Research Paper: The Impact of Rural Production Cooperatives on Sustainable Rural Development: A Case of Kashan's Rural Production Cooperatives

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ABSTRACT

Purpose: This study aims to investigate the impact of rural production cooperatives on improving the land use system and its environmental, social and economic consequences on sustainable local development in Kashan, Iran.

Methods: This is an applied, descriptive-analytical study. The field and survey methods and the questionnaire were used for data collection. The statistical population consisted of 2761 farmers and exploiters who were members of rural production cooperatives in 10 villages and three cities in Kashan, of whom, 340 people were randomly selected as the sample size by Cochran's formula.

Results: Results showed a significant relationship between the formation of the rural production cooperatives in Kashan and the sustainability of agricultural land use, increase in agricultural production and increase in income of exploiters of rural production cooperatives (Sig = 0.05).

Conclusion: The article revealed that rural production cooperatives should be regarded as an efficient exploitation system affecting sustainable rural development.

1. Introduction

Nowadays, the effective role of the cooperatives in the rural development has been much taken into account by the governments and policy-makers. Consequently, cooperation and cooperative systems are mainly considered in high-level governmental documents such as the constitution and the document of 20 years Vision of the Islamic Republic of Iran and five-year development plans. As Article 44 of the Constitution states, the economy of the Islamic Republic of Iran consists of three sectors: public, cooperative and private, based on regular proper planning (Nasimi, 2001). Cooperatives are recognized as a dynamic platform for sustainable rural development, empowerment, identification and endogenous development, relying on

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the involvement of the local community (Jomehpour & Talebi, 2012), pursuing multi-dimensional economic, social, productive and ecological goals, not focusing on their short-term interests, reducing inequality and injustice, and fairly promoting sustainable development (Taherkhani & Heidari Sareban, 2014). Moreover, rural cooperatives contribute to the extensive involvement of the rural people to develop the rural areas (Sedighi & Darvishinia, 2002).

According to Article 5 of their statute and by modifying the structure of the agriculture exploitation system, Rural Production Cooperatives (RPCs) as an exploitation system play a significant role in the promotion of the productivity of production factors, optimal allocation and utilization of resources, increased quantity and quality of the crops (agricultural, horticultural, livestock, forests, pastures and aquatic animals, and the like), the realization of sustainable agriculture, environmental protection, improvement of the standard of living, promotion of the economic potentials of members and sustainable rural development (Office of Exploitation Systems, 2018).

Given the role of the productive cooperatives and the necessity for improving and developing the agricultural activities in Iran, it is of great importance to deal with the impact of production cooperatives on rural development. Considering the challenges in public and the private sectors, RPCs can play an influential role in agricultural and rural development. Hence, the present study seeks to investigate the impact of production cooperatives on rural development.

According to the available statistics, by the end of March 2020, there were 1437 operating RPCs in Iran in 6413 villages, with 419234 members and 3386168 haectares of agricultural lands.

Isfahan province has 55 RPCs with 16870 members in 103 villages and 14 cities as 102646 ha (101189 ha irrigated and 1457 ha rainfed). Thus, nearly 4% of the total RPCs and 3% of the total lands of the members are located in Isfahan. In other words, Isfahan is the eighth province in terms of the number of cooperatives and the seventh in terms of the number of members (Central Organization of Rural Cooperatives of Iran, 2020). Furthermore, the geographical location of Isfahan and its centrality, the formation of these cooperatives before and after the Islamic Revolution of Iran, dormant, low, medium or high-level RPCs, climatic diversity and lack of research on RPCs show the significance of the present study.

Kashan has four RPCs. Golestane Sedeh and Kosar Nab Barzok cooperatives are located in Barzok District, Kosar Meshkat cooperative is located in the central part and Kabir Kamo cooperative is located in Qamsar District. There were 2761 active farmers as the members from 1990 to 2014.

This study mainly aims to investigate the extent to which cooperatives achieve their goals and identify the effects of the performance of RPCs on sustainable rural development in the research area. Therefore, it explores how RPCs in Kashan may increase agricultural production and improve the sustainability of agricultural land use. Accordingly, this study seeks to answer the following questions:

1. To what extent have the RPCs of Kashan increased the agricultural production of the members of the cooperatives?

2. To what extent have the RPCs of Kashan increased the income of the members of the cooperatives?

3. To what extent have the RPCs of Kashan been effective in the sustainability of agricultural land use?

4. To what extent have the RPCs of Kashan been effective in the preservation of the stability of rural settlements in the region?

Many studies have been carried out on cooperatives' position, performance, and impact and impact on agricultural production and farmers. In Iran, early studies on RPCs date back to the 1970s. Here a list of domestic and foreign relevant literature is reviewed.

Rouhani (1999) revealed that RPCs have failed to consolidate lands, change the exploitation system and conduct group activities in Hamedan. However, they have been relatively successful in developing development of the mechanization, the improvement of irrigation methods, the increase of productivity, and the improvement of exploitation methods.

Pezeshki Rad and Kiani Mehr. (2001), carried out a study on wheat farmers in Sabzevar and concluded that there was a significant positive relationship between improvement of technical variables, including knowledge level and optimal use of new inputs, production performance per unit, increase in efficiency and access to inputs and facilities as well as \ RPC membership.

Sedighi and Darvishinia. (2002), demonstrated that cooperative farmers' performance and economic position in Mazandaran improved, thereby improving the villagers' involvement in group activities.

Safari Shali. (2002), in a study on RPCs in Iran, reported that cooperatives play a significant role in integrated and coordinated cultivation. They prevent land fragmentation, reduce production costs, increase production, farmers' incomes, irrigation efficiency and the level of mechanization, provision of converting and complementary industries and prevention of rural migration, encouragement of farmers to engage in group work and observation of social justice.

Taherkhani and Heidari Sareban. (2004), investigated the role of RPCs in rural development in Meshkinshahr. They realized that RPC membership effectively creates employment, increases the villagers' income, and improves the development of rural areas.

Shateri et al. (2012), conducted a study entitled The economic impacts of agricultural production cooperatives on rural households in Birjand and concluded that indicators such as income, savings, employment and welfare of families of agrarian production cooperatives had been increased compared to the past.

Bozarjomehri and Hadizadeh Bazaz. (2013), investigated factors affecting the development of RPCs in three intra-organizational, extra-organizational, and structural dimensions from the experts' viewpoint. They concluded that the performance of cooperatives was poor.

Mirzaei et al. (2015), performed a study on Boyer-Ahmad city. They indicated that the structures of satisfaction with the services offered by the cooperatives, the responsibility of the board of directors, members' knowledge and awareness of the principles and rules of the cooperative, the social capital of the board of directors and members' attitudes towards cooperation and group work determine the farmers' involvement in production cooperatives.

Ahmadpour and Momeni Helali. (2016), carried out a study in Sari and found that in cooperatives, experienced members show higher and more positive performance in terms of sustainable agriculture practices.

Balali et al. (2017), reported the factors affecting the success of cooperatives in Savadkuh, including internal factors (members' satisfaction, members' empathy and trust, members' participation), external factors (banks' payment sources, active reginal rural cooperative union, proper infrastructure and so on), and structural factors (cooperation culture and involvement in the RPC, supervision and control of competent authorities in the cooperative).

Imani and Valadbeigi. (2019), analyzed the factors affecting the success of rural cooperatives using a balanced evaluation model (a case study of Piraghom RPCs in Ardabil city). They realized that finance, customer, internal process, growth and learning were influential in the RPCs' performance.

Abdel-Seed Mohamed (2004), investigated the low organizational effectiveness in agricultural development and low income of farmers in Menofia, Egypt. Ruben and Lerman (2005), analyzed the efficiency of production systems. the level of income and the spirit of involvement and cooperation of members in Nicaragua.

Uche et al. (2010), reported members' sense of belonging to the cooperative, members' trust in cooperative management, members' participation in decisions, and cooperative membership are the most important achievements of forming cooperatives.

Garnevska et al. (2011), dealt with the sustainable legal setting, government financial and technical support, farmers' understanding and involvement in cooperative activities in northwestern China.

Mau Dung. (2011), reported that members' satisfaction with agricultural activity and maintaining agricultural jobs in Bac Ninh Province in Vietnam were effective in the cooperatives' success.

MacDonald and Rowarth. (2013), stated that product marketing, value chain management, job creation, and entrepreneurship play a significant role in the cooperatives' success.

De Alessi et al. (2014), investigated the cooperatives' structural and functional changes, notably the involvement level of members in Alaska and the west coasts of the United States.

Yuliandoa et al. (2015), analyzed members' access to market information, increased production, membership and involvement in Indonesia.

Mhembwe and Dube. (2017), reported an increase in agricultural products, income, cooperation and spirit of

involvement as the achievements of the formation of co-operatives in Zimbabwe's Shurugwi.

A review of relevant literature demonstrated that significant research had been carried out on the effects and consequences of RPCs at the national and international levels, However, no study has evaluated the status of RPCs in Kashan since its formation.

According to the previous studies, several variables were considered, such as the increase in agricultural production, increase in rural incomes, prevention of rural migration, and creation of a sustainable environment in rural areas for the present study.

2. Literature Review

The sustainable development strategy mainly aims to provide sustainable livelihoods for all people. This strategy emphasizes the sustainable reduction of poverty, job creation and finally, social integration through people's involvement in all stages of the development and empowerment process (Jomepour, 2015). Sustainable development improves the long-term health of people and ecological systems (Wheeler, 2014). Hence, sustainable development is a modern directed and modified process of social, cultural and political development along with economic development, industrialization and (especially sustainable) agricultural development by concurrent and integrated preservation of human development and the environment, reducing poverty, eradicating hunger, inequality of power through the empowerment of the people and the spread of democracy as well as involvement (Zahedi, 2013). Correspondingly, sustainable rural development is an integrated solution covering efficiency, justice and sustainability, so that efficiency ensures the optimal use of natural resources. Justice alleviates poverty and reduces the gap between the rich and poor, and sustainability refers to sustainable livelihoods by preserving future livelihoods through the conservation of natural resources (Brouwer, 2004). By definition, cooperatives are classified into two categories: voluntary and non-governmental organizations. Indeed, cooperatives are non-governmental organizations that are established by their members with latitude and are managed properly and democratically based on the international principles of cooperation (Valkila & Nygren, 2010). A cooperative is neither capitalist nor socialist, but an organization that impartially satisfies various goals and serves economic systems (Taleb, 2005). An RPC is a kind of agricultural exploitation system based on collective involvement or group work that landowners establish by maintaining individual ownership. According to the Law on Cooperative Production and Land Integration approved in 1970 and amended by the Islamic Consultative Assembly in 2014 to exploit water and soil resources, increase the villagers' production and income and achieve other goals permitted in the relevant law (Office of Exploitation Systems, 2016).

The proposed conceptual model of the present study is shown in Figure 1.

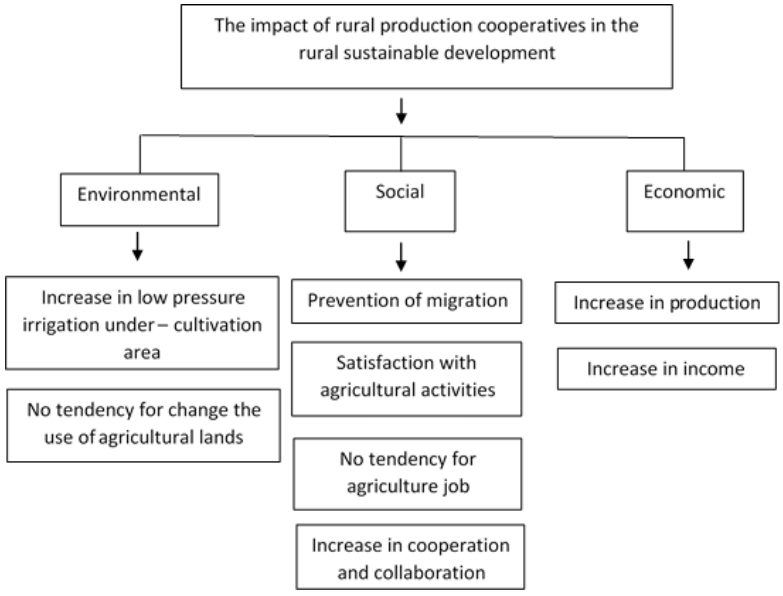

Figure 1. Proposed conceptual model

3. Methodology

This is an applied, descriptive-analytical study. The field and survey methods and the questionnaire were used for data collection. The statistical population consisted of 2761 farmers and exploiters who were members of RPCs in 10 villages and three cities in Kashan. Three hundred forty people were randomly selected as the sample size by Cochran's formula and based on the ratio of member exploiters in each village to the total number of cooperative members systematically, as shown in Table 1.

Members of RPCs of Kashan randomly completed 30 questionnaires in a preliminary test To measure the reliability of the measuring instrument. Cronbach's alpha determined the reliability of the questionnaire as 0.89, which is acceptable.

The quantitative method was used to analyze the data and findings of the questionnaire. Comparative methods (before and after the formation of the cooperatives in the region) and differences and distinctions were used for the qualitative analysis. For the quantitate analysis, frequency distribution table, measures of central tendency, the measure of dispersion (standard deviation), Wilcoxon signed-rank test, and SPSS software were used.

The geographical location of the understudied area:

Kashan was selected for the aim of this study. It has seven cities (Kashan, Meshkat, Niasar, Barzok, Ghamsar, Joshaghan Ghali and Kamo),and 84 villages. According to the 2016 census, the population of Kashan was 364482, of whom 327243 (90%) live in cities and 37236 (10%) live in villages (Isfahan Management and Planning Organization, 2017: 33). The geographical map of Isfahan province, cities and villages is shown in Figure 2.

Table 1. Statistical population and sample size

No.	RPC	Year of establishment	Number of members (exploiters)	Sample size
1	Golestane Sedeh	1990	1485	183
2	Kosar Meshkat	2008	479	59
3	Kosar Nabe Barzok	2010	520	64
4	Kabir Kamo	2014	277	34
	Total		2761	340

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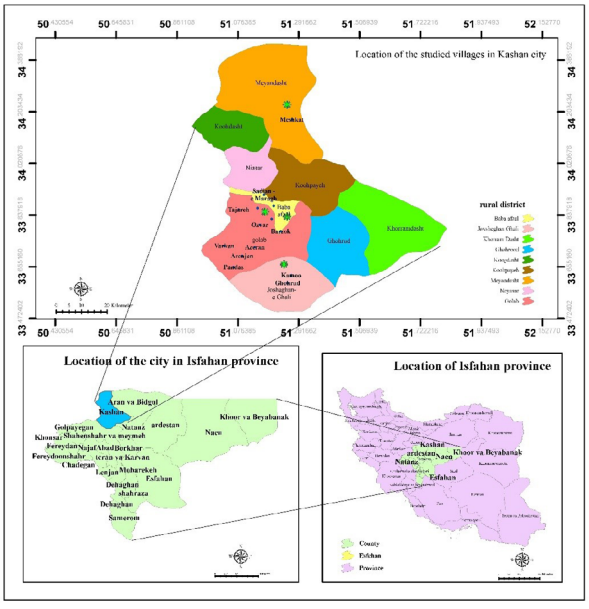

Figure 2. Geographical map of the understudied area

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4. Findings

Age and marital status of RPCs' members: analysis of the age (distribution) composition of RPCs' members showed that the highest frequency is observed in the age group of 40-49 years old (middle-aged group) with 41%. The lowest frequency is observed in the age group of 20-29 years old with 5%. In addition, 93% of the sample were married, 4% were single, and 3% did not answer this question.

Literacy and education level of members: the results showed that 147 people (43%) had primary education, 63 (18%) had secondary education, 47 (14%) had diplomas, and 42 (13%) were higher diplomas.

History of membership and exploitation of cooperative production services: As shown in Table 2, the highest record of membership based on the classification is nine years and higher than (50%) the lowest record is1 to 2 years with 11%.

As shown in Figure 3, the ratio of the number of RPCs' members to total rural households in each region indicates that the number of cooperative families varies from 94% (highest) in Viduj village (centre of Golestane Sedeh rural cooperative) to 5% (lowest) in Pendas village.

Increase in low-pressure irrigation under – cultivation area: Traditional and flooded irrigation of rural agricultural lands was common before the establishing of the cooperative,. However, after forming the cooperative, low pressure and pressurized irrigation systems were used. As shown in Figure 4, Kamo city had the maximum level below low-pressure irrigation cultivation from 210 ha (100% of cooperative members' lands) to 4 ha (lowest) in Arenjen village. Pendas, Varkan, Naber and Meshkat villages do not benefit from the low-pressure irrigation system. low-pressure irrigation is used for the total under cultivation area of Kosar Nabe Barzok cooperative members. Due to the presence of solutes in the agricultural water of the under studied area, it is not possible to use a pressurized irrigation system and inevitably, a low-pressure irrigation system was used. This system directs water from the primary source using a pipe to the soil surface.

Table 2. Frequency distribution of membership history in cooperatives

No.	membership history (year)	frequency (person)	relative percentage
1	1-2	37	11
2	3-5	66	19
3	6-8	61	18
4	9 years and higher	170	50
5	No response	6	2
	Total	340	100

Source: Research findings

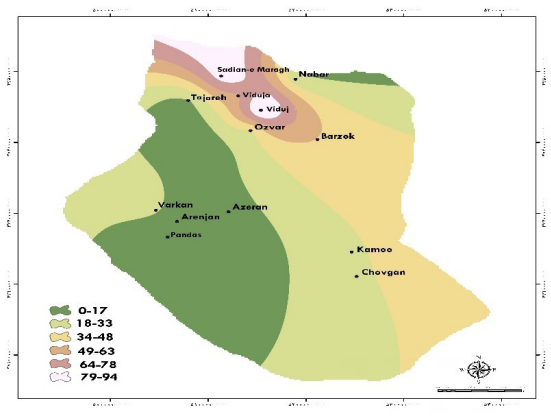

Figure 3. Map of the ratio of the number of cooperative members to the total number of rural households in each region in Kashan (%)

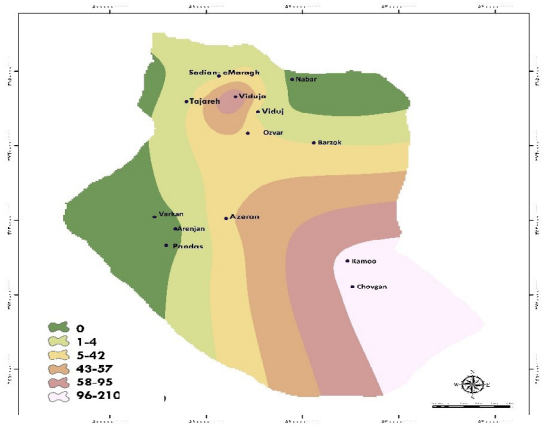

Figure 4. A map of low-pressure irrigation under cultivation area of RPCs in Kashan (ha)

Increase in crop production: As shown in Table 3, before establishing RPCs, crop production of 64% of villagers was less than 2 tons/ha and 33% of them was higher than 2 tons/ha, and after the establishment of RPCs, crop production of 37% of members was less than 2 tons/ha and the production of 60% of them was higher than 2 tons/ha. The average crop production increased from 1.4 tons/ha before the establishing the RPCs to 2.6 tons/ha after the establishment. In other words, 1.2 tons/ha. Therefore, crop production has increased after establishing rural production (RPCs) due to soil and water management, the use of low pressure and pressurized irrigation, and the land integration and timely distribution of fertilizers and poisons by RPCs.

Increase in the production of horticultural crops: As shown in Table 4, the production of horticultural crops of 52% of the villagers was less than 3 tons/ha before the establishment of the RPC, and 24% of them was more than 3 tons/ha, while after the establishment of the RPC and membership of villagers, the garden production of 30% of the members was less than 3 tons and 67% of them was more than 3 tons. The average production of horticultural crops has increased from 2.3 tons/ha before establishing the RPC to 3.8 tons/ha after the establishment of the RPC. Therefore, the production of horticultural crops after the formation of RPCs has increased by 1.5 tons/ha.

The average monthly income of farmers from agricultural activities (before and after membership in the production RPC): Table 5 shows that before the formation of the RPC, the monthly income of 65% of villagers was less than 30 million Rials, and the income of 31% was higher. By establishing the RPC, 27% of the members had an income of fewer than 30 million Rials, and 69% had a revenue of more than 30 million Rials. The average monthly income of the villagers before the establishment of the RPC was 28 million Rials, and after the formation of the RPC, it was 39 million Rials. Consequently, the RPC has increased the members' income by increasing production due to soil and water management and low-pressure and pressurized irrigation.

Table 3. Production rate (before and after the establishment of RPCs)

No.	Before the establishment of cooperatives			After the establishment of cooperatives		
	Increase in crops (tons/ha)	Frequency	Relative percentage	Increase in crops (tons/ha)	Frequency	Relative percentage
1	< 1	49	14	< 1	13	4
2	1-2	169	50	1-2	113	33
3	2-3	99	29	2-3	174	51
4	>3	12	4	>3	31	9
5	No response	11	3	No response	9	3
	Total	340	100	-	340	100

Source: Research findings

JSRD

Table 4. Production rate of horticultural crops (before and after the establishment of RPCs)

No.	Before the establishment of cooperatives			After the establishment of cooperatives		
	Increase in horticultural crops (tons/ha)	Frequency	Relative percentage	Increase in horticultural crops (tons/ha)	Frequency	Relative percentage
1	< 1	49	9	< 1	16	5
2	2-3	174	43	2-3	86	25
3	3-4	85	21	3-4	153	45
4	>4	19	3	>4	75	22
5	No response	13	24	No response	10	3
	Total	340	100	-	340	100

Source: Research findings

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Table 5. Average monthly income of RPC members from agricultural activities (before and after the establishment of RPCs)

No.	Before the establishment of cooperatives			After the establishment of cooperatives		
	Income level (million Rials)	Frequency	Relative percentage	Income level (million Rials)	Frequency	Relative percentage
1	<10	69	20	<10	17	5
2	10-30	152	45	10-30	74	22
3	30-40	76	22	30-40	157	46>40
4	>40	29	9	>40	77	23
5	No response	14	4	No response	15	4
	Total	340	100	-	340	100

Source: Research findings

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Members' tendency to change agricultural lands into non-agricultural lands: As shown in Table 6, after establishing the RPC members' tendency to change the use of agricultural lands into non-agricultural lands has decreased.

Based on the findings in Table 6, the tendency of member farmers to change the use of agricultural lands to non-agricultural has decreased after the formation of RPCs. Before establishing the RPC, 14% of the villagers had a low and very low tendency, and 60% had a high or very high tendency to change their land use. At the same time, after establishing the RPC, this ratio decreased to 50%, very little and little, and 19% high and very high, indicating an increase in the farmers' tendency for involvement in agricultural activities on their lands.

The tendency of families to live in the village before and after the establishment of RPCs: As shown in Table 7, the tendency of the sample members to stay in the village and focus on agriculture jobs after the establishment of RPCs increased and vice versa the tendency for migration among them decreased, so that the tendency of villagers to migrate before the establishment of RPCs decreased from 20% as very low and low, 34% as high and very high to 45% and 17% after the establishment of RPCs, indicating the tendency of farmers to stay in rural settlements.

Level of members' satisfaction with agricultural activities: Table 8 shows that after the formation of RPCs, 31% of members showed high and very high level of satisfaction with agricultural activities, compared to 13% before the formation of RPCs, indicating an increase in the level of satisfaction with agricultural activities and the importance of farm activities among the cooperatives' members.

Table 6. Frequency distribution of RPC members' tendency to change the use of agricultural lands (before and after the establishment of RPCs)

No.	Before the establishment of cooperatives			After the establishment of cooperatives		
	tendency to change the use of agricultural lands	Frequency	Relative percentage	tendency to change the use of agricultural lands	Frequency	Relative percentage
1	Very low	27	8	Very low	51	15
2	Low	19	6	Low	119	35
3	Medium	71	21	Medium	87	26
4	High	157	46	High	53	15
5	Very high	49	14	Very high	13	4
6	No response	17	5	No response	17	5
	Total	340	100	-	340	100

Source: Research findings

JSRD

Table 8. Frequency distribution of members' level of satisfaction with agricultural activities (before and after the establishment of RPCs)

No.	Before the establishment of cooperatives			After the establishment of cooperatives		
	Satisfaction with agricultural activities	Frequency	Relative percentage	Satisfaction with agricultural activities	Frequency	Relative percentage
1	Very low	49	14	Very low	22	6
2	Low	95	28	Low	30	9
3	Medium	138	41	Medium	173	51
4	High	25	7	High	77	23
5	Very high	19	6	Very high	29	8
6	No response	14	4	No response	9	3
	Total	340	100	-	340	100

Source: Research findings

JSRD

The level of members' tendency to change agricultural jobs: As shown in Table 9, 17% of villagers before membership had a very low to low, and 33% had a very high to very high tendency to change agricultural jobs; this ratio changed from 34% to very low and 19% to very high after membership. The results showed that after membership, the members' tendency to change agricultural jobs decreased and their motivation to focus on agrarian jobs increased more than before. The high average villagers' tendency to change agricultural jobs before and after membership results from structural problems in the farming sector, such as the high risk of investing in this sector compared to industry, oil and services. Government policies, climatic conditions, increase in prices of agricultural inputs, brokers and intermediaries, and corruption of agricultural products are among the factors that increase the agricultural sector's risk and, consequently, farmers' tendency to change their agricultural jobs.

Level of cooperation and involvement among the villagers: The level of cooperation and participation among the villagers before and after the establishment is shown in Table 10. It is low to very low before establishing the RPC as 37% to 20% after establishing the RPC. In other words, the number of people with a low and very low tendency for cooperation has been decreased. In addition, the level of tendency for moderate to very high cooperation has increased from 58% before the establishment of the RPC to 75% after the establishment of the cooperative, indicating the growth of the spirit of cooperation and involvement in agricultural activities among RPC' members after the establishment of the RPC.

Analytical findings

H1: There is a significant relationship between the formation of RPCs in Kashan and the increase in agricultural production of members of RPCs.

Table 9. Frequency distribution of members' tendency to change agricultural jobs (before and after the establishment of RPCs)

No.	Before the establishment of cooperatives			After the establishment of cooperatives		
	tendency to change agricultural jobs	Frequency	Relative percentage	tendency to change agricultural jobs	Frequency	Relative percentage
1	Very low	21	6	Very low	50	15
2	Low	36	11	Low	65	19
3	Medium	158	46	Medium	144	42
4	High	97	29	High	56	16
5	Very high	15	4	Very high	9	3
6	No response	13	4	No response	16	5
	Total	340	100	-	340	100

Source: Research findings

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Table 10. Frequency distribution of cooperation and involvement among villagers (before and after the establishment of RPCs)

No.	Before the establishment of cooperatives			After the establishment of cooperatives		
	Level of cooperation and involvement	Frequency	Relative percentage	Level of cooperation and involvement	Frequency	Relative percentage
1	Very low	59	17	Very low	40	12
2	Low	68	20	Low	26	8
3	Medium	142	42	Medium	181	53
4	High	34	10	High	45	13
5	Very high	21	6	Very high	30	9
6	No response	16	5	No response	18	5
	Total	340	100	-	340	100

Source: Research findings

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H1: α 0.05

H2: There is a significant relationship between the formation of RPCs in Kashan and the increase in income of members of RPCs.

H2: α 0.05

H3: There is a significant relationship between the formation of RPCs in Kashan and the sustainability of agricultural land use.

H4: There is a significant relationship between the formation of RPCs in Kashan and the preservation and sustainability of rural settlements.

The results of Wilcoxon signed-rank tests in Table 11 showed that the significance level (α) is less than 0.05,It indicate a significant relationship between the establishment of RPCs in Kashan and increase in agricultural production, rise of income, preventing migration, satisfaction with agricultural activities, no tendency to change agricultural jobs, increase in cooperation and involvement, increase in the low pressure irrigation under cultivation area and no tendency to change the use of agricultural lands and the members of RPCs.

As shown in Table 12, the Pearson correlation results revealed a significant relationship between economic, social, environmental variables and sustainable development of rural areas of Kashan.

Table 11. Results of Wilcoxon test

Components	Variable 1	Variable 2	Ratio Z	Sig (α)
Economic	Establishment of RPCs in Kashan	Increase in income	- 7.886	0.000
		Increase in agricultural production	- 7.241	0.000
Social		Preventing migration	- 5.305	0.003
		Satisfaction with agricultural activities	- 6. 704	0.000
		No tendency to change agricultural jobs	- 5. 548	0.003
		Increase cooperation and collaboration	- 7.602	0.000
environmental		low pressure irrigation under cultivation area	- 6.207	0.001
		No tendency to change their land use	-5.806	0.000

At a significant level with a coefficient of 0.99 α <0.01

At a significant level with a coefficient of 0.95 0.01

No significance <0.05

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Table 12. Correlation coefficient results

Independent variable	Dependent variable	Correlation coefficient	Sig	P value
environmental	Sustainable development of rural areas of Kashan	Pearson	.000	0.661*
Social			.001	0.631**
Economic			.000	0.804**

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According to the results of multiple stepwise regression in Table 13, three economic, environmental and social variables were inserted into the regression equation, respectively.

As shown in Table 13, economic, environmental and social factors were inserted into the equation. The economic factor alone with 64%, then, the environmental factor, economic and environmental factor with 67% had the most significant impact and, finally with inserting the social aspect, the three economic, ecological and social variables led to 71% of the dependent variable changes.

5. Discussion

RPCs are considered one of the common types of exploitation systems in the agricultural sector, which affect the economic, social, cultural, physical and environmental dimensions of rural communities.

This comparative study dealt with the dependent variables before and after the establishment of RPCs. The results showed that the establishment of RPCs, in the economic aspect, increased the agricultural production and, consequently, income. In terms of social dimensions, prevented migration, preserved rural settlements, increased members 'satisfaction with agricultural activities and farmers' reluctance to change agriculture jobs, and increased the spirit of cooperation and involvement among RPCs' members. Ecologically, they increased the low-pressure irrigation under cultivation areas, and the farmers' reluctance to change the use of agricultural lands to non-agricultural and as a result, the sustainability of agricultural land use. The results also revealed that RPCs have been effective in achieving the sustainable development of rural areas of this city due to their structure.

The results of this study are consistent with those of Pezeshki Rad and Kiani Mehr (2001), Sediqi and Darvishinia (2002), Taherkhani and Heidari (2004), Bozarjomehri and Hadizadeh Bazaz (2013), Imani and Valdebeigi (2019), Ruben and Lerman (2005), MacDonald and Rowarth (2013) and Safari Shali (2002), Mhembwe and Dube (2017) in terms of increase in the income of RPCs ' members and are not consistent with those of Abdel-Seed Mohamed (2004). In terms of increase in agricultural production (agricultural and horticultural), the results of the present study are consistent with those of Pezeshki Rad and Kiani Mehr (2001), Safari Shali (2002), Yuliandoa et al. (2015) and Mhembwe and Dube (2017). In terms of the level of members' satisfaction with agricultural activities and maintaining agrarian jobs, the results of this study were consistent with the results of Ahmadpour and Momeni Helali (2016) and Mau Dung (2011). In terms of the spirit of cooperation and collaboration, and involvement, the results of the present study were consistent with those of Safari Shali (2002), Mirzaei et al. (2015), Balali et al. (2015), Ruben and Lerman (2005), Uche et al. (2010), Garnevska et al. (2011), De Alessi et al. (2014), Yuliandoa et al. (2015) and Mhembwe and Dube (2017) and were not consistent with Rouhani (1999) and Bozarjomehri and Hadizadeh Bazaz (2013). In terms of stability of the rural settlements and preventing migration, the result of this study was consistent with the study by Safari Shali (2002).

Table 13. Different stages of inserting the independent variables on the dependent variable

Stages	Variables	R	R square	Adj R square	F	Sig
1	Economic factor	0.804	0.647	0.646	594.41	0.001
2	Environmental factor	0.823	0.677	0.675	338.4	0.000
3	Social factor	0.845	0.714	0.712	268.53	0.003

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Generally speaking, RPCs should be considered an efficient and effective exploitation system in the sustainable development of rural areas.A cooperative institution with components of sustainable development, such as actual participation of actors, involvement of the local community, use of endogenous and self-reliant development approach, creating a sense of belonging, identity and cooperation among the local community, using indigenous knowledge and finally creating a sense of equality in society may be considered as a satisfactory model for rural development. At the same time, by strengthening this institution via improvement of the management level, the expansion of its field of activity and diversification of its functions by completing the product production process and value chain, its positive impact can be promoted. Finally, moving towards an efficient cooperative system is an inevitable necessity for endogenous and self-reliant development.

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Conflict of Interest

The authors declared no conflicts of interest.

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