



Quality Analysis of the Problems and Barriers of Greenhouse Growers: Case Study of Isfahan Province, Iran

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Abstract

The purpose of this study is to investigate problems and barriers of greenhouse growers in Isfahan Province, Iran using the qualitative paradigm. Data were collected with semi-structured interviews and direct observations. Most participants were questioned by phone interview. The response rate to phone calls was 59.2 percent. Data are analyzed by the grounded theory. Structural analysis is utilized to evaluate open-ended questions. The components of the questionnaire including the words, concepts and their correlations in terms of frequency, the number of words, vocabularies, metaphors, and idioms used in the sentences are investigated to discover the existing patterns in their statements. As a result, 849 problems are expressed by greenhouse growers. At the open coding stage, the extracted phrases are formulated in 27 terms of meaningful expressions by integrating the same items and removing repetitive cases. At the axial coding stage, 27 formulated concepts are obtained. Subsequently, the extracted phrases create eight main factors. At the selective coding stage, the greenhouse owners' basic problems are categorized into four categories: economic, infrastructure and strategic, human, and extra-organizational. The study shows that about 50 percent of greenhouse growers' problems are caused by three factors as follows: extreme price fluctuations, brokerage interval, and high costs of fuel. Finding solutions can improve the greenhouse sector.

Keywords:

Isfahan Province,
problems of greenhouse
growers, qualitative study

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INTRODUCTION

Sustainable agriculture has been considered as the focus of development plans during recent decades. In general, sustainable agriculture serves two purposes: maintaining (or increasing) the given production level and decreasing (or eliminating) the detrimental environmental consequences. The fundamental purposes of all ecological farming systems are to diminish the affiliation of the system to scarce and environmental inputs, as well as improving its efficiency. The efficient utilization of rare inputs is considered one of the required principles of sustainable agriculture. In recent years, due to problems of climate change, drought, water resources restriction, growing urban population growth, and sustainable food security, greenhouse cultivation has been taken into consideration for off-season crops in Iran. Greenhouse cultivation is highly adapted to the conditions of this country and allows the optimal utilization of water and soil resources, the use of small land portion and available facilities in villages and suburbs. In addition, greenhouses are capable of developing employment and have good potential for profitability. In Isfahan Province, greenhouse cultivation has been interested in by the Agricultural Jihad Organization of Isfahan Province and provincial authorities as a solution to problems emanating from water mismanagement, uncontrolled exploitation of underground resources, an incompatible cultivating pattern, irregular irrigation practices, and drought. It has been well adopted by farmers because of its high yields, regional conditions, and desirable profitability (Moradinejadi et al., 2007) so that this province is the third leading province of the country in greenhouse cultivation.

Greenhouse owners and green growers are suffering from many problems, from crop establishment to its sale, which have been studied extensively. Some researchers have emphasized that infrastructural factors such as non-standard greenhouse constructing companies, lack of access to expert consult-

ants in the context of greenhouse cultivation, inappropriate management, lack of heat supply and plant nutrition, inappropriate ventilation, lack of creativity, and innovation in the use of greenhouse equipment, lack of expert operators, lack of access to updated information about greenhouse, and lack of sufficient experience in the production process are some barriers against greenhouse production (Asadi et al., 2009). Among these factors, items enumerated as the most important causes of greenhouse failure include, but limited to, inadequate greenhouse equipment and facilities, low technical knowledge in the production process, lack of utilization of top-notch technologies in the production of healthy plants, lack of standard native plants for production in the country, an increase in the production costs compared to sale prices, severe fluctuations of selling prices, producers' low capital, lack of active associations, and inadequate governmental support and the banking system of the country (Mashayekhi & Ghaderi, 2013).

Developing greenhouse production and increasing the resource productivity of this sector require permanently improving the knowledge and skills of the employees of this sector. Active employees in the greenhouse sector are mostly young, lowly educated, and lowly experienced people who are not able to apply the existed information sources in spite of their great motivation (Ghasemi & Karami, 2009). The poor education given to greenhouse growers and its persistence give rise to many problems. Inappropriate educational and promotional services increase the fixed costs of an economic activity in using new required technology for producers of greenhouses. Technical education of greenhouses has become more attractive than economic and organizational education in Iran (Sayad-Mansour et al., 2015). Education plays a significant role in promoting knowledge, insight, skills, and information, and developing the capabilities and abilities of greenhouse growers and relevant businesses. The absence of entrepreneurial education and technical

skills, lack of consultancy services, lack of sufficient information about the domestic market, lack of knowledge about foreign markets, lack of knowledge and lack of education for greenhouse growers on how to export greenhouse products, and lack of education to construct standard greenhouses are the most important issues in Iran (Moradinejadi et al., 2007). The absence of systematic and fundamental management (Sharifi, 2008), the shortage of productive organizations, and growers' education deficiencies are the major barriers against developing greenhouse production (Behnia & Arvand, 2005).

The government support factor, specifically financial support, has a positive correlation with the marginal profit and the increase in farmers' incomes (Maliwichi et al., 2010). One of the strongest mechanisms by which governments can improve the productivity of agricultural enterprises is to grant low-interest loans, facilitate the risky investments, and improve the process of corporate development as well (Flavia & Cristina, 2005; Sporleder, 1977). In the production process, credits play an essential role to fund and develop an economy (Alawi Bajgani & Arab Mazar, 2000). Importantly, optimal financial status to return the loans, the proportional repayment period, as well as sufficient loans and funds are factors by which the loan efficiency is determined (Mashayekhi & Ghaderi, 2013). Meanwhile, difficulties such as constraints and regulations to take out diverse loans, lack of supporting policies to export greenhouse products, investment security deficiency, coordination shortage between relevant departments and organizations, improper exchange policies, and incompatible status of greenhouse's insurance system have posed many problems to greenhouse units (Moradinejadi et al., 2007).

One of the preconditions to satisfy a comprehensive rural development is to have a perfect service system (Motiee Langarodi, 2003). Moradinejadi et al. (2007) suggests that infrastructural barriers such as restricted access to the required inputs, and un-

favorable ground and air transportation systems, as well as lack of refrigeration units for timely delivery, and deprivation of the packaging mechanized systems, insufficient research & development centers, production patterns deficiency as well as restricted accessibility to associations and institutions required to export greenhouse products can give rise to constraints on this sector.

Many researchers have emphasized the market status improvement to make it available to farmers and greenhouse growers, and the restructuring of distribution has been taken into consideration in cooperatives and NGOs. Poor marketing is regarded as the primary challenge of farmers in their production process (Markou & Stylianides, 2009; Pour Afzal et al., 1995; Wynen, 2004, quoted from Sandooghi et al., 2015). In light of the results achieved by Pour Afzal et al. (1995), considerable problems and insufficiencies have been identified in fruit and vegetable marketing network; even, the market is unable to satisfy producers' interests. The lowest amount of marginal profit will be expected if the grower sells his products directly to retailers while if the grower sells them to a wholesaler, the marginal profit will reach its peak (Salem, 2000). In a study conducted by Shafiee and Pour Jopari (2006), they argue that the shortage of active associations of greenhouse growers, the supply and demand for greenhouse products which are badly organized, and unreasonable relation between income and cost of greenhouse growers are responsible for the marketing difficulties of greenhouse crops. Domestic and global markets development will be possible if the government supports greenhouse growers and plays an essential role in this sector. Meanwhile, the agricultural commodities can be supported by the government to identify opportunities for marketing in domestic and foreign markets, to eliminate issues related to export, to provide information systems, and to enforce laws and regulations in the target markets. In order to augment agricultural exports, the government should en-

hance the number of greenhouse units. Importantly, misleading policies taken by the government are considered to be major barriers to the development of Iranian greenhouse units (Hosseini Darvishani & Zarei, 2009).

As a result, several factors have been emphasized in the reviewed studies as the implied barriers of greenhouse cultivation. These factors can be summarized as follows: weak support of greenhouse growers by the government; deprivation from well-structured associations and organizations; shortage of management in a proper and correct manner; inappropriate policy-making; insufficient support by banking systems; market situation; fragile marketing; distribution methods; increased rate of costs compared to the prices; severe fluctuations in prices; low investment capability of producers; the absence of allocated loans with the desirable interests; not being in equilibrium; misalignment of income to cost ratio; low technical knowledge; the use of outdated technologies in the production of healthy plants; suffering from low-literate and low-experienced labors in the greenhouse sector; the creativity and innovation shortage; unavailability of expert labors; limited access to updated greenhouse information and experience deficiency in the production process; educational weakness of the greenhouse growers; inappropriate educational and promotional services; attending merely technical education and not considering the economic and organizational education; the absence of consultancy services; lack of adequate information about the domestic market; little knowledge about foreign markets; training rarely for greenhouse growers on how to export greenhouse crops and scarcely training for the implementation of standard greenhouses; rigid regulations to take out the loan credited by banks; inappropriate status of greenhouse insurance systems; constrained access to required inputs; improper ground and air transportation systems; lack of refrigeration units to adjust the supply; the ab-

sence of packaging mechanized systems; deprivation from research and development on greenhouse sector; production patterns deficiency; incompatible equipment and facilities; the absence of producing the standard native plants in Iran; non-standardization of greenhouse constructing companies; restricted access to expert consultants in the field of greenhouse cultivation; failure to supply the required heat and nutrition; unfavorable air conditioning.

The purpose of the study is to identify the most significant problems of greenhouse growers in Isfahan Province. Numerous studies have been carried out on greenhouse difficulties, and its issues have been evaluated professionally in different contexts. In this study, while the main problems of the greenhouse growers are qualitatively evaluated, the significance is examined separately, too. The results can play a fundamental role in future planning by policymakers and planners.

METHODOLOGY

The current research was carried out qualitatively, and it is an applied investigation in terms of purpose. The paper uses descriptive and interpretive approaches to collect data and utilize the grounded theory for their analysis. Due to the geographical extent of the province and dispersion of the studied population, the phone-interview technique was used to reduce costs, improve the quality of data gathering, have quick access to people, and facilitate the connection between the interviewer and interviewees.

The sample included greenhouse growers of "cucurbits and vegetables". The data were provided by the Isfahan Agricultural and Natural Resources Engineering Organization. Accordingly, 471 individuals possess the greenhouses of "cucurbits and vegetables". Most of the greenhouses are founded in the cities of Dehagan, Isfahan, Tiran and Karvan with penetration rates of 38, 17.83, and 15.71 percent, respectively. Although the method of "census" was applied for this research, in practice, because of wrong phone numbers,

unavailability of people and misinformation, this approach was excluded from the list. A total of 279 individuals were studied.

Structural analysis was utilized to evaluate open-ended questions. The components of the questionnaire including the words, concepts and their correlations were investigated in terms of frequency, the number of words, vocabularies, metaphors, and idioms used in the sentences to discover the existing patterns in their statements (Farrokhzad, 2005). Open and axial coding is an approach applied in structural analysis. Theoretical triangulation method was utilized to provide a theoretical framework and confirm the results by the informed people.

RESULTS

In this section, first, the individual characteristics of the respondents are considered and then the problems of the greenhouse growers are explained. In light of descriptive findings, 91.8% of greenhouse growers are male. It seems that greenhouse growing is a popular job among men. It is also found during the interview that the percentage of women who have attempted to launch a greenhouse is less than men. Most greenhouses which have been constructed by women are seemingly the consequence of their contributions to spouse, father, or a brother.

The average age of the examined individuals is 44.29 years with a standard deviation of 12.38. The youngest respondent is 23 years old while the oldest is 81 years old. About 51.1% of the members are under 40 years old and 31.9% of the members are over 50 years old. Nearly, 16.8% of the population consists of 41-50-year individuals. The majority of the greenhouse growers are young. It seems that middle-aged and young people are interested in launching a greenhouse. It is worthy to note that the risk-seeking can be a reasonable factor in establishing a greenhouse for the youth.

Interestingly, 41.9% of respondents have academic education while about 27.6% have

elementary and lower education. Approximately, 30.5% of the examined sample possesses high school education and diploma. On average, the education level of the members is limited to the associate degree. The production of greenhouses is knowledge-based which requires high levels of education. The comparison of the educational level of the greenhouse growers with other farmers, which is achieved through official statistics, shows that greenhouse growers have a higher level of literacy compared to ordinary farmers (MAJ, 2016).

The research findings indicate that 45.5 percent of greenhouses in the province have an area of smaller than 4000 m² (4 acres) and are economically small, even though 37.3% has a moderate scale. Only, 17.2% have an area of above 8 acres and are considered to be large and commercial greenhouses. The smallest greenhouse is 500 m² while the largest one is 8 hectares.

Respondents were asked to list one to four substantial problems. As a result, 849 problems were expressed by greenhouse growers. Then, by adopting the strategy of listening to the whole sentences, the main expressions were identified. Consequently, 54 key codes were determined. Accordingly, the extracted phrases were formulated in terms of meaningful expressions by integrating the same items and removing repetitive cases. At this stage, 27 formulated concepts were obtained. Subsequently, the extracted phrases created eight main factors, jointly.

At the selective coding stage, the greenhouse owners' basic problems in Isfahan were categorized into four categories: human, economic, extra-organizational, infrastructure, and strategic factors. The results are displayed in Figure 1.

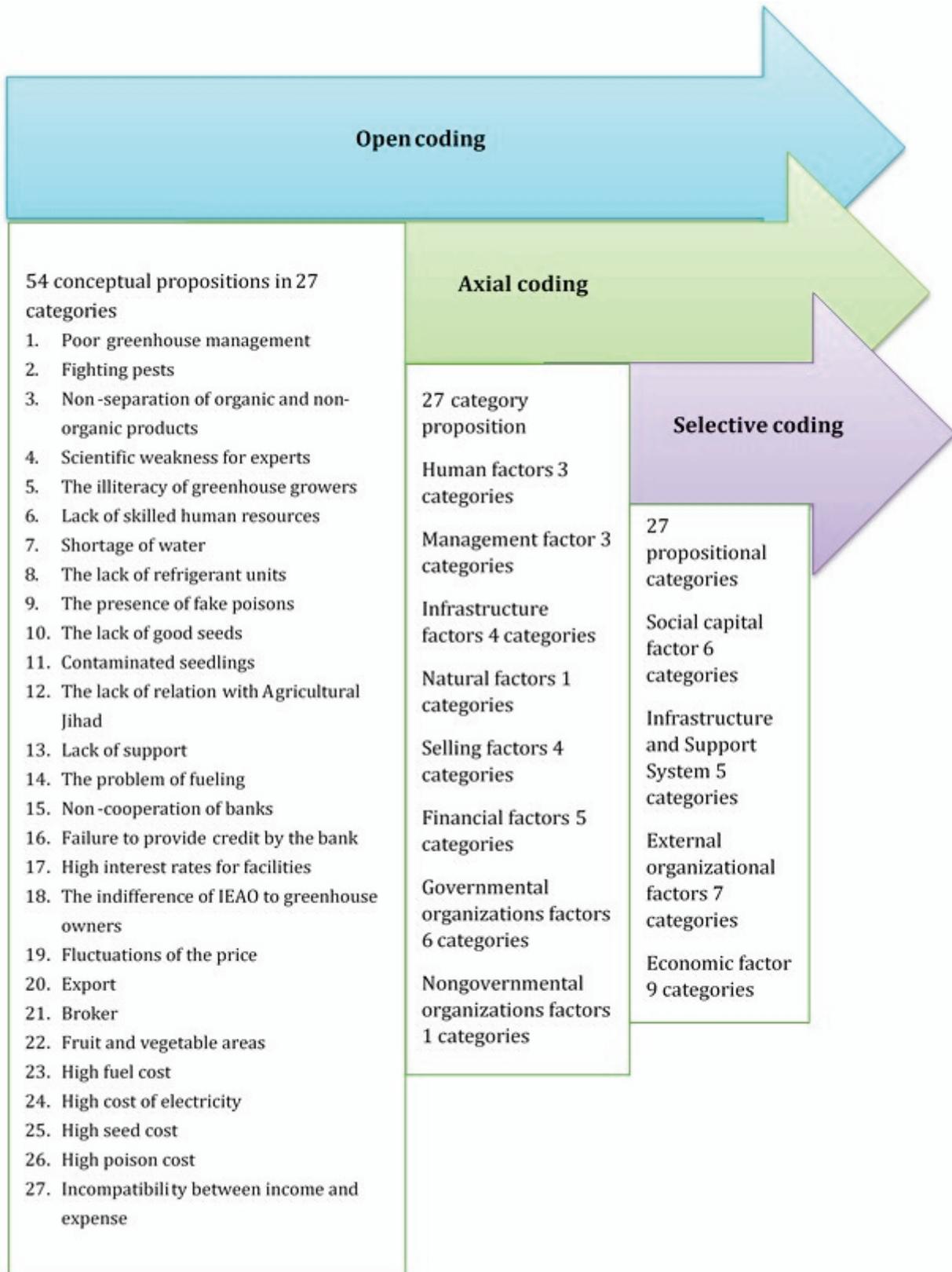


Figure 1. The results of the coding process

In the following sections, according to the size of the studied sample, the focus was placed on the implications of the data, the frequency of the problem returns was counted, and the importance and weight of each problem and consequently, the weight of each factor were evaluated. In this section, each factor is assessed separately in terms of importance and weight.

Economic factors

The economic system includes sale agencies and financial aspects. Totally, 60.7% of the problems of greenhouse owners stem from this factor. Therefore, each of the factors is discussed separately.

Sale factors

The research findings show that the main problem of greenhouse growers in the economic context is how to sale their crops. As a result, the percentage of greenhouse growers that have mentioned this problem is about 45.8. The severe price fluctuation of productions is one of the main elements of the mentioned factor among all the items counted in the research so that 32.9% of greenhouse growers have emphasized the market price fluctuations as the main production barrier while about 3.2% have mentioned export barriers as a major problem. The role of mediators and distribution areas with a frequency of 9.7% is determined as a second issue among economic factors.

Financial factors

In light of the results, 14.5% of greenhouse growers rated financial factors as the third problematic item. Moreover, the high fuel cost with a frequency of 7.8% has been noted as one of the most important problems. Indeed, the excessive cost could be referred to as the misleading management of energy in the greenhouses. The incompatible income-cost ratio resulting from sales and costs is recognized as one of the effective elements of this factor.

It is worth to mention that 2.8% and 0.2%

of the greenhouse owners mentioned the high costs of pesticides and seeds as a financial problem that can hinder their optimal activities.

External organizational factors

Importantly, the role of governmental and non-governmental organizations seems to be more impressive. Therefore, the results show that 18.5% of problems are associated with this type of determinant perceived as the second main factors. The percentage of these problems attributed to governmental organizations is around 15.2 whereas 7.1% is caused by banks. In addition, it is expected that 5% of issues can be attributed to a lack of support by the government and 2.4% is related to Agriculture Jihad organization. Moreover, around 3.3% of the issue is associated with Isfahan Construction Engineering Disciplinary Organization.

Infrastructure and support system

The infrastructure and support system included two categories of infrastructure factors and natural factors as the third problem of greenhouse owners identified with a frequency of 11.7%, which is discussed below briefly.

Natural factor

In general, 6.5 percent of the problems can be explained by dry climate in recent years along with water shortage in the region.

Infrastructure factor

Infrastructure operator can be demonstrated as the fifth barrier with a frequency of 5.3%. The factor can be separated into (1) unavailability of high-quality seed, (2) existence of counterfeit pesticides, (3) inaccessibility of fridge in the region, and (4) polluted seedling with the frequencies of 1.6%, 3.2%, 2%, and 2%, respectively.

Social capital factor

Human resource and management aspects are taken into account as greenhouse prob-

lems with a frequency of 9.1%. They are evaluated separately as follows.

Management factor

The misleading management can justify 5.2% of the barriers greenhouse growers complain about. Poor management of greenhouses, pest control and the non-separation of the organic and non-organic products are 2.4%, 1.9%, and 0.9% responsible for the expected impact of management categories on the greenhouse performance, respectively.

Human factor

Human factor accounts for 3.9% of greenhouse problems. Experts who suffer from scientific weakness, the illiteracy of greenhouse growers, and the absence of skilled human resources (expert and labor) can, in turn, impact greenhouse optimal practices.

Considering the results presented above, the conceptual model of the present study is designed as Figure 2. The proposed solutions based on the research findings attempt to solve the problems of greenhouse owners.



Figure 2. The conceptual model of identification and classification of greenhouse owners' problems

The greenhouse growers are asked to provide practical and executive solutions to resolve the issues cited by themselves. Despite the impact of problems on greenhouse activities, 58.1% of greenhouse growers could not offer any suitable solution to their problems. Indeed, it is expected that by benefiting from the innovative thoughts, problems can be resolved with activists' aids. In fact, it is strongly felt that economic experts should represent solutions to these problems. Although it seems slightly reasonable, the presentation and implementation of solutions require a creative team to contribute to the experts. The usefulness and effectiveness of strategies are crucial to face the existing issues. Moreover, 37.3% of greenhouse growers have proposed that the government's key role is to solve the problems in forms such as state support, coordination of organizations, and government-guaranteed purchasing. However, 2.5 and 16.1% argue that the elimination and restriction of mediators alongside the export enhancement are the alternative answers, respectively. Interestingly, only 7.4% of the respondents have focused on the role of greenhouse growers to resolve problems related to the formation of organizations.

CONCLUSION AND RECOMMENDATIONS

The findings of the present study show that 60.7% of the greenhouse growers' problems are related to economic factors compounded of 45.8% and 14.5% market problems and financial factors, respectively. Specifically, the economic factor and the price fluctuations are the main concern of the greenhouse growers. In fact, the attractiveness of the sector for investors will decrease if severe fluctuations become its routine trend. This finding is consistent with the results of Hosseini Darvishani and Zarei (2009) and Moradinejadi et al. (2007). By using effective tools of supply adjustment, and export and import modification, as well as the alteration of industries, it is expected that the fluctuations of the market be reduced to a large ex-

tent. Certain fluctuations in prices are rooted in government policies for the region. The government can prepare conditions to export greenhouse crops and control market fluctuations by adopting reasonable policies and rational behavior.

It is worthy that if the broader protections are legally observed, the more fragile economic foundation would be expected in the agricultural system and inevitably, it will lead to the national crisis. Interestingly, so far no effective action has been adopted to protect agricultural producers, and the achievements of the production sector have been spoiled by mediators. The identified problems and barriers to the greenhouse growers for marketing are consistent with the result of Pour Afzal et al. (1995), Shafiee and Pour Jopari (2006), Salem (2000), Sandooghi et al. (2015), and Wynen (2004). To protect producers and consumers, it is necessary to alter the structure of the economy and market relations. Focusing on the supply side instead of demand one and providing agricultural crops directly alongside reducing the market margin can lead to improved producer' income. It is essential to empower greenhouse owners in order to play a constructive role in the market and direct supply of goods.

Among the financial factors, the high cost of fuel, especially gas, is emphasized by the greenhouse growers. This is consistent with the findings of Maliwichi et al. (2010), Mashayekhi and Ghaderi (2013), Shafiee and Pour Jopari (2006) and Sayad-Mansour et al. (2015). According to the field observations, all the province's greenhouses use fossil fuels to supply the desirable heat. The high cost of fuel will alleviate the competitiveness of growers in the long run. To diminish fuel consumption in the greenhouse, it is recommended to use two-layer and three-layer nylon coatings in cold seasons and shading systems in greenhouses. Using solar energy, given the climate of Isfahan Province, can also decrease costs and increase the efficiency of greenhouses.

The second factor that is outsourcing fac-

tors accounted for 18.5% of greenhouse owners' problems. Meanwhile, dissatisfaction with the banking system was expressed by greenhouse owners. Unfortunately, it is not accepted in the banking system to pay rural bailout, so it would be difficult for investors to invest. In addition, flexibility in paying the installments is not perceived. According to the nature of agricultural activities and its risky production, however, it is crucial in banking systems to provide a high degree of flexibility in paying installments depending on the type of cultivation and market situation. Positive results can be guaranteed if the complicated rules are eliminated and the related organizations and government provide support for greenhouse owners. This finding is in line with Moradinejadi et al. (2007)'s results.

Due to climate changes, drought and mismanagement, water resources are in critical conditions in the east of Isfahan Province. In recent years, because of drought and drying wells, the water has been taken to greenhouses with tankers, which is referred to greenhouse owners' decision. The water transfer has given rise to increasing costs and this consequently has increased the risk of production in these areas. Before the construction and long-term forecast of water resources, economic locating is required. Importantly, groundwater resources can be recovered if they are nourished by low atmospheric precipitations. Also, in order to make the farmers compatible with the conditions, they should be taught as to how to plant greenhouse crops in a low-water way to improve their performance.

According to the problem tree model, if the three main problems, i.e. economic factor, financial factor, and external factor are solved, 90.9 percent of the issues that farmers encounter will be resolved. Meanwhile, 60.5 percent of the problems of the greenhouse growers can be resolved just by the following approaches: Preventing the severe price fluctuation, qualifying mediators, alleviating fuel costs (especially gas), improving water pro-

ductivity, supporting greenhouse growers by the government.

Only 7.4% of greenhouse growers emphasized the role of agricultural organizations to solve their problems. Clearly, the results show that greenhouse growers do not believe in their ability to solve existing problems. So, they are attracted to the influential external factor or government to achieve the desired result. As a result, it is supposed that the cooperative development is a useful answer to the problems, but prior to any action, it is evident that it is necessary to provide comprehensive education to improve the ability of rational analysis. Therefore, growers are convinced about the advantages that the cooperation and consultation with economic experts can bring about. Consequently, it is expected that adopting such attitudes might lead the greenhouse growers to struggle for solving the existing problems.

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