-local identity of the village;
5. Design patterns and cultural planning to maintain indigenous-local knowledge at the rural level;
6. Planning through media to continue traditional culture proper to sustainable development of the village;
7. Awareness about changing consumption and imitating beliefs and attitudes towards creativity and cultivating talents within rural community structure;
8. Implementation of cultural education models among villagers in order to institutionalize real rural lifestyle proper to globalization and protection of indigenous-local identity;
9. Adopt cultural and social measures to maintain rural elite as a human capital in the village;
10. Create a suitable ground and platform for villages to benefit from regional and national publications, press and magazines;
11. Motivate young structure of rural community to increase awareness, managerial knowledge proper to rural community structure;
12. Adopt proper cultural arrangements for comprehensive participation of the villagers in various activities of the village;
13. Design cultural and reasonable policies to increase media awareness and literacy in the village;
14. Adopt motivational strategies for cohesion, joint efforts and enhancing the collective spirit in rural activities;
15. Cultural reinforcement and encouragement to increase rural community trust about the productivity and effectiveness of rural development projects;
16. Present cultural advertising in the village to advance sustainable rural plans;
17. Social and cultural policies to prevent social and cultural crisis in the rural community structure;
18. Sociability of rural community in achieving to the latest scientific, practical changes and cultural interactions with other nations;
19. Enhance and expand community-centric networks and non-governmental organizations (civil commitment) in line with sustainable rural development;
20. Create measures and policies to motivate and encourage youth to manage rural administration
21. Develop cultural and social solutions to prevent uncontrolled migration to other places;
22. Motivate and encourage investment of indigenous-local people for sustainable rural development instead of investment in other places;
23. Provide cultural and social arrangements for social monitoring and control and preventing from comprehensive damages to sustainable rural development and prevent the uncontrolled growth of urbanization in rural areas;
24. Develop cultural, social and economic measures and plans for sustainable development of rural tourism;
25. Re-socialize rural community for cultural struggle with western lifestyle.

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Original Article

بازآفرینی فرهنگ نواحی روستایی ایران در جهت دهی به ارتباطات روستائیان با نظام شهری با رویکرد توسعه پایدار روستایی

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چکیده مبسوط

۱. مقدمه

توسعهٔ روستایی–شهری بر این باور استوار است که حضور شهرها و روستاها در یک واحد توسعهٔ منطقه‌ای، می‌تواند از تنوع فعالیت‌های(اجتماعی، فرهنگی، اقتصادی) و توانمندی‌های مکمل موجود بین مراکز متنوع سکونتگاهی بهره‌مند گردد. هدف این پژوهش ارتقاء توانمندی‌ها در حوزه فرهنگی در جهت‌دهی به ارتباطات روستائیان با نظام شهری در تقویت توسعه‌پایداروستایی است. بدین صورت که در روستاها زمینه‌های لازم فرآهم گردد تا تراکم جمعیت و تنوع فعالیت‌ها و امکانات کافی برای تحصیل و جمع آوری ثروت و... در آن به حدی معین برسد تا توسعه پایداروستایی با بازآفرینی فرهنگ نواحی روستایی در روستاها شکل گیرد. بر این اساس شکل‌گیری ظرفیت ها و توانایی های فرهنگی، اجتماعی و اقتصادی جوامع روستایی برای رفع نیازهای اساسی مادی و معنوی می‌گردد و کنترل مؤثر بر نیروهای شکل دهنده نظام سکونت محلی (اکولوژیکی، فرهنگی، اجتماعی، اقتصادی، نهادی و سرزمینی) همچنین توسعه سرمایه انسانی با بهره گیری از فرصت های درونی در روستاها رشد و تعالی یافته که در نهایت خط مشی روشنی برای بهبود فرهنگ روستایی و نتیجتا توسعه اقتصادی، اجتماعی و فرهنگی مناطق روستایی که بیشتر در سیطره بهبود زندگی می‌باشد، تعیین می‌گردد.

۲. روش تحقیق

این پژوهش با هد ف بررسی و تحلیل بازآفرینی فرهنگ نواحی روستایی در جهت دهی به ارتباطات روستائیان با نظام شهری در تقویت توسعه پایدار روستایی از طریق بررسی های فرهنگی پنج قوم شهر(خرم‌آباد، کرمانشاه، تبریز، شادگان و شیراز) می باشد. روش تحقیق این پژوهش توصیفی- تحلیل است. از جمله ۳۰۷ سکونتگاه روستایی (بیش از ۱۰۰ نفر) شهرستان های بیان شده بر اساس حجم آبادی‌های نمونه در هر طبقه به کمک قاعده تسهیم به نسبت تعیین و روستاهای نمونه تحقیق به روش تصادفی با تقریب در برآورد پارامتر جامعه ۰.۱۷ استفاده گردید، تعداد ۷۴ آبادی تعیین گردید. سپس در جهت تعیین حجم نمونه از فرمول کوکران استفاده شده و از ۴۱۳۵۹ نفر جمعیت روستاهای نمونه ۳۸۰ خانوار به روش تصادفی انتخاب شد. در این پژوهش سعی شده است با استفاده از معیارهای توسعه پایدار روستایی به عنوان متغیر مستقل و نمودهای فرهنگی تأثیرگذار در روستاها و معیارهای اثرگذار بر روابط بین شهر و روستا به عنوان متغیر وابسته در مورد های مورد مطالعه، بتوان به ارتقاء سطوح مختلف پایداری پرداخت.

۳. یافته‌های تحقیق

بررسی روابط فرهنگی روستا و توسعه پایدار روستایی در روابط روستا-شهری در روستاهای اقوام مختلف مشخص می‌کند که این روابط دارای همبستگی متقابل بوده است. چرا که وجود هر معیار به تنهایی نمی‌تواند شرط لازم وکافی برای تحقق رابطه باشد ونیاز به استفاده از ارتباطی معنادار است که موجب بهبود بازآفرینی فرهنگی روستا از طریق توسعه پایدار روستایی می‌شود. در این پژوهش متغیرهای اجتماعی-فرهنگی، اقتصادی و زیست محیطی در ستون‌های ماتریس و مناطق روستایی ۵ شهرستان (شیراز، شادگان، خرم‌آباد، کرمانشاه و تبریز) در سطرها قرار داده می شوند. سپس برای ایجاد رابطهٔ منطقی و مناسب بین شاخص‌ها (متغیرها) و عوامل، شاخص‌هایی که مورد استفاده قرار می‌گیرند با ضریب همبستگی بالای ۵٪ می‌باشد.

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بر این اساس در پژوهش حاضر ۳ عامل ۷۳/۶۲۹ درصد واریانس را تبیین می کنند و مبین رضایت بخش بودن تحلیل عاملی و شاخص های مورد مطالعه لند. همچنین تحلیل ANOVA برای نشان دادن معنی‌داری بین خوشه ها در هر مؤلفه، نشان دهنده وجود معنی‌داری بین خوشه ها در هر چهار مؤلفه بازآفرینی فرهنگی و ارتباطات بین شهر و روستا، معیارهای اجتماعی-فرهنگی، اقتصادی و زیست محیطی می باشد. به عبارتی ابزارهای توسعه پایدار روستایی در حیطه های (اجتماعی-فرهنگی، اقتصادی و زیست محیطی) سبب بهبود بازآفرینی فرهنگی و ارتباطات بین شهر و روستا در روستاها می گردد.

۴. بحث و نتیجه‌گیری

یکی از مشکلات پیش روی این تحقیق سطوح فرهنگی متفاوت افراد مناطق مورد مطالعه بود که خود به نوعی لازمه شرایط و نحوه برخورد رفتاری خاصی بود، نا از سوی آنان سو تفاهم پیش نیاید. یکی از مهمترین محدودیت های این تحقیق عدم همکاری سازمان های مربوطه برای در اختیار قرار دادن مطالعات صورت گرفته پیرامون تغییرات فرهنگی تأثیرگذار بر نواحی روستا-شهری است. اولویت توسعه فرهنگی به خصوص در روابط روستا-شهری در مسیر ارتقاء توسعه پایدار روستایی غیر قابل انکار است. توسعه فرهنگی، توسعه اقتصادی را به دنبال دارد، در حالی که اگر توسعه اقتصادی منجر به توسعه فرهنگی نشده باشد نتیجه ای برای رسیدن به الگو مناسب توسعه پایدار روستایی در راستای تحقق فرهنگ آن جامعه را در پی نخواهد داشت. لذا از جمله نوآوری های این پژوهش بررسی دقیق روابط فرهنگی بر الگوهای ارتباطی روستا-شهری و تأثیرات توسعه پایدار روستایی بر آن دو است.

از جمله راهکارهای عملی شامل ارائه الگوها و راهکارهای توسعه فرهنگی و توسعه پایدار متکی بر فرهنگ و پیوست فرهنگی اجتماعی برای طرح ها و پروژه های توسعه منطقه ای، هدایت برنامه ریزان به سمت شناخت فرهنگ هر جامعه از طرق مختلفی چون : استخدام مشاورین معتمد و کارآمد در سازمان و امور فرهنگی و بکارگیری شیوه های نوین تبلیغاتی در رابطه با هدایت برنامه ریزان در شناخت فرهنگ جامعه، اجرای علنی و شفاف نیات فرهنگ توسط متولیان و رفع کمبودهای قانونی در زمینه مسایل فرهنگی و توسعه منطقه ای است.

کلید واژه‌ها: فرهنگ، بازآفرینی فرهنگ، روابط روستا-شهری، توسعه‌پایدار روستایی، ایران.

تشکر و قدردانی

بدین وسیله از دانشگاه پیام نور که هزینهٔ اجرای این طرح پژوهشی را تأمین کرد، قدردانی می‌کنیم.

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فهرست مندرجات

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۹. ۳. انواع نقل قول‌ها (مستقیم و غیر مستقیم)، نقل به مضمون و مطالب به دست آمده از منابع و مآخذ، با حروف نازک و استفاده از نشانه‌گذاری‌های مرسوم، مشخص شود و نام صاحبان آثار، تاریخ و شماره صفحات منابع و مآخذ، بلافاصله در میان پرانتز نوشته شود.

۱۰. مقالات برگرفته از رساله و پایان‌نامه دانشجویان با نام استاد راهنما، مشاوران و دانشجو به صورت توأمان و با مسؤولیت استاد راهنما منتشر می‌شود.

۱۱ . چنانچه مخارج تحقیق یا تهیه مقاله توسط مؤسسه‌ای تأمین مالی شده باشد، باید در بخش تشکر و قدردانی مشخص گردد.

۱۲ . شیوه ارزیابی مقالات: مقالات ارسالی که شرایط پذیرش را احراز کنند، برای داوران خبره در آن موضوع ارسال می‌شوند. داوران محترم، جدای از ارزشیابی کیفی مقالات، راهبردهای سازنده‌ای پیشنهاد می‌کنند. پیشنهادهای داوران محترم به طور کامل، اما بدون نام و نشان داور، برای نویسنده مقاله ارسال خواهد شد.

۱۳ . مجله حق رد یا قبول و نیز ویراستاری مقالات را برای خود محفوظ می‌دارد و مقالات مسترد نمی‌گردد. اصل مقالات رد یا انصراف داده شده پس از سه ماه از مجموعه آرشیو مجله خارج خواهد شد و مجله پژوهش و برنامه‌ریزی روستایی هیچ مسئولیتی در این ارتباط نخواهد داشت.

۱۴ . مسؤولیت ارائه صحیح مطالب مقاله بر عهده‌ی نویسندگان مقاله است. از این‌رو، نسخه‌ای از مقاله آماده چاپ برای انجام آخرین تصحیحات احتمالی به نشانی الکترونیکی نویسنده ارسال خواهد شد. چنانچه ظرف مدت یک هفته پاسخی از سوی نویسندگان واصل نگردید به معنای موافقت آنها با اصلاحات انجام شده تلقی و نسبت به چاپ آن اقدام می‌شود.

۱۵. دریافت مقاله صرفاً از طریق سامانه مجله (http://jrrp.um.ac.ir) خواهد بود و مجله از پذیرش مقالات دستی یا پستی معذور خواهد بود.

۱۶. نویسندگان گرامی، مقالاتی که مطابق فرمت مجله تهیه نشده باشند به نویسنده بازگردانده شده و در فرآیند ارزیابی قرار نخواهد گرفت.

۱۷. فایل های ضروری برای ارسال از طریق سامانه عبارتند از:

الف) فایل مشخصات نویسندگان: در محیط word شامل اسامی و مشخصات نویسندگان به فارسی و انگلیسی.

ب) فایل اصلی مقاله بدون مشخصات: در محیط word شامل متن اصلی مقاله بدون اسامی و مشخصات نویسندگان.

ج) فایل چکیده مبسوط (مکمل) مقاله: شامل چکیده مبسوط فارسی در قالب یک فایل در محیط Word.

۱۸. شرایط جزئی تر و دقیق تر نیز در فایل راهنمای نگارش و ارسال مقاله توسط نویسندگان ارائه شده است.

۱۹. مقاله پس از ارزیابی علمی به زبان انگلیسی برگردانده شده و نویسنده(گان) موظف به ترجمه آن در مراکز ویراستاری معتبر خواهند بود و تا قبل از انجام ترجمه، امکان ارسال گواهی پذیرش مقدور نمی‌باشد. لذا پیشنهاد می‌شود فارسی زبانان مقاله خود را به زبان فارسی تهیه و ارسال نموده و پس از طی فرایند ارزیابی علمی و پذیرش نسبت به ترجمه آن اقدام شود.

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فرم اشتراک (یک ساله/ دوشماره) **مجلهٔ پژوهش و برنامه‌ریزی روستایی**

این جانب ..... شغل ..... با ارسال فیش بانکی به مبلغ ..... ریال به حساب جاری شماره **۴۲۵۲۹۹۶۳۸** بانک تجارت شعبه دانشگاه مشهد کد ۴۲۵۰ به نام عواید اختصاصی دانشکده ادبیات و علوم انسانی، متقاضی اشتراک فصلنامه از شماره .....هستم. چنانچه صاحبان مقالات منتشر شده متقاضی دریافت مجلّه و تیراژه‌ی آن از طریق پست پیشتاز باشند، باید هزینه‌ی آن را به شماره حساب مذکور واریز و اصل فیش پرداختی را به نشانی دفتر مجلّه ارسال کنند.

نشانی: ..... کدپستی: .....

شرایط پذیرش مقاله

برای سرعت بخشیدن به امر داوری و چاپ مقالات، از همهٔ پژوهشگرانی که مایل به چاپ مقالات علمی خود در این نشریه هستند، درخواست می‌شود به نکات زیر توجه کافی داشته باشند:

۱ . مقالهٔ ارسال شده نباید قبلاً در هیچ نشریهٔ داخلی یا خارجی چاپ شده باشد. هیئت تحریریه انتظار دارد نویسندگان محترم تا هنگامی‌که جواب پذیرش از نشریه نرسیده است، مقالهٔ خود را به مجلهٔ دیگری برای چاپ ارسال نفرمایند.

۲ . مقالات انگلیسی با قلم نازک Times New Roman11 با نرم افزار Word تهیه شود. مقالات، روی کاغذ A4 (با حاشیه از بالا ۳ و پایین ۲ و راست ۲ و چپ ۲ سانتی‌متر) تایپ شود. متن به صورت دو ستونی با رعایت فاصله ۱ سانتی‌متر بین دو ستون و فواصل بین خطوط به صورت single باشد. ۳ . حجم مقاله نباید ازحدود ۹۵۰۰ کلمه و یا حداکثر ۱۵ صفحهٔ چاپی به قطع نشریه بیشتر باشد (با در نظر گرفتن محل جداول، اشکال، خلاصه فارسی و فهرست منابع).

۴ . عنوان مقاله با در نظرگرفتن فواصل بین کلمات نباید از ۶۰ حرف تجاوز کند و با قلم Times New Roman14 سیاه تایپ شود.

۵ . نام نویسندهٔ مقاله با قلم سیاه Times New Roman10 عنوان علمی یا شغلی او با قلم Times New Roman10 در زیر عنوان مقاله ذکر شود. ضمناً آدرس الکترونیکی و شماره تلفن نویسندهٔ مسؤول در پاورقی آورده شود.

۶ . چکیدهٔ مقاله ساختاریافته با قلم نازک Times New Roman 11 به صورت تک ستونی باشد.

۷ . شکل‌ها و نمودارهای مقاله حتماً اصل و دارای کیفیت مطلوب باشد. فایل اصلی اشکال (تحت PDF، Word،Excel) و با دقت ۳۰۰ dpi ارائه شود. اندازهٔ قلم‌ها خصوصاً در مورد منحنی‌ها (legend) به گونه‌ای انتخاب شوند که پس از کوچک‌شدن مقیاس شکل برای چاپ نیز خوانا باشند.

۸ . ساختار مقاله شامل عناصر زیر است:

۸. ۱ صفحهٔ عنوان: در صفحهٔ شناسنامه باید عنوان مقاله، نام و نام خانوادگی نویسنده (نویسندگان)، درجهٔ علمی، نشانی دقیق (کد پستی، تلفن، دورنگار و پست الکترونیکی)، محل انجام پژوهش، مسؤول مقاله و تاریخ ارسال) درج شود. عهده‌دار مکاتبات باید با علامت ستاره مشخص شود.

۸. ۲ چکیده: شامل چکیده‌های فارسی ساختار یافته (شامل هدف؛ روش؛ یافته‌ها؛ محدودیت‌ها؛ راهکارهای عملی؛ اصالت و ارزش و واژگان کلیدی (۳ تا ۶ کلمه)) است. تا حد امکان چکیدهٔ مقاله از ۳۰۰ کلمه تجاوز نکند . علاوه بر چکیده ساختار یافته، لازم است چکیدهٔ مبسوط فارسی بین ۷۵۰ تا ۱۰۰۰ کلمه نیز حاوی مقدمه، مبانی نظری، روش، نتایج و بحث، نتیجه‌گیری و کلیدواژه‌های مقاله تهیه شود، به طوری که حاوی اطلاعاتی از کل مقاله باشد و بتوان جداگانه آن را چاپ کرد. با توجه به این که مقاله بعدا به صورت کامل به انگلیسی برگردانده خواهد شد، نیازی به ترجمه چکیده مبسوط به انگلیسی نیست.

۸. ۳ مقدمه: شامل ۱-طرح مسئله؛ ۲-اهمیت و ضرورت؛ ۳-اهداف و سوالات اصلی تحقیق.

۸. ۴ ادبیات نظری تحقیق: شامل ۱- تعاریف و مفاهیم؛ ۲- دیدگاه‌ها و مبانی نظری؛ ۳- پیشینه نظری تحقیق و ... .

۸. ۵ روش‌شناسی تحقیق: در برگیرندهٔ ۱- محدوده و قلمرو پژوهش؛ ۲- روش تحقیق و مراحل آن (روش تحقیق، جامعهٔ آماری، روش نمونه‌گیری، حجم نمونه و روش تعیین آن، ابزار گردآوری داده‌ها و اعتبارسنجی آن‌ها)؛ ۳- سؤال‌ها و فرضیه‌ها؛ ۴- معرفی متغیرها و شاخص‌ها؛ ۵- کاربرد روش‌ها و فنون.

۸. ۶ یافته‌های تحقیق: ارائهٔ نتایج دقیق یافته‌های مهم با رعایت اصول علمی و با استفاده از جداول و نمودارهای لازم.

۸. ۷ بحث و نتیجه‌گیری: شامل آثار و اهمیت یافته‌های پژوهش و یافته‌های پژوهش‌های مشابه دیگر با تأکید بر مغایرت‌ها و علل آن، توضیح قابلیت تعمیم‌پذیری و کاربرد علمی یافته‌ها و ارائهٔ رهنمودهای لازم برای ادامهٔ پژوهش در ارتباط با موضوع، نتیجه‌گیری و توصیه‌ها و پیشنهادهای احتمالی.

۸. ۸ تشکر و قدردانی: قبل از منابع مورد استفاده ارائه شود و از ذکر عناوین دکتر و مهندس خودداری شود.

۹. نحوهٔ ارجاعات: منابع و مآخذ باید به صورت درون‌متنی و همچنین در پایان مقاله ذکر شود.

۹. ۱ ارجاعات در متن مقاله باید به شیوهٔ داخل پرانتز (APA) نسخه ۶ باشد؛ به گونه‌ای که ابتدا نام مؤلف یا مؤلفان، سال انتشار و صفحه ذکر شود. شایان ذکر است که ارجاع به کارهای چاپ شده فقط به زبان فارسی بوده و در اسامی لاتین معادل آن در زیر نویس همان صفحه ارائه شود. به عنوان نمونه: (شکوئی، ۱۳۸۷، ص. ۵۰) یا (وودز، ۲۰۰۵، ص. ۲۷).

۹. ۲ در پایان مقاله، منابع مورد استفاده در متن مقاله، به ترتیب الفبایِ نام خانوادگی نویسنده بر اساس الگوی فهرست نویسی APA تنظیم گردد.

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بسم الله الرحمن الرحيم

دانشکده ادبیات و علوم انسانی

مجلّهٔ پژوهش و برنامه‌ریزی روستایی

سال دهم، شمارهٔ ۲، بهار ۱۴۰۰، شمارهٔ پیاپی ۳۳

صاحب امتیاز: دانشگاه فردوسی مشهد
مدیر مسئول: دکتر حمید شایان
سردبیر: دکتر علی‌اکبر عنابستانی

دستیار سردبیر: مهدی جوانشیری
مدیر اجرایی: زهرا بنی‌اسد
ویراستار انگلیسی: مرکز ویراستاری ادبیات
حروف‌نگاری و صفحه‌آرایی : الهه تجویدی
شمارگان: ۵۰ نسخه

نشانی: مشهد، دانشگاه فردوسی مشهد، دانشکدهٔ ادبیّات و علوم انسانی دکتر علی شریعتی، کد پستی ۹۱۷۷۹۴۸۸۸۳ ، نمابر: ۳۸۷۹۶۸۴۰ (۰۵۱)
بها: داخل کشور: ۲۰۰۰۰۰ ریال (تک‌شماره) خارج کشور: ۲۵ دلار (آمریکا- سالانه)، ۲۰ دلار (سایر کشورها- سالانه)
درگاه الکترونیکی: http://jrrp.um.ac.ir/ E-mail:Rplanning@um.ac.ir

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این مجلّه در پایگاه های زیر نمایه می‌شود:

- **پایگاه استنادی علوم جهان اسلام (ISC)**
- **پایگاه اطلاعات علمی جهاد دانشگاهی (SID)**
- **پایگاه بانک اطلاعات نشریات کشور (Magiran)**
- **فهرست دسترسی آزاد مجلات (Doaj)**
- **Index Copernicus- RICeST- ISI-Noormags- Googlescholar- Civilica- Oaji**

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مجله پژوهش و برنامه ریزی روستایی

سال دهم، شماره ۲، بهار ۱۴۰۰، شماره پیاپی ۳۳

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