Journal of Research and Rural Planning
Volume 12, No. 4, Autumn 2023, Serial No. 43, Pp. 57-78
eISSN: 2783-2007 **ISSN: 2783-2791**
http://jrrp.um.ac.ir

Original Article

Consequences of Creative Agriculture and its Role in the Development of Rural Areas of Roshtkhar County

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Abstract

Purpose- Supporting and stimulating agricultural development has a decisive role in rural development and is considered the main basis of rural development. Therefore, the agricultural sector and rural areas in Iran are still far from the real potentials for development. Therefore, this study aimed at the consequences of creative agriculture and its role in the development of rural areas of Roshtkhar County in Razavi Khorasan province.

Design/methodology/approach-This research was an applied one, conducted with descriptive-correlation and causal-relational methods. The statistical population of the research consists of all heads of rural households (21,785) in Roshtkhar County, using the Cochran formula, 377 farmers from the heads of households were selected as a sample. The main tools of the research were researcher-made questionnaire, field observations and library studies. Then, the questionnaires were distributed in 20 villages of the study area. SPSS software and structural equation modeling approach were employed to analyze the data.

Findings: The results of the fitted model showed that creative agriculture had the greatest effects on economic (0.405) and social (0.370) variables. The results of investigating the status of creative agriculture in the study area showed that more than 60% of rural farmer households stated that creative agriculture has been able to play a significant role in rural development.

Limitations/Strategies: The dispersion of the studied villages to fill out the questionnaire depending on the topic at the village level, the lack of awareness of some rural households towards conducting research projects in order to complete the questionnaire, and finally the costs of conducting this research are challenging of this study.

Practical solutions: Finally, according to the results, solutions such as the full implementation of modern irrigation systems, changing the cultivation pattern and using up-to-date machinery and tools in the agricultural sector can improve the results and the consequences of creative agriculture and its role in rural development in the villages and the implementation strategies of this solution are considered necessary.

Original/value- This study is significant as the recognition of different issues of creative agriculture at the regional level can help to take an important step in order to improve the condition of rural households in different dimensions (economic, social-cultural, institutional-managerial and physical).

Key words: Agriculture, Rural development, Creativity, Causal analysis, Roshtkhar County

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How to cite this article:
Izadi, A. & Tayebnia, S.H. (2023). Consequences of creative agriculture and its role in the development of rural areas of Roshtkhar County. *Journal of Research & Rural Planning*, *12*(4), 57-78.

http://dx.doi.org/10.22067/jrrp.v12i4.2307-1083

Date:
Received: 25-07-2023
Revised: 18-08-2023
Accepted: 25-09- 2023
Available Online: 01-11-2023

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1. Introduction

Nowadays, one of the most important concerns, particularly in developing countries, is to reach an acceptable level of development in different dimensions, and rural development is considered one of the primary and important dimensions of national development in any country (Mirlotfi et al., 2017).

Today, it is possible to analyze the current situation and future perspective of rural areas with regard to the agricultural landscape. Rural economy, as one of the most basic aspects of village existence, has long been associated with agriculture and agronomical and horticultural activities (Nouri Zamanabadi & Amini Faskhudi, 2007). In fact, the only way to escape dependence on oil revenues is to leave the single-product economy. Among export goods, the export of agricultural products is of paramount importance and currently includes a major part of non-oil exports (Dadres Moghadam, 2010). The agricultural sector is one of the most important sectors of the country's economy, so that more than a third of the gross national product, more than a quarter of employment, and approximately 87 percent of the country's food needs and nearly 36 percent of non-oil exports depend on this sector. Even in unfavorable economic conditions, this sector has shown prosperity and new capacities, which have remained somewhat unknown to many economists (Shakouri, 2005). Nonetheless, the emergence and continuation of various social, economic and environmental issues at the global level, including issues in the agricultural sector, affected by the failure of the market and growth-oriented development policies in the framework of the modernization theory, make it necessary to revise the development theories with an emphasis on re-adjusting the relationship between human and the environment and establish a favorable relationship between economy and ecology and in response, the theory of rural development as the dominant paradigm of development and accordingly agricultural development were proposed (Moteei Langroudi & Shamsai, 2008; Rezaei-Moghaddam et al. 2005; Naderi Mahdeie, 2007). The confrontation of agricultural development with several challenges such as providing food security and safety, employment and income profitability, technology development, etc. reveals the need to adopt an effective strategy to achieve this goal (Finland's EU Presidency, 2006; Sharif Zadeh et al. 2009; FAO, 1997). In this regard, the necessity of a structural transformation in the current agricultural sector in the direction of agricultural development based on being creative in the framework of agricultural development has been emphasized (European Commission, 2013).

The requirement for this is to change the role of farmers and the management system of the agricultural sector in a way that is able to change at the global level. Therefore, the agricultural sector and the farmers today should be able to recognize sustainable opportunities and create different economic, social and environmental values simultaneously. Thus, the only main actor of these changes is the farmers who, as the main actors in the process of transition to agricultural development, must be creative (McElwee, 2006).

As a result, in the current situation, creativity in the agricultural sector has been highlightrd as a key strategy which can respond to various challenges of agricultural development (OECD, 2008; Sharif Zadeh et al. 2009). Considering the natural disasters that have occurred in Iran, such as unprecedented droughts and frequent warming in recent years, the approach of agriculture at the country level should be changed to a new approach such as creative agriculture, which has been able to consider all aspects of agricultural sector in order to achieve sustainable agriculture (Afrakhteh et al., 2013).

Rural areas in Iran namely the rural areas of Roshtkhar county, has these types of natural disasters, and the experts of this matter should be aligned with the changes in the country. Roshtkhar County is surrounded by Torbat Heydarieh from the north and west, Khaf County from the east and southeast, and Gonabad County from the south. The study area (villages of Roshtkhar County) has 57 inhabited villages and 46,525 people, of which 20% of the population lives in the city and 80% lives in rural areas, most of whom are engaged in agriculture and animal husbandry. This area is one of the major areas in the field of horticultural and agricultural production (saffron, pistachio and wheat) in Razavi Khorasan province. Khorasan-Razavi province, having a vast production sector of

agricultural products, has the highest production efficiency in the country, and in the meantime, the area of Roshtkhar County has allocated nearly 60% of the production of the agricultural sector (Agricultural Jihad of Roshtkhar County, 2022). The agricultural products grown in this region have been able to play a significant role in the condition of rural households due to their large income generation. Therefore, the current research is designed to answer the following questions:

1- What are the most important effective factors in creative agriculture?

2- What is the relationship between creative agriculture and rural development?

2. Research Theoretical Literature

Development is of the concepts that has a close relationship with individuals' lives and is responsible for raising the standard of life by creating favorable and optimal conditions (Dadvar Khani, et al., 2013). Since a huge part of the population is in rural areas, rural development is an inevitable part of national development (Dadvar Khani, 2006). As a normative term, rural development has had difficulties in evaluation, measurement and diagnosis since long ago, and as a result, the rural economic, social and physical system has also become more diverse and complex with the passage of time (Long et al, 2011).

There are different views regarding the concept of rural development; according to the World Bank, rural development is a strategy designed to improve the economic and social life of a specific group of people-the rural poor. In this view, the rural poor include small-scale farmers, renters, and landless villagers (Moteei Langroudi, 2003).

If development is to occur in third world countries and be self-sustaining to some extent, it must start in rural areas. Basic issues such as widespread poverty, progressing inequality, excessive population growth and unemployment are all rooted in stagnation and the downward trend of economic life in rural areas (Todaro, 1965).

In the early 1990s, rural development was almost synonymous with agricultural development (Mirlotfi et al., 2017). Agriculture plays a major role in the economic and social development of most rural areas (Connolly Boutin & Smit, 2016) and is their biggest source of employment (Jun & Xiang, 2011). The majority of people in rural areas are directly or indirectly dependent on agriculture and related activities for their livelihood, and most planners, both at the local and national levels, emphasize the importance of agricultural development (Moshkbid et al., 2020). However, nowadays, due to the vast changes as well as climatic changes, the development of agriculture in different regions, especially in less developed countries, is facing major challenges. Therefore, creative agriculture should be taken into consideration. Warren (2004) define creativity in agriculture as an effort to diversify production and get rid of raw materials in the cycle of production and move towards production for the market, using the capacities of farms for job creation (Sepahpanah & Movahedi, 2015).

In most parts of the world, particularly in developing countries, due to the dominance of agricultural activity, farmers are the main players in the economy of their region (Sojasi Qeidari et al., 2011). As ordinary farmers, they often have a traditional and subsistence farming method which prevents innovation and creativity (Habbershon, 2006). Market changes, agricultural policies, environmental issues and employment are of significant factors that increasingly demonstrate creativity in agriculture (Khosravipour & Dehghanpour, 2015). Creative agriculture means the process of identifying opportunities, threats, strengths and weaknesses of the activity environment, including agriculture, with a special and new methodology and policy to create agricultural development and transformation. This development is associated with the presentation of new thinking, methods and measures to solve the current and former problems of agriculture, which is the result of cooperation between the main actors of agriculture (activists of the agricultural sector) and external actors (planners, managers and officials) as well as considering the global conditions and developments, new technology and rural culture and environmental limitations in line with achieving creative agriculture.

In general, such a process leads to the improvement of the economic situation of the villagers and especially the farmers. Therefore, creative agriculture is a new method in the agricultural sector to increase and create income and wealth, as well as create employment (Rokneddin Eftekhari et al., 2010). In this regard, the consequences of creative agriculture have

been divided into the following three categories in this study:

A- Economic (occupation and income, economic growth, accessibility, investment): Since creativity in the agricultural sector can be of high value, therefore, solving its challenges in the path of development shows a promising outcome for dynamics rural economy (FAO, 2008) and it can be considered as a good source of income for the poor and weak villagers of the rural society.

B- Social (participation, durability, educational facilities): In terms of social point, agriculture and cultivation pattern are determining factors in maintaining social cohesion, strengthening the social and cultural structure of the village, creating social networks for villagers and farmers, attracting facilities and services and finally are considered as the biggest and most important parameters for political, social and economic stability and security in the village (Mansouri, 2009). Social evolution is an evolution flowing from subsistence cultivation to commercial production of agricultural products, which includes specializing in the production of cash products, purchasing non-agricultural products in the market, and prevailing wage labor in agriculture. In fact, the basic needs strategy can be mentioned here. The basic needs strategy was noticed in many developing countries in the 1970s. This strategy is looking for a way to provide the basic needs of the poorest population of developing countries for income and services within a generation. In general, this strategy in developing countries affected the quality of life in rural areas, but could not eradicate poverty (Razavi, 1978).

C- Physical: Due to the creativity in the agricultural sector in the last few years, it has been able to have consequences for rural households in terms of physical aspect such as capabilities and accessibility, architectural style and construction, development of physical facilities such as access to agricultural machines and tools, access to personal vehicles, the development of communication routes (transportation) at the county level.

Reviewing and delving into scientific papers, most of the researches have been conducted about agriculture, and there is no research related to investigating the effects and consequences of creative agriculture on the development of rural areas, and if a research has been carried out, it is a similar research. Therefore, researches about the effects of the agricultural sector on rural development, which have been identified as related to the research topic, are mentioned in the following as the background.

Dehghani (2014) conducted a research about the importance and role of agricultural activities in rural development. The results indicate that attention to the increase in population growth and the decrease in agricultural land per capita, the high cost of production, the high amount of waste especially in horticultural products, the lack of proper marketing, seasonal and hidden unemployment and the decrease in income in this sector have made agriculture encounter problems and challenges.

Shayan & Taghdisi (2016) analyzed the relationship between agriculture and rural development in Zarindasht Township. The results show that the most important effect of agriculture on rural development is the effect on the economic, recreational and residential situation, and the most significant effect of rural development on the agriculture is the agricultural services and technology.

Najafi Kani et al. (2018) investigated the role of agricultural activities risk management in improvement of economic indexes in the rural families in Gorgan city. The findings indicate that there is a significant relationship between the risk management of agricultural activities and most of the environmental components and natural disasters namely drought, flood, frost, etc. with a 99% confidence level.

Karimzadeh (2021) prioritized the barriers to agricultural development in rural areas of Saravan. According to the results, weakness and lack of proper support of farmers' barriers with the most importance and barriers to information and knowledge of farmers with the least importance have affected the development of rural agriculture in the County.

Yang & He (2013) studied on connotations and development strategies of creative agriculture. The results showed that these projects are mainly limited due to problems such as weak development concept, lack of support policies and inefficient industrial integration. Taking Zhejiang Province as an example, the authors proposed path choice, supportive system and related policy suggestions for the development of creative agriculture.

Zhang et al. (2013) studied the creative agriculture development model and strategy in the southeast coastal region. Based on the summary of the creative agriculture development results from the developed courtiers, the authors try to propose a creative agriculture development model and strategy in the framework of low-carbon and ecology after analyzing its suitability in the southeast coastal region, and then provide a decision-making reference for it.

Hung et al. (2019) conducted a research titled "Constructing a creative agricultural complex base on the law for development of the cultural and creative industries in Taiwan". This study proposes conclusions and recommendations for the creative agriculture complex from the two directions of agricultural resource and technology integration.

Andaningsih & Susanto (2022) studied empowering MSMEs in the creative economy of the agribusiness industrial sector in the Baranangsiang Area, BogorCity. The results indicate that research limitation is the significance of implementing, understanding and practical implementation in implementing empowerment networks, especially for business unit services in Bogor City, West Java. The contribution of this research is to improve MSME empowerment services through the creative economy of the agricultural agribusiness sector in a strong and professional manner.

Shaikh et al. (2022) investigated the role of machine learning and artificial intelligence in precision agriculture and smart farming. The results highlight the potential of ICT technologies in traditional agriculture, as well as the challenges that may arise when they are used in farming techniques.

A review of the research literature and conducted studies implies the importance of the agricultural sector in rural development. The results of the studies show that the economic, social-cultural, institutional-management, environmental and finally physical consequences are of the most important effective consequences. Considering the identified consequences, this research aimed at investigating the effects and consequences of creative agriculture in the development of rural areas in the villages of Roshtkhar County (Figure 1).

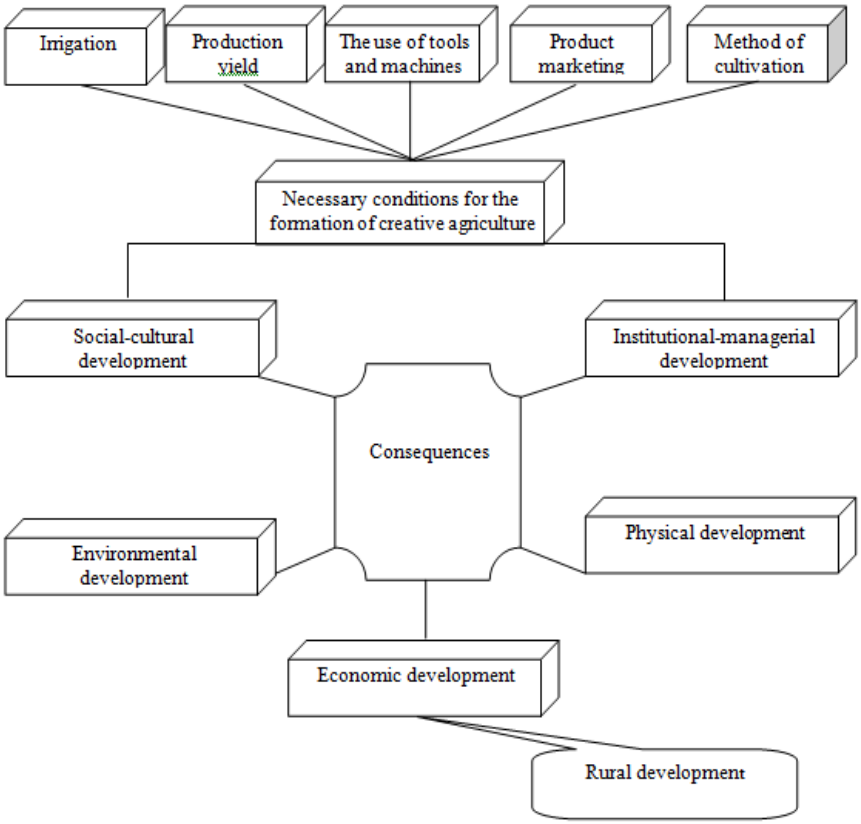


Figure 1. The conceptual framework of the research

3. Research Methodology

3.1. Geographical Scope of the Research

Roshtkhar County with an area of 4360 square kilometers is located in Razavi Khorasan province. This county is bordered by Torbat Heydarieh from the north and west, Khaf County from the east and southeast, and Gonabad County from the south (Figure 2). This county has two districts namely central and Jangal and four sub-districts including Roshtkhar and Astane in the central district and Jangal and Shabeh in the Jangal district. The study area (Roshtkhar County) has 2 cities and 57 inhabited villages and according to the 2016 general population census, this county has a population of 46,522 people and 13,415 households, of which 20% of the population live in the city and 80% live in rural areas.

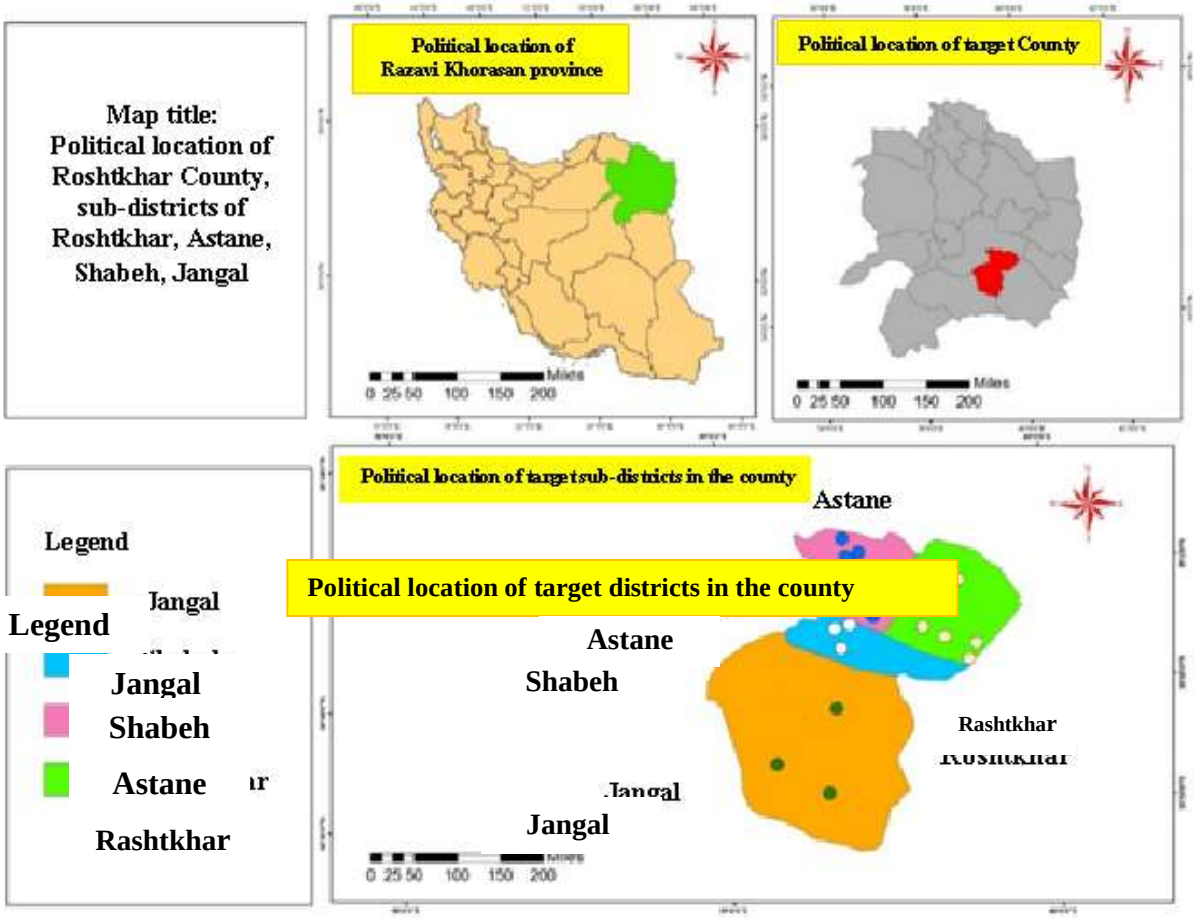


Figure 2. Location map of Roshtkhar County in the country and Khorasan Razavi province

3.2. Methodology

The study is applied in terms of its purpose and uses descriptive-analytical method to investigate the studied variables and has two main phases to collect data. The first phase included documentary and library studies as well as the use of internet facilities to review literature, research background, concepts, etc., and the second phase was conducted in the form of field research to collect statistical data and compile and complete the questionnaires.

According to the basic and key questions of the research, the indicators of the effects and consequences of creative agriculture (Table 1) and rural development in the study area (Table 2) and finally a questionnaire was prepared. It should be noted that the studied indicators have been selected according to the conditions of the region and from a wide range of indicators related to each sector, and their status has been measured both quantitatively and qualitatively.

Table 1. The status of the considered indicators in creative agriculture in the study area

Source: Toulabi Nejad & Sadeghi, 2019; Savari & Shokati Amghani, 2019; Shafii et al., 2019; Khalili et al., 2020

Row	Dimension	Indicator
1	Agronomic and horticultural measures	Using transplanting seedling, using modified seeds, protective plowing, planting drought-resistant plants (saffron and pistachio), increasing crop diversity, using more resistant vegetative bases, preparing and interpreting the soil profile, reducing the diversity of trees, controlling pests, changing the cultivation pattern, leaving the land fallow
2	New irrigation measures	Optimal irrigation methods, optimal methods of water transfer, using covered canals, using new irrigation technologies, controlling floods with the help of earth dams, dredging of canals, irrigating during low evaporation time (night and evening), controlling waste water
3	Animal husbandry measures	Using optimized livestock, following health principles in keeping livestock, reducing the number of livestock, grazing under grass and trees, manual feeding of livestock, protecting the pastures
4	Managerial measures	Financial management, local cooperative companies, education and extension, strengthening local management

Table 2. The status of the considered indicators in rural development in the study area

Source: Barghi & Memaremamieh, 2016; Bostani et al., 2016; Salehian et al., 2020; Falahati & Azizi, 2019; Azkia & Kamvar, 2013; Asadi & Mazhabian, 2016; Mousavi et al., 2017; Belton, et al, 2021; Khalil et al., 2021; Sharp et al., 2020; Van Hoyweghen et al., 2020; Abay et al., 2021; Dharmawan et al., 2020; Basole, 2017; Zinchuk et al., 2018; Ayala & Bergad, 2020; Aayog, 2017; Donnelly, 2017; Delgado & Siamwalla, 2018

Dimensions		Indicators
Economic	Economic growth (10 items)	1- Job satisfaction, 2- Satisfaction with income, 3- Occupation in informal jobs, 4- Occupation status of women and youth, 5- Satisfaction with job variety, 6- Equal distribution of job opportunities, 7- Reducing poverty and destitution, 8- Hoping for a future job
	Investment (5 items)	1- The possibility of saving part of the income, 2- Establishing and strengthening of financial and microcredit institutions, 3- Increasing investment in the field of infrastructure services, 4- Increasing investment in the field of educational and medical services, 5- Investing in the establishing production units and small and medium enterprises
	Occupation and income (8 items)	1- Increasing the price of land and housing in the village, 2- Using mechanized and new agricultural tools, 3- New constructions in the village, 4- Tendency to invest in the village, 5- Purchasing power for daily needs, 6- The progress of the economic situation of the village, 7- The yield of agricultural products, 8- The amount of bank deposits, 9- The income from agricultural and livestock products, 10- Having luxury appliances in the house
	Accessibility (5 items)	1- Access to durable and non-durable consumer goods, 2- Easy access to the market for selling agricultural products, 3- Access to transportation, 4- Access to useful information related to quality of sustainable economy, 5- Access to credit and financial services
Social-Cultural	Social and psychological security	1- Tendency to continue living in the village, 2- Reducing rural migrations, 3- External relations of the village with neighboring areas, 4- Expanding native-local culture, 5- Tendency to improve family relations in village, 6- Reducing abnormality among village youth, 7- Village security, 8- Region security, 9- Feeling of social justice, 10- Reducing feeling of poverty
	Awareness and sense of belonging to the society (10 items)	1- Increasing the awareness and knowledge of the local community regarding the social rights of individuals, 2- The sense of belonging to the living environment and motherhood community, 3- Increasing the level of literacy and education, 4- Individuals' awareness and knowledge towards the knowledge of the living environment, 5- The local managers' awareness towards the common demands and needs of the people, 6- Easy access to educational and extensional facilities, 7- Changing in the social life style of the local residents, 8- Strengthening of national institutions, using the local dialect, 9- Strengthening the social identity of the village, 10- The sense of belonging to the village
	Social cohesion (7	1- Using local clothing, 2- Holding ceremonies in traditional and local ways, 3- villagers'

Dimensions		Indicators
	items)	interaction with tourists and non-native people, 4- Participating in collective workshops, 5- Financial participation in village affairs, 6 - Satisfaction with living together with each other, 7- Participating in the village councils
	Level of satisfaction (8 items)	1- Level of satisfaction with job, 2- Level of satisfaction with the allocation of capital sent by immigrants, 3- Level of satisfaction with housing and physical space, 4- Level of satisfaction with the quality of access to infrastructure and public services, 5- Level of satisfaction with access to support services, 6- Level of satisfaction with the quality of communication services, 7- Level of satisfaction with access to facilities and amenities, 8- Level of satisfaction with the social situation of the region
Institutional-managerial	Managerial awareness (9 items)	1- Managers' view based on knowing the opportunity of investment funds for the development of the region, 2- Local managers' awareness about how to allocate resources, 3- Knowing the social, economic, and environmental capacities and limitations in the region by responsible managers, 4- Designing policies and guidelines based on local and regional conditions and management, 5- The ability to administer and organize long-term management mechanisms in various areas of the region, 6- More managers' attention to new methods of regional and local development, including the promotion of knowledge, 7- Learning, 8- Social development and entrepreneurship, 9- Proper communication and coordination of management institutions and organizations in regional development affairs.
	Institutional-managerial approaches (3 items)	1- Making necessary infrastructures and measures for correct and appropriate allocation of funds, 2- Developing entrepreneurship and appropriate extensional methods at the village level, 3- Increasing the number of non-governmental and local institutions in the field of cooperation and coordination between people in order to optimally allocate resources
Physical	Capabilities and accessibility (11 items)	1- Access to roads within and outside the region, 2- Access to suitable means of transportation, 3- Access to health care space, 4- Access to financial and credit services, 5- Access to all types of welfare and educational services, 6- Access to new and high-quality schools, 7- Easy access and less time for children and teenagers to schools, 8- The presence of suitable sports facilities, 9- Easy access to shopping centers, 10- Access to the library, 11- Access to public-recreational spaces
	Architecture and construction style (10 items)	1- Expanding the village structure in accordance with the slope of the land, 2- The harmony between the newly built areas and the old structure of the village, 3- The proximity of the village to agricultural lands and green and beautiful nature, 4- Using beautiful local materials in the architecture of the village, 5- The existence of buildings and structures suitable for the internal texture of the village, 6- Using beautiful traditional architectural methods in forming the texture of the village, 7- The existence of residential and recreational uses suitable for the tourists of the village, 8- The existence of old uses with ancient history, 9- The existence of high quality historical buildings in the village, 10- The appropriate quality of communication routes and available routes
	Development of infrastructural facilities and services (9 items)	1- The level of internal improvement of the village, 2- Establishing service facilities in the village, 3- The presence of political-administrative institutions in the village, 4- The coverage of the village's green space, 5- Recreation-entertainment facilities, 6- Educational infrastructure facilities in the village, 7- public health infrastructure facilities, 8- Access to communication services, 9- Access to agricultural services

The statistical population includes all rural households in the study area. Roshtkhar County has 82 villages, according to the 2016 National Population and Housing Census, 25 villages in this county are uninhabited, and a total of 57 villages are inhabited.

Based on the 2016 census, this county has a population of 46,522 people and 13,415 households. Out of these 57 villages, based on the estimated sample size, 20 villages in this region were selected as a sample. In this research, random sampling was used and the sample size was determined by Cochran's formula. The statistical population is estimated N =6447 and the number of sample size is estimated n=377 (Table 3). The selection of the number of samples has been according to the population of the villages, and 20 villages with a population of over 1000 ones have been selected.

Table 3. The status of the studied villages of Roshtkhar County

Source: Roshtkhar Health Care Network, 2023

	Jangal sub-district				
Jangal district	**Row**	**Village**	**Number of households**	**Number of populations**	**Number of samples**
	1	Janatabad	712	2655	35
	2	Chahshour	131	493	15
	3	Alinaghi Sofla	40	123	10
	Shabeh sub-district				
	Row	**Village**	**Number of households**	**Number of populations**	**Number of samples**
	1	Haghan Abad	152	562	15
	2	Moharam Abad	22	62	5
	3	Feyzabad	53	150	10
	Astane sub-district				
Central district	**Row**	**Village**	**Number of households**	**Number of populations**	**Number of samples**
	1	Aliabad-e Daman	313	1075	25
	2	Malek Abad	458	1569	25
	3	Abas Abad Faramishan	902	2965	35
	4	Basfar	1131	3917	42
	5	Rivand	42	146	10
	6	Kazem Abad	47	156	10
	Roshtkhar sub-district				
	Row	**Village**	**Number of households**	**Number of populations**	**Number of samples**
	1	Abbas Abad	210	634	15
	2	Saadat Abad	672	2310	35
	3	Ghader Abad	44	167	10
	4	Sadegh Abad	22	67	5
	5	Mahdi Abad	485	1620	25
	6	Dastjerd	9	24	5
	7	Fathabad	893	2825	35
	8	Rouh Abad	109	324	10

The necessary data was collected based on the questionnaire prepared by the researcher, and the number of questionnaires completed by the studied rural households was 377. In the questionnaire, the Likert scale was used to measure the research indicators. Statistical tests were used to analyze the data using Amos and SPSS software. For the validity of the questionnaires in this study, decision-making groups including 15 elites (university professors), experts or managers of rural and agricultural development were consulted (Table 4).

Table 4. Characteristics of the elite and rural development expert

Characteristics	Age	Degree	field of activity	expertise
Rural Development Expert	33	Bachelor	Governorship	Rural Development
	36	Doctoral student		geography and rural planning
	27	Bachelor		Rural Development
	45	Master of art		geography and rural planning
	51	Associate Degree		civil and structural engineering
Rural Development Expert	29	doctorate	Agricultural Jihad	Agricultural economics
	35	Master of science		poultry and livestock
	55	Associate Degree		Agronomic and horticultural affairs
	42	Master of science		Fisheries
	38	Bachelor		Drainage and Soil Improvement
Elites	39	Doctorate	University professor	Geography and Rural Planning
	44			
	48			
	56			
	46			

Then Cronbach's alpha was used for the reliability of the questionnaires (creative settlements and rural development), the results of which are shown in table 5. The process of this study is illustrated in Figure (3).

Table 5. Cronbach's alpha of the studied subjects of the research

Row	Subject	Number of items	Cronbach's alpha
1	Creative agriculture	30	0.88
2	Rural development	30	0.79

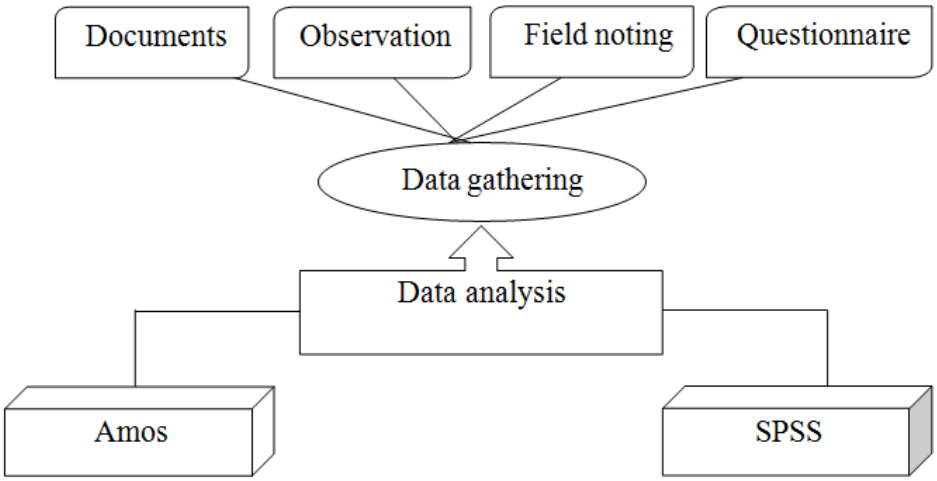


Figure 3. The process of this study

4. Research Findings

Out of the total of 377 of the studied households, 88.7% (280 ones) were male and 11.3% (97 people) were female. The highest frequency is related to the age group of 36 to 45 years, where 195 ones (32.3%) are in this age group. In terms of the level of education, 9.4% of the studied individuals were illiterate and more than 19.3% of the individuals have a bachelor degree or higher. According to the supplementary questionnaire, most of the household heads (39.5%) hold job as a farmer and the jobs including laborers, employee and animal husbandry are in the next ranks. The average monthly income of people in the study area is 730 thousand Tomans and the highest income group is from 500 thousand Tomans to one million Tomans, and nearly 50% of individuals are in this income group. More results are shown in Table (6).

Table 6. Distribution of respondents according to personal and occupational characteristics

Variable	Levels	Frequency	Percent	Statistic indicators
Gender	Male	280	88.7	Mode: male
	Female	97	11.3	
Age	Under 25	45	12.2	Mean score: 46.05 Mode: 45 Standard deviation: 14.5 Minimum: 30 Maximum: 85
	25-35	90	25.6	
	35-45	160	37.8	
	45-55	52	14.5	
	55-65	20	6.7	
	66 and over	10	3.2	
Family size	Less than 2	15	2.1	Mean score: 4.34 Standard deviation: 1.136 Mode: 5
	2-4	190	50.5	
	5-7	102	30.8	
	7 and over	70	16.6	
Education	Illiterate	7	3.4	Mode: High school

Variable	Levels	Frequency	Percent	Statistic indicators
	Primary school	20	9.8	
	High school	158	45.2	
	Diploma	106	22.3	
	Bachelor and over	86	19.3	
Occupation	Farmer	152	39.5	Mode: Farmer
	Employee	60	15.6	
	Laborer	80	22.4	
	Free lance	64	18.7	
	Animal husbandry	21	3.8	
Average monthly income	Under 300,000	15	6.5	Mean score: 703000 Mode: 500000 Standard deviation: 441302 Minimum: 30
	300000-500000	82	2.6	
	501000-1000000	201	45.5	
	1000000-2000000	68	20.8	
	2000000 and over	10	4.6	

The results of investigating the creative agriculture status on the rural households of Roshtkhar County show that 75% of the studied households have a favorable status and 25% experience various degrees of the consequences of creative agriculture. 13.4% are in an average status, 7.8% are in an unfavorable, and 3.8% are in a very unfavorable status. Based on the obtained results, it can be deduced that creative agriculture has been able to have a favorable effect on the status of rural households in the study area. The main consequences of creative agriculture in the study are job satisfaction, satisfaction with the income, the possibility of saving a part of the income, the use of mechanized and new agricultural tools, access to useful information related to improving the quality of the sustainable economy (Table 7).

Table 7. The status of the effect of creative agriculture on the rural households of Roshtkhar County

Items	Consequences of creative agriculture			
	Favorable	Average	Unfavorable	Very unfavorable
Frequency	282	57	25	13
Percent	75.0	13.4	7.8	3.8

Analysis of variance was used to investigate the difference between the villages of the county in terms of creative agriculture. The results of the One-way Anova test show that the average of the variances between the groups is higher than the average within the groups as the P value is less than 0.001. In this regard, with a confidence level of 99%, there is a significant difference between the villages of Roshtkhar County in terms of creative agriculture (Table 8).

Table 8. Investigating the difference between the villages of Roshtkhar County in terms of creative agriculture

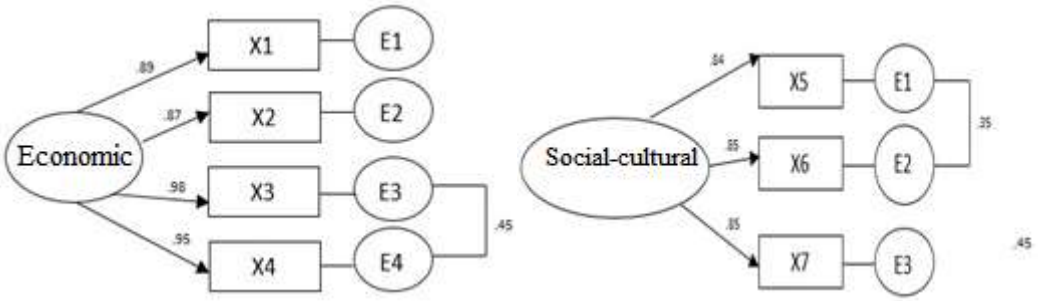
Indicator	Variance	Sum of squares	Degree of freedom	Mean squares	Significance level
Creative agriculture	Between groups	31.120	19	6.642	0.000
	Within groups	7.201	1340	0.005	
	Total	38.321	13.59		

Before the measurement models, the four dimensions of the consequences of creative agriculture are described. The mean score of all the indicators and variables of the consequences of creative agriculture (Economic, social-cultural, institutional-managerial and finally physical) are higher than the average value of the Likert scale (3). The results indicate that the consequences of creative agriculture are higher than average and are in a favorable status in the study area (Table 9).

Table 9. Description of the final items and variables (observed and researcher-made indicators) of the consequences of creative agriculture

Dimensions of the consequences of creative agriculture	Symbol	Items and variables (observed and researcher-made indicators)		
		Items	Mean	Standard deviation
Economic	X_1	Economic growth (10 items)	4.05	0.670
	X_2	Investment (5 items)	3.97	0.612
	X_3	Occupation and income (8 items)	4.20	0.598
	X_4	Accessibility (5 items)	4.12	0.937
Social-cultural	X_5	Awareness and sense of belonging to the society (10 items)	3.88	0.790
	X_6	Social cohesion (7 items)	3.95	0.702
	X_7	Level of satisfaction (8 items)	3.75	0.815
Institutional-managerial	X_8	Managerial awareness (9 items)	3.70	0.829
	X_9	Institutional-managerial approaches (3 items)	3.68	0.870
Physical	X_{10}	Capabilities and accessibility (11 items)	3.59	0.950
	X_{11}	Architecture and construction style (10 items)	3.55	0.980
	X_{12}	Development of infrastructural facilities and services (9 items)	3.64	0.891

A) Measurement model of economic dimension B) Measurement model of social-cultural dimension



C) Measurement model of Institutional-managerial D) Measurement model of social-cultural dimension

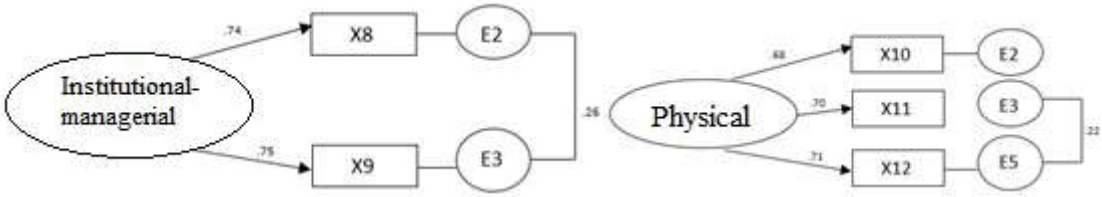


Figure 4. Factor load of the observed variables for 4 dimensions of the research

After describing the variables of each dimension, in order to present an experimental model of the consequences of creative agriculture on the rural households of Roshtkhar County using Amos software, first, 4 first-order confirmatory factor analysis (CFA) models related to the research variables were drawn and then the model was validated (Figure 4, Table 10).

As shown in Figure 4, the factor loadings of each variable of the 4 models are in a favorable status.

To evaluate the overall measurement models of 4 dependent dimensions of the research, the most important model fit evaluation indicators were extracted from the references and the calculated values were compared with the proposed criteria.

As can be seen in Table 10, all the estimated criteria are in high agreement with the desired values (proposed criteria). It can be deduced that the 4 drawn measurement models possess the required properties and validity for the design of the final model of consequences of creative agriculture on the rural households of Roshtkhar County.

After fitting all the dependent variables in 4 measurement models, the model of the consequences of creative agriculture on the study area is drawn using Amos Graphics (Figure 5). In this model, creative agriculture has the most effect on the economic dimension (Z1), among which the occupation and income component (E3) has the most effect.

As can be seen, in the mentioned model, creative agriculture is used as a manifest variable and dependent variables are used as latent variables. Table 11 illustrated the dimensions of evaluating the overall measurement model of the consequences of creative agriculture on the rural households of Roshtkhar County along with the proposed criteria.

The fitted model has the required validity and accuracy and has been able to explain the effects of creative agriculture on the rural households of this county.

Table 10. Dimensions of evaluating the overall measurement model of dependent variables

Dimensions	CMIN	DF	CMIN/DF	CFI	RMSEA	HOELTER	RMR	GFI	NFI	PRATIO
Economic	8.058	3	3.249	0.883	0.046	199	0.010	0.891	0.888	0.300
Social-cultural	6.724	3	1.117	0.889	0.036	480	0.008	0.890	0.789	0.300
Institutional-managerial	0.179	1	0.179	1	0.01	3037	0.001	1	1	0.177
Physical	4.489	4	1.079	0.889	0.030	498	0.007	0.881	0.882	0.400
Proposed values	-	-	<5	>0.9	<0.05	>75	0	>0.9	>0.9	0-1

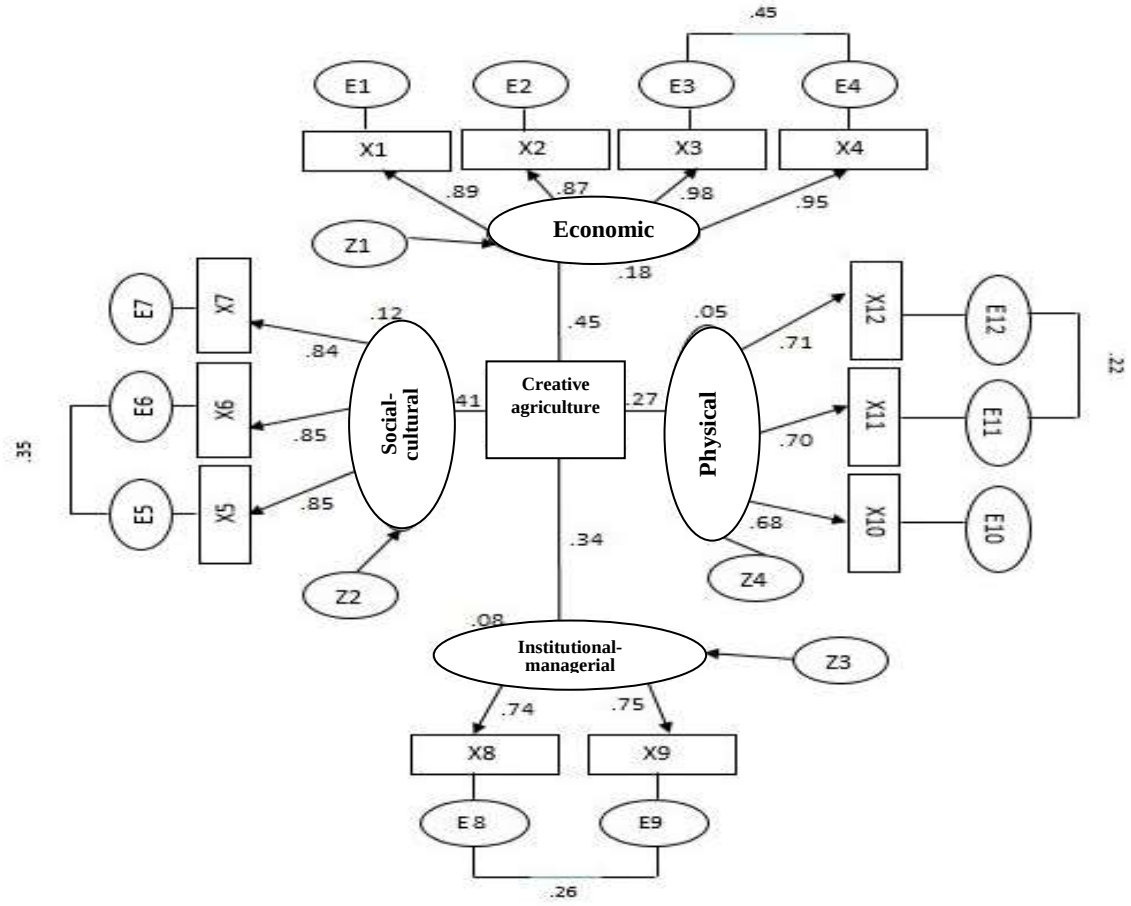


Figure 5. The final structural equation model of the effects and consequences of creative agriculture on rural households of Roshtkhar County

Table 11. Dimensions of evaluating the overall model of the effects and consequences of creative agriculture on rural households of Roshtkhar County

Dimensions	CMIN	DF	CMIN/DF	CFI	RMSEA	HOELTER	RMR	GFI	NFI	PRATIO
	912.720	420	2.619	0.980	0.062	115	0.11	0.980	0.990	0.936
Proposed values	-	-	<5	>0.9	<0.05	>75	0	>0.9	>0.9	0-1

After evaluating the fit of the model of the consequences of creative agriculture on rural households in the study area, the effects of creative agriculture on the dependent variables of the research were investigated (Table 12). Since in the presented model, the direct effects of creative agriculture on the dependent variables of the research are drawn, in the results of investigating the effects of creative agriculture on the 4 dependent variables, the total effects of creative agriculture on the dependent variables are mentioned. As can be seen (Table 12), creative agriculture has had the greatest effects on economic and social-cultural variables with total effects of 0.509 and 0.454, respectively.

Table 12. Estimation of standard, non-standard and total effects of creative agriculture on dependent variables of the research

Independent variable	dependent variable	Estimation		Critical ratio	Total effect	Significance level
		Standard	Non-Standard			
Creative agriculture	Economic	0.109	0.509	17.648	0.509	0.000
	Social-cultural	0.108	0.454	15.918	0.454	0.000
	Institutional-managerial	0.102	0.340	12.821	0.340	0.000
	Physical	0.091	0.290	9.358	0.290	0.000

The results of the step-by-step regression show that among the four variables of creative agriculture that entered this model, the component of modern irrigation measures has the largest contribution to creative agriculture with a coefficient of 0.205, so that it could explain 36.9 percentage of the variance (Table 13).

Table 13. Entered indicators and the contribution of each variable in the step-by-step regression model on creative agriculture

Steps	Entered indicators at each step	Coefficient of Determination (R)	The contribution of each variable in the determination of the dependent variable (percentage)
Step 1	Agronomic and horticultural measures	0.389	20.6
Step 2	New irrigation measures	0.205	36.9
Step 3	Animal husbandry measures	0.421	11.1
Step 4	Managerial measures	0.216	31.4

In table 14, beta for each independent variable shows the average amount by which the creative agriculture increases when the independent variable increases one standard deviation and other independent variables are held constant. New irrigation measures with a beta of 0.502 and managerial measures with a beta of 0.420 are the most important in increasing the level of creative agriculture in villages, respectively.

Table 14. Step-by-step regression coefficients to investigate the effect of independent variables on the level of creative agriculture and determining the relative importance of variables

Variables	Unstandardized coefficient B	Standardized coefficient Beta	Standard Error	t	Sig.
Constant	40.653	-	-	-	-
Agronomic and horticultural measures	1.420	0.378	0.32	0.637	0.000
New irrigation measures	0.753	0.502	0.47	31.4	0.000
Animal husbandry measures	0.622	0.340	0.53	14.92	0.000
Managerial measures	1.124	0.420	0.52	15	0.000

To interpret table 15, firstly, the amount of ADJ.R^2 is taken into account. This amount shows how many percent of the variance of rural development is predicted by the mentioned model. Since the amount of ADJ.R^2 is 0.652 and if this value is multiplied by 100, it will be equal to 65.2, it means that the four variables including agronomic and horticultural measures, new irrigation measures, animal husbandry measures and managerial measures could predict 65.2% of the variance of rural development. The next indicator is the beta of each variable. As can be seen from the P-value of each variable, there are four variables including agronomic and horticultural measures, new irrigation measures, animal husbandry measures and managerial measures, which significantly predict rural development. Increasing one standard deviation of new irrigation measures leads to 0.38 increase in standard deviation of rural development (Table 15).

Table 15. The results of linear regression analysis to predict rural development through creative agriculture

Variables	Unstandardized coefficient B	Standard Error	Standardized coefficient Beta	t	Sig.
Constant	38.411	33.314	-	0.345	0.790
Agronomic and horticultural measures	1.567	0.30	0.328	2.470	0.62
New irrigation measures	0.583	0.38	0.420	1.127	0.14
Animal husbandry measures	0.511	0.78	0.265	2.110	0.27
Managerial measures	1.316	0.73	0.355	1.288	0.48

5. Discussion and conclusion

Investigating the status of creative agriculture, as one of the most important goals of rural development, is important from various aspects. On the one hand, creative agriculture investigates the current status of rural society in various ways. If the conditions of the society are inappropriate in terms of creative agriculture, food security, the vitality of the rural community, which is a necessary condition for the villagers' participation in the process of rural development, faces a new challenge. On the other hand, since the villagers' benefit from an acceptable level of creative agriculture in rural communities indicates the development and progress of planning in the development of local communities, special consideration should be given to creative agriculture sector. In this regard, creative agriculture in rural communities can cause many consequences and effects on rural communities and their environment to help these communities to achieve their main goal. This study aimed at investigating the consequences of creative agriculture and its role in the rural development of Roshtkhar County. The results of investigating the creative agriculture status on the rural households of Roshtkhar County indicate that 75% of the studied households have a favorable status and 25% experience various degrees of the consequences of creative agriculture. The obtained result is consistent with the findings of Asghari Lafmejani & Eizadi (2017), Pourtaheri et al. (2014), Safarpour et al (2014). The findings confirm that creative agriculture has had the greatest effects on economic and social-cultural variables with total effects of 0.509 and 0.454, respectively. It could be due to the fact that the dominant source of livelihood for 95% of the villages of Roshtkhar County is the agricultural sector and its sub-sectors. On the one hand, the reduction of the production costs of agricultural and livestock products, and on the other hand, the rapid increase in the price of the aforementioned products, have made the activity in the agricultural sector profitable, and the agricultural products such as saffron and pistachios grown in this area has provided a large income to the rural households of this region. As a result, the savings obtained through the income of the agricultural sector could lead to development in different dimensions of rural households and even rural development. In addition, due to the strong need for water resources for the agricultural sector, rural households have been able to avoid the amount of harvested water by applying the creative agriculture. Villagers can increase the area under cultivation using new irrigation system in creative agriculture and consequently earn more income. Nonetheless, the effect of creative agriculture on the research dependent variables has been different. Its effect on economic and

social-cultural variables has been more than other variables. The development of creative agriculture in the study area can improve the status of economic and social-cultural development, while the reduction of creative agriculture may weaken the status of the studied variables. The result is consistent with the findings of Izadi et al. (2023), Laurett et al. (2021), Genthon et al. (2015). In sum, the following points should be taken into account in order to improve the effects and consequences of creative agriculture and its role in the development of rural areas in the villages of Roshtkhar County:

- If the planners in the rural area are interested in developing the rural environment and are concerned about returning human forces to the village, it is suggested that they should consider the dimensions (agricultural measures, modern irrigation measures, animal husbandry measures and managerial measures) and requirements of creating a suitable rural environment for the prosperity of creative agriculture as a source of income and livelihood and try to pave the way for it. Since creative agriculture has special and unique features, such as being consistent with technology, it can be introduced as the best solution.
- The presence of creative farmers makes the agricultural sector develop significantly because creative farmers can partially compensate for the deficiencies of the agricultural sector through innovation and creativity in agricultural fields.
- Creativity in the agricultural sector can be strengthened by holding training and consulting classes, creating, supporting and developing organizations active in creative agriculture and using the experiences of creative farmers.
- In order to improve the consequences of creative agriculture in rural development in the study area, variables and factors should be selected that are most compatible with the conditions of the study area. The existence of restrictions such as the not providing free and low-interest loans and credit facilities to the villagers, the non-guaranteed purchase of agricultural products by the government, the lack of culture to promote creative agriculture, etc., has caused the slow speed of creative agriculture in the villages of Roshtkhar County. In this regard, it is suggested that the necessary support be provided by the relevant institutions and organizations.

Acknowledgments

The current paper is extracted from the doctoral dissertation of the first author (Ali Izadi) in the Department of Geography & Rural Planning, Faculty of Geography and Environmental Planning, University of Sistan and Baluchestan, Zahedan, Iran.

Authors' contributions

The authors equally contributed to the preparation of this article.

Conflict of interest

The authors declare no conflict of interest.

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Journal of Research and Rural Planning
Volume 12, No. 4, Autumn 2023, Serial No. 43, Pp. 57-78
eISSN: 2783-2007 **ISSN: 2783-2791**
http://jrrp.um.ac.ir
Original Article

پیامدهای کشاورزی خلاق و نقش آن در توسعه نواحی روستایی شهرستان رشتخوار

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چکیده مبسوط

۱.مقدمه

در شرایط کنونی خلاقیت در بخش کشاورزی به عنوان راهبرد کلیدی که قابلیت پاسخگویی به چالش‌های مختلف توسعه کشاورزی مورد تاکید قرار گرفته است. حال با توجه به بلایای طبیعی رخداده شده در سطح کشور ایران مثل خشکسالی های بی سابقه و گرمایش پرتکرار در سال‌های اخیر باید نگاه و رویکرد کشاورزی در سطح کشور تغییر کند و به رویکردی جدید هم چون کشاورزی خلاق که توانسته این نوع از رویکرد تمام زوایای بخش کشاورزی را در نظر داشته باشد روی بیاورد تا بتواند کشاورزی پایداری را رقم بزند. مناطق روستایی در سطح کشور ایران همچون مناطق روستایی شهرستان رشتخوار هم از این نوع بالایای طبیعی بی نصیب نمانده است و کارشناسان و متولیان و خبرگان این امر باید همراه با تغییرات در سطح کشور همسو شوند. استان خراسان رضوی با دارا بودن بخش وسیعی تولید محصولات کشاورزی، دارای بیشترین راندمان تولید در سطح کشور است که در این بین منطقه شهرستان رشتخوار نزدیک به ۶۰ درصد از تولیدات بخش کشاورزی را به خود اختصاص داده است. لذا پژوهشی پیرامون بررسی آثار و پیامدهای کشاورزی خلاق در توسعه مناطق روستایی در محدوده مورد مطالعه امری ضروری به حساب می‌آید که مساله‌ای است که محققان در این پژوهش به دنبال تبین آن هستند.

۲. مبانی نظری

توسعه از جمله مفاهیمی است که با زندگی افراد رابطه تنگاتنگی دارد و ناظر بر بالابردن سطح زندگی از طریق ایجاد شرایط مطلوب و بهینه می‌باشد. حال از آنجایی که بخش عظیمی از جمعیت در مناطق روستایی است، توسعه روستایی بخش اجتناب ناپذیر توسعه روستایی است. توسعه روستایی از دیرباز به عنوان یک واژه هنجاری، دارای سختی‌هایی در ارزیابی و اندازه‌گیری و تشخیص بوده است و به تبع آن، سیستم اقتصادی و اجتماعی و کالبدی روستایی نیز با گذشت زمان متنوع‌تر و پیچیده‌تر شده است. در ارتباط با مفهوم توسعه روستایی دیدگاه‌های گوناگونی وجود دارد؛ از دیدگاه بانک جهانی، توسعه روستایی، استراتژی است که برای بهبود زندگی اقتصادی – اجتماعی گروه مشخصی از مردم که همان روستاییان فقیر هستند، طراحی می‌شود. در این دیدگاه فقرای روستایی شامل کشاورزان خرده‌پا، اجاره نشین‌ها و خوش‌نشین‌ها می‌شود. اگر قرار است توسعه در کشورهای جهان سوم رخ دهد و به نحوی خودپایدار باشد، باید در نواحی روستایی نقطه شروع آن استارت زده شود. مسائل اساسی همچون فقر گسترده، عدم برابری در حال پیشرفت، رشد بیش از حد جمعیت و افزایش بیکاری، همه و همه ریشه در رکود و غالباً سیر نزولی زندگی اقتصادی در نواحی روستایی دارد. در اوایل دهه ۱۹۹۰ توسعه روستایی تقریبا مترادف با توسعه کشاورزی بوده است.

کشاورزی نقش عمده‌ای در توسعه، اقتصادی و اجتماعی اکثر نواحی روستایی ایفا می‌کند و بزرگترین منبع اشتغال آن‌هاست. اکثریت مردم در مناطق روستایی، برای گذران زندگی خود، به طور مستقیم یا غیر مستقیم به کشاورزی و فعالیت‌های مرتبط به آن وابسته هستند و بیشتر برنامه‌ریزان چه در سطح محلی و چه در سطح ملی بر اهمیت توسعه کشاورزی تاکید می‌کنند. اما امروزه با عنایت به تغییرات وسیع و همچنین تغییرات اقلیمی، توسعه کشاورزی در مناطق مختلف به خصوص در کشورهای کمتر توسعه یافته با چالش‌های اساسی روبه رو است. از این رو توجه به کشاورزی خلاق امری واجب است. تغییرات بازار، سیاست‌های کشاورزی، مباحث زیست محیطی و اشتغال از عوامل مهمی هستند که خلاقیت در کشاورزی را بیش از بیش نمایان می‌کنند. می‌توان گفت که در کشاورزی خلاق منظور این است که فرآیند شناسایی فرصت‌ها، تهدیدها، نقاط قوت و

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ضعف محیط‌های فعالیت از جمله کشاورزی با روش‌شناسی و سیاست‌گزینی خاص و جدید برای ایجاد تحول و دگرگونی در کشاورزی است.

۳. روش شناسی تحقیق

این پژوهش کاربردی با روش توصیفی – تحلیل انجام گرفته است. جامعه آماری پژوهش را کلیه سرپرستان خانوارهای روستایی (خانوارهای کشاورز) شهرستان رشتخوار تشکیل می‌دهد که با استفاده از فرمول کوکران، ۳۷۷ کشاورز از سرپرستان خانوارها به عنوان نمونه مورد مطالعه انتخاب شده‌اند. ابزار اصلی پژوهش پرسشنامه محقق ساخته و مشاهدات میدانی و مطالعات کتابخانه‌ای بوده است. روایی و پایایی پرسش‌نامه به ترتیب با کسب نظرات کارشناسان مربوطه و انجام پیش آزمون با تعداد ۳۰ پرسش‌نامه به تایید رسیده است. در ادامه پرسشنامه‌ها در ۲۰ روستای محدوده مورد مطالعه توزیع گردید. جهت تجزیه و تحلیل داده‌ها از نرم افزار spss و رویکرد مدل سازی معادلات ساختاری استفاده شد.

۴. یافته‌های تحقیق

نتایج مدل برازش شده پیامدهای کشاورزی خلاق برخانوارهای روستایی کشاورز شهرستان رشتخوار نشان داد که، کشاورزی خلاق بیشترین اثرات را بر متغییرهای اقتصادی(۰/۴۰۵) و اجتماعی(۰/۳۷۰) داشته است. نتایج بررسی وضعیت کشاورزی خلاق در محدوده مورد مطالعه نشان داد که، بیش ۶۰ درصد از خانوارهای روستایی کشاورز اظهار کرده‌اند که کشاورزی خلاق توانسته است در توسعه روستایی نقشی چشم‌گیر داشته باشد.

۵. نتیجه‌گیری و پیشنهادات

بررسی وضعیت کشاورزی خلاق، به عنوان یکی از مهم‌ترین اهداف توسعه روستایی، از جنبه‌های گوناگونی حائز اهمیت است. از یک طرف بررسی کشاورزی خلاق وضعیت فعلی جامعه روستایی به جهات گوناگون را بررسی می‌کند. در صورت نامناسب بودن شرایط جامعه به لحاظ کشاورزی خلاق، امنیت غذایی، سرزندگی جامعه روستایی که شرط لازم برای مشارکت روستاییان در فرآیند توسعه روستایی است، با چالش جدیدی روبه رو می‌شود. از طرف دیگر، با توجه به اینکه بهره‌مندی روستاییان از سطح قابل قبولی از کشاورزی خلاق در جوامع روستایی، نشانگر توسعه و پیشرفت برنامه‌ریزی‌ها در توسعه جوامع محلی است. از این رو نگاه ویژه‌تر به بخش کشاورزی خلاق را طلب می‌کند. در این راستا، وجود کشاورزی خلاق در جوامع روستایی می‌توانند سبب پیامدها و اثرات متعددی بر جوامع روستایی و محیط آنها گردد که این جوامع را به هدف اصلی خود برساند.

کلیدواژه‌ها: کشاورزی، توسعه روستایی، خلاقیت، تحلیل علی، شهرستان رشتخوار

تشکر و قدردانی

پژوهش حاضر برگرفته از رساله دکتری نویسنده اول (علی ایزدی) گروه جغرافیا و برنامه‌ریزی روستایی، دانشکده جغرافیا و برنامه‌ریزی محیطی، دانشگاه سیستان و بلوچستان، زاهدان، ایران است.

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How to cite this article:
Izadi, A. & Tayebnia, S.H., (2023). Consequences of creative agriculture and its role in the development of rural areas of Roshtkhar County. *Journal of Research & Rural Planning*, *12*(4), 57-78.

http://dx.doi.org/10.22067/jrrp.v12i4.2307-1083

Date:
Received: 25-07-2023
Revised: 18-08-2023
Accepted: 25-09- 2023
Available Online: 01-11-2023