Designing a Model for Villager Empowerment to Access Self-sufficiency, Case Study: Zanjan Province

Azra Ganjkhanloo
Islamic Azad University Ilam Branch
Alireza Poursaeed (dizajparvane@yahoo.com)
Islamic Azad University Ilam Branch
Roya Eshraghi Samani
Islamic Azad University Ilam Branch
Marjan Vahedi
Islamic Azad University Ilam Branch

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Abstract

Empowering or gaining power is considered as a process through which villagers get capability to form and organize themselves in order to increase their self-confidence, ask for their right to choose freely and independently, being able to control the resources, cope with and eliminate poverty. Accordingly, the present study (a descriptive and non-experimental study) aimed to design a capability model for villagers in Zanjan province in order to achieve self-efficiency and assess the model through structural equations modeling. The main components of the intended model were compared through post-event technique, and the variables of self-sufficiency in villagers were validated by using descriptive-correlational design and structural equations modeling. Furthermore, statistical population included all villagers living in Zanjan province among which 384 ones were selected as the sample population through stratified random sampling with proportional allocation through distributing researcher-made questionnaire among villagers in the province. The data related to descriptive and inferential statistics sections were respectively analyzed by SPSS 25 and AMOS 24 softwares. Based on the results of structural equations, financial connector and condition were determined as the most effective latent variables on capability as a mediator dependent variable. Finally, the highest effect on self-sufficiency was observed in capability.

Significance Statement

By searching in reputable scientific databases and research institutes of Iranian scientific documents, a treatise with this title has not been registered yet. It should also be noted that most of the published articles have dealt with the issue of economic and social empowerment on a case-by-case basis and from a specific angle. The issue of self-sufficiency is addressed for the first time in this study, which is an example of the ability of villagers to meet basic needs sustainably, including food, clothing, housing, health and education needs, and sustainable livelihoods that include livelihood capabilities, tangible and intangible resources.

Introduction

Poverty, as a manifestation of financial, social, and cultural underdevelopment, threatens the political stability, social cohesion, physical and mental health of nations resulting in higher mortality rates, especially among infants and mothers. This would consequently decrease mean lifetime and human efficiency, and lead to declining economic productivity. Per a report of the world bank, almost half of world population (6 billion in 2001) lived on less than two dollars a day and around 1.2 billion spend less than one dollar a day for their personal consumptions. About 63% of total world poverty is related to rural poverty, the percentage of which reaches 90% in some countries such as Bangladesh (Bank, 2007). Economic and social inequalities in the communities are considered as the most important social issues in economics. Today, most countries, especially developing ones, suffer from the severe inequality caused by the pattern of wealth and income distribution due to different reasons. Income inequality has always attracted the attention of humans and is significantly important for political and social actors over the world (Fotros and Shahbazi, 2015). After 2008, Iran entered a turbulent period which influenced the total performance of economics negatively. Annual growth rate of gross domestic production (GDP) in Iran, for the period of 2008–2014, was close to zero being lower than similar countries. information regarding the recent trends of socio-economic welfare among Iranians is scarce. Despite the inaccessibility of the public to formal estimations, the estimates related to poverty trends

are available in academic studies. The estimates are based on the authors' assessment of poverty line or international poverty line as US dollar (Group, 2014). The statistic for the whole country indicates no difference between the rate of rural and urban poverty, while poverty was very higher in rural areas compared to the urban ones (3-folds on average). Although the gap gradually decreased slightly during 2009–2012, it raised again in 2014 (Group, 2014). Based on the World Bank report, Iran could have preserved the positive growth of per capita expenditure in the bottom 40% of population during 2009–2012 despite the negativity of mean economic growth. Most of the individuals placed in the bottom 40% live in rural areas and engage in agriculture and simple jobs (Group, 2014). Although poverty is a global problem, it is raised as the most important issue in the rural areas due to its more incidences in the areas (Kord and Abtin, 2013). Empowering or acquiring power is considered as a process through which villagers gain ability to form and organize themselves for enhancing their self-confidence, asking their right to choose freely and independently, and controlling the resources which help to cope with and eliminate their poverty (Tyler and Wallace, 2006). According to Aziz et al. (2020), legal fields, information and communication technologies, social support, and family law can be considered as important ways for improving women's food security which could lead to their higher bargaining power in using resources. Moreover, Han et al. (2019) found that the policies to increase the security of land ownership can result in enhancing women empowerment and useful welfare effects in developing women's rights, family, and rural economics, as well as helping the bottleneck of gender opportunity gap in the families. Sell and Minot (2018) reported the significant relationship between age and education level with empowerment. Garikipati et al. (2017) pointed out that the rural women who utilized instant loans possess high bargaining power in making different decisions in the family. Samian et al. (2017) found the better social and cultural status of the villagers recorded in fishing cooperatives to the unrecorded ones compared to the users who joined the cooperatives before implementing the plan. Therefore, it can be argued that fishing cooperatives affect rural areas significantly. According to Akter et al. (2017), there are some trends contradicting the conventional narratives of gender inequality in agriculture in the fields of special empowerments. Ganle et al. (2015) mentioned that some women become empowered due to their accessibility to micro-facilities. Furthermore, those having lower control over using the facilities are less empowered, and some become unable over the time because of failing to repay the loan. Akpabio (2009) found a positive relationship between stakeholder encounter in the credit facilities of women's nongovernmental organizations (NGOs) and an increase in their income. Heydari Sareban et al. (2018) mentioned as the most important factors for improving the sense of social justice based on the perspective of villagers under study. The existential nature of the production cooperatives existing in the rural areas under study has altered and resulted in strengthening non-participation and distrust among villagers (Daneshmehr and Hedayat, 2018). According to Imani Jajarmi and Lak (2018), weak interaction and exchange in the different spaces of action resulted in failing to generate convergent actions over the time and disturbing the trend of local community development although ethnic background is considered as the main factor in forming divergent actions. Heydari Sareban et al. (2018) reported the undesirability of agricultural sustainable development indexes. Accordingly, the existence of social capital in rural areas plays an important in rural development due to its creation by participation, trust, and local cohesion. Moradi et al. (2018) introduced an infrastructure factor as the first obstacle to develop agriculture based on the farmers' perspective. Hosseininia and Fallahi (2017) divided the effective factors on rural entrepreneurship development in Manoojan County into nine main categories. The results of Amini et al. (2017) indicated direct and indirect effects, socio-economic status (SES), housing situation, recreational activities, and facilities as the most effective positive factors on assessing rural communities regarding the quality of life. Further, credits affected the economic development of

the rural areas under study (Javanshiri et al., 2017). Heydari Sareban et al. (2016) found a positive and significant relationship between social capital and women's empowerment. Mohajeri Amiri et al. (2016) addressed the positive impact of psychological and social factors on the empowerment of rural women household heads. According to Heydari Sareban and Roknoddin Eftekhari (2016), social (44%), economic (36%), and environmental factors (35%) have the maximum effect on empowering the farmers.

Considering the study of Ghanbari et al. (2016), the village under study encountered different weaknesses and threats such as the lack of tourism infrastructures and appropriate propaganda despite its strengths and opportunities. The mean economic capability of member farmers have been reported as 2.74 by Hadizadeh Bazaz and Bouzarjomehry (2016) which is slightly higher compared to non-member farmers (2.47).

The results of Qanbari and Ansari (2015) addressed the cooperation of rural women in economic activities, as well as individual and social factors as the most important factors influencing their empowerment. Based on the analyses conducted by Bosshagh et al. (2015), the second-order model of rural poverty is affected by the latent social, economic, and political factors. Yasouri and Javan (2015) emphasized the role of infrastructural and institutional obstacles, and environmental, economic, and social factors on the lack of economic diversity in the rural areas in the region with impact factors of 0.633, 0.449, 0.106, and 0.093, respectively. The analyses performed by Amini and Boroumand (2015) demonstrated a positive significant and motivating effect of social and economic variables on individuals' willingness and action to leave the village. Additionally, age and social capitals play a negative and deterrent role in escaping individuals from village. The social, economic, and environmental elements affect villagers' tendency to merge villages with the mean of 3.4–3.6 at 95% significance level (Anabestani and Sadeghi 2014). According to Mohammadi Yegane et al. (2014), asset, education level, and bank credits are considered as some of the most important factors influencing the spatial distribution of poverty in the region under study. Farahani and Hajihosseini (2013) reported the maximum effect on empowerment for infrastructural and individual fields. Taleb and Bakhshizadeh (2012) found that democracy was not implemented in the rural cooperatives of Iran practically and observed as an effective method for development. Participation possesses different levels and fails to imply villagers' co-operation in the designs prepared by others. In addition, optimal participation occurs when villagers can interfere in subjective, objective, decision-making, and executive levels. Factor analysis in the study of Bayat et al. (2011) indicated the severe vulnerability of rural-urban migrations and workforce outflow from village (0.910) to social diseases among cultural factors (Bayat et al., 2011). Achieving developmental objectives at a lower cost and positive outcomes in a long term is considered as one of the challenges facing rural development and villagers' empowerment. How can a cost-effective and optimal developmental design be implemented at the village level to attain progress and empower villagers in order to be self-sufficiency?

Another challenge for empowerment research arises from the fact that current individual and target groups empowerment level measurement approaches to assess the ability to empowerment outcomes relies more on one-dimensional propositions without considering their relationship to contextual characteristics of the audience. In such a situation, step-by-step instructions, absolute and one-sided statements can no longer guarantee the empowerment ability of individuals. Correspondingly, how can a farmer with performance improvement training courses yet incapable of acquiring chemical fertilizers and high-yield inputs, as the sole method of increasing yield and income, be considered capable. Nonetheless, the group could efficiently take advantage of the new inputs marketing their produce, with support of the government, becoming empowered

farmers (accounting for the neutralization of desired results of training and use of new inputs by price fluctuations).

To empower the villagers, the development and provision of socio-economic infrastructure of the villages can play an important role. Therefore, it is very important to provide a suitable model for the empowerment of the villagers, which will lead to the improvement of their economic and social situation. In this context, we aimed to elucidate the main components of the rural empowerment model to achieve self-sufficiency.

Zanjan province with the area of 22,164km2 is located in the northwest of Iran. Based on the latest administrative divisions, the province includes 8 counties, 17 districts, 48 dehestans, and 21cities, which 346,283 individuals of its population lived in villages in 2016. The province possesses many abilities and talents in agriculture field. In fact, suitable climate, fertile soil, vast plains, adequate water resources, plant species diversity, abundant human force provide the basis to the province for improved food and agricultural crop production. However, the province has failed to utilize its potentials and suffers from poverty, illiteracy, malnutrition, and low agricultural efficiency. Figure 1 displays the theoretical model of the study based on previously conducted studies.

Figure 1 is here.

Conceptual model of research

The ability of villagers as an intermediate dependent variable is affected by various indicators such as social trust, social participation, social solidarity, social interaction, market access, job security, access to facilities, financial conditions, financial relationship and risk-taking. In this study, we used the empowerment model of the World Bank as well as Alsop and Hinshen as the basic model to determine the extent of economic and social factors on the empowerment of villagers (adding several indicators to use related managers in rural areas). Effect size of various variables were assessed in this model (empowerment ability of villagers and self-sufficiency as dependant variables, economic and social indicators as independent variables).

Objectives

The present study generally sought to design a capability model for villagers in Zanjan province in order to achieve self-sufficiency. In this regard, the following specific objectives were pursued.

1. Explaining the main components of capability factors among villagers in Zanjan province
2. Assessing the status of components related to capability factors among villagers in Zanjan province
3. Specifying the main components of the self-sufficiency factors among villagers in Zanjan province
4. Evaluating the status of the components related to self-sufficiency factors among villagers in Zanjan province
5. Validating the capability model for villagers in Zanjan province

Method

The study is considered as an applied, non-experimental, and field research with respect to objective, variable control, and data collection, respectively. In addition, the study was conducted quantitatively through the

structural equations modeling as a correlation method. Based on literature review and behavioral models, 12 variables were identified. Among all, self-sufficiency and empowerment were assessed as final and mediator dependent variables, respectively. Furthermore, other factors were investigated as independent variables (1. social trust, 2. participation, 3. cohesion and interaction, 4. market and facility accessibility, 5. job security, 6. financial condition and interface, 7. risk-taking). The statistical population of the study included all villagers living in Zanjan province which were 346,283 individuals based on 2016 census. Statistical sample size was determined as 384 by using Cochran formula and the individuals were sampled using stratified random sampling with proportional allocation among 8 counties, 21 cities, 17 districts, 48 dehestans, and 935 villages having residents in Zanjan province. Furthermore, the data were collected using a researcher-made questionnaire with closed-ended questions on five-point Likert scale (very low, low, somewhat, high, and very high). The validity and reliability of the questions were confirmed. Regarding the structural equations of construct validity, there was a probability for low response rate due to flotation of statistical population, as well as unavailability to some. In this regard, 400 questionnaires were distributed through proportional allocation to overcome the problem. The data in descriptive and inferential statistics sections were analyzed using SPSS 25 and AMOS 24, respectively.

Results

First, demographic factors were described by descriptive statistics. Then, the relationships between independent and dependent variables were evaluated through inferential statistics using structural equations modeling (assessing measurement and structural models). Two hundred eighty-five men (74.2%) and 99 women (25.8%) participated in the study. With no exception in this study much of attention has been given to men's empowerment as the breadwinners of family due to prevalence of patriarchal culture in the villages under investigation. The minimum and maximum age of participants (384 individuals) in our study were 18 and 73 years old (mean of 45 years old), respectively. Majority of the participants (52.6%) were non high school graduates. Four out of five of the participants were married (305, 79.4%) and small portion of the population were divorced (15, 3.9%). All individuals were employed (permanently employed: 231 individuals (39.9%), seasonal and factory workers: 123 (32.0%), self-employed individuals and those working in non-agricultural jobs: 108 (28.1%)). The mean of their job experience was 12.46 years and most individuals had the experience of 10-15 years (32, 56.3%). Furthermore, 246 of the participants (64.1%) owned a house and 272 (70.8%) were household heads. Large part of the population had no saving (332, 86.5%) and were not covered by any supportive institution (314, 81.8%). Almost half of the participants were covered by rural insurance (166, 43.2%). The mean of family members was determined as 3.83 (about 4) and nearly 50 percent belonged to two-, three- and four-member families (182, 47.4%). About one out of four of the individuals earned ≤500,000 tomans (104, 27.1%) while the mean of income was 1,781,818 tomans.

As shown in Table 1, the composite reliability (CR) and Cronbach's alpha coefficient of all constructs in the study were more than 0.9 and 0.7, respectively. Accordingly, validity and reliability of constructs were confirmed during investigating the measurement model. The measurement model’s goodness of fit was determined before drawing any structural model and the results are summarized in Table 1. After confirming the fit related to the model of measuring the effect of capability on villagers' self-sufficiency using confirmatory factor analysis, the structural model evaluation method was used to test the hypothesis using the theoretical framework proposed in the study. In order to evaluate the validity of measurement model of construct factors, we estimated the

factor loading of each observable variable. Moreover, the significance of their difference with zero was examined by t-test. Based on the results, the loading of the variable on construct factors was significant at the 0.05% error level. Thus, each item plays a significant role in measuring the factors at 95% probability level, which confirms the validity of the model.

Table 1 is here.

Table 2 shows the calculated fit indices related to the model of measuring construct factors. We calculated the degree of freedom (df), as well as chi-square statistic and normed chi-square index (CMIN/df) of factors. In addition, normed chi-square index was computed by dividing chi-square statistic by the degree of freedom. All of the values were less than 3 (maximum acceptable value) indicating the appropriateness of our model fit to the data. Further, RMSEA was below 0.08 (maximum acceptable value), which demonstrates the model goodness of fit for each factor. Furthermore, the CFI, GFI, NFI, and AGFI of each factor were above 0.90 (minimum acceptable value), which indicates the goodness of fit to data. Finally, RMR of <0.1 (maximum acceptable value) reflects acceptable model fit.

Table 2 is here.

Results of evaluation of validity and fit indices related to the measurement model of capability factor, as presented in Tables 3 and 4, and Figure 2, confirm the model with respect to the validity of measuring scales and represent its acceptable fit. The highest coefficient of determination related to latent variables on capability factor was 0.815 for financial interface on villagers' self-sufficiency. Accordingly, the latent variables of financial mediator and capability can predict 81% of variations in the variance of financial interface on villagers' self-sufficiency.

Table 3. 4 are here.

To check the validity of the empowerment factor measurement model, the factor load of each of the observed variables was estimated using t-test, the significance of their difference was tested. Also, to evaluate the reliability or reliability of the scales used to measure the empowerment factor, the Combined Reliability Criterion (CR) for the factor and the Multiple Correlation Squared criterion (R^2) for each of the observed variables are calculated and their values are given in the table 4.

Figure 2 is here.

Tables 5 and 6, and Figure 3 illustrate the results of evaluating the validity and fit indices related to the measurement model of self-sufficiency, by confirming the model with respect to the validity of measuring scales and indicating its acceptable fit. According to results, all hypotheses of the study were confirmed and the final model of villagers' self-sufficiency was delineated (Figure 4).

Table 5. 6 are here.

To evaluate the validity of self-sufficiency factor measurement model, the factor load of each of the observed variables was estimated. As shown in Table 5, the significance of their difference with zero was tested using *t*-test indicating the load of each variable. It is significant on the self-sufficiency factor at the error level of 0.05 (*t*

>1.96). Therefore, all 15 variables belonging to the self-sufficiency factor had significant share in measuring that factor, and this confirms the validity and/or validity of the self-sufficiency factor measurement scale.

Also, to evaluate the reliability or reliability of the scales used to measure the self-sufficiency factor, the Combined Reliability Criterion (CR) for the factor and the Multiple Correlation Squared criterion (R^2) for each of the observed variables are calculated and their values are given in the table (above).

The value of fitness indicators for the self-sufficiency factor measurement model is calculated and is given in Table (6). According to our results, the value of Chi-square statistic equals to c^2 =87.716 with a degree of freedom (df) 61. The value of the normal Chi-square index (calculated by dividing the Chi-square statistic by its degree of freedom (c^2 / df)) equals to 1.438 (< 3 (maximum possible value)). Therefore, according to this index, the suitability of the model for measuring the self-sufficiency factor to the data is appropriate. The value of RMSEA index is equal to 0.034 (<0.08 (maximum acceptable value)). Therefore, based on the value of this index, the model has a good fit.

The values of CFI, GFI, NFI and AGFI indices are 0.995, 0.971, 0.982 and 0.943, respectively (all four indices are >0.90 (minimum acceptable value)). Therefore, based on these four indicators, the fit of the model to the data is good. Also, the value of RMR index equals to 0.031 (<0.1 (maximum acceptable value)). Therefore, it can be judged that the model as a whole has an acceptable fit. In general, the above fitness indicators show that the factor structure and the measurement model designed to measure the self-sufficiency factor have a good fitness.

Figure 3 is here.

Figure 4 is here.

Table 7 is here.

Figure 4 and Table 7 present the results of analyzing the paths of each variable. As shown, the test statistics and significance level of all indices were above 1.96 and below 0.05, respectively. The results related to the assessment of the validity and fit indices of the model for measuring intended model are provided in Tables 7 and 8, and Figure 4., which confirm the model with respect to the validity of measuring scales and represent its acceptable fit.

Table 8 is here.

Social trust with a coefficient of 0.421 had a direct and significant effect on empowerment considering <0.05 as the level of significance of the path of social trust and empowerment (confidence level of 0.99). Moreover, social participation with a coefficient of 0.556 had direct and significant effect on empowerment considering <0.05 (p = 0.000) as the significance level of the path of social participation and empowerment (confidence level of 0.99). The significance level of social interaction and empowerment path is <0.05 (p = 0.000), so social interaction has a direct and significant effect on empowerment with a coefficient of (0.525) with a confidence level of 0.99. The significance level of market access and capability is <0.05 (p = 0.000), so market access has a direct and significant effect on capability with a coefficient of (0.545) with a confidence level of 0.99. At this level, only the level of job security and empowerment is not significant. However, the significance level of

access to facilities and credits and capability is <0.05 (p = 0.000), so social trust has a direct and significant effect on capability with a coefficient (0.893) with a confidence level of 0.99. The significance level of the path of financial condition and capability is <0.05 (p = 0.000), so financial condition has a direct and significant effect on capability with a coefficient (0.421) with a confidence level of 0.99. The significance level of the financial interface and capability path is <0.05 (p = 0.000), so the financial interface has a direct and significant effect on capability with a coefficient (0.894) with a confidence level of 0.99. The significance level of risk-taking and empowerment path is <0.05 (p = 0.000), so risk-taking has a direct and significant effect on empowerment with a coefficient of (0.800) with a confidence level of 0.99. Significance level of empowerment and self-sufficiency path is <0.05 (p = 0.000), so empowerment has a direct and significant effect on self-sufficiency of villagers with a coefficient (0.933) with a confidence level of 0.99.

Discussion And Conclusion

The human empowerment approach first proposed by Amartya Sen, argues that individual well-being and social order are based on the principle of what people want and can do. In assessing individual well-being more attention is given to functions rather than resources and income. Functions are based on the work of human beings and desires and factors such as health, possibility of social participation, and housing. Functions are beyond the material aspect of welfare and can be actual or potential (capabilities) (Mahmoudi, 2013). In other words, empowerment includes giving more power, responsibilities and authorities to employees and managers of decision-making body, performing some activities and more control over their jobs (Ziaei et al., 2008). The human empowerment approach, the mainstay of which is growth and creation of human capabilities, can achieve multiplicity of development goals in a friendly and humane process based on having a free and desirable life by linking growth and redistribution (Mahmoudi). Yet, the factors affecting empowerment are categorized from different perspectives. In the view introduced by Spriters Jerchen et al. (1992), main factors affecting empowerment are: 1) individual factors: education, work experience, gender, race, internal control center, self-esteem, 2) group factors: group effectiveness, group importance, intra-group trust, perception of group members about their impact on managers, 3) organizational factors: ambiguity in role, access to resources, scope of control, access to information, socio-political support, individual position in the organizational hierarchy, participatory atmosphere of the work unit.

According to William (1991), several factors facilitate empowerment, some of which are: 1) positive self-assessment, 2) desire to be empowered, 3) awareness of your potential abilities, 4) gain confidence and 5) motivation, interest, and passion. Recognizing personal emotions and feelings and gaining the power to control and guide them (Fazel Beigi and Yavari, 2009). As a result, by identifying different factors of villagers' empowerment, the empowerment model for self-sufficiency can be addressed.

Based on the results of the present study, the square of multiple correlations related to self-sufficiency was 0.87 explaining 87% of its variance by the involved predictor variables. This indicates the desirability of the final model. Moreover, evaluating the path coefficients demonstrated financial interface (0.903) and condition (0.894) as the most effective latent variables on capability as a mediator dependent variable. In addition, we determined the maximum effect of capability on self-sufficiency (0.933). Per our findings, social trust, participation, and cohesion significantly influenced capability. In other words, they indirectly affected self-sufficiency through capability. Our results agreed with those reported by other researchers regarding social trust

(Aziz et al., 2020; Akpabio, 2009; Taleb and Bakhshizadeh, 2013; Qanbari and Ansari, 2015; Heydari Sareban, 2018; Heydari Sareban et al., 2018), social participation (Bosshagh et al., 2015; Taleb et al., 2012; Heydari Sareban and Roknoddin Eftekhari, 2016; Hosseininia and Fallahi, 2017; Samian et al., 2017), and social cohesion (Anabestani and Sadeghi, 2014; Heydari Sareban et al., 2016; Amini et al., 2017; Samian et al., 2017; Imani Jajarmi and Lak, 2018; Aziz et al., 2020). Considering the significant impact of social interaction and market accessibility on capability, as well as their indirect effect on self-sufficiency through capability, the results of the present study were in line with those reported by other researchers on social interaction (Anabestani and Sadeghi, 2014; Bosshagh et al., 2015; Heydari Sareban and Roknoddin Eftekhari, 2016; Daneshmehr and Hedayat, 2018; Imani Jajarmi and Lak, 2018; Aziz et al., 2020) and market accessibility (e.g., Farahani and Hajihosseini, 2013; Amini and Boroumand, 2015; Ghanbari et al., 2016; Hosseininia and Fallahi, 2017; Moradi et al., 2019). Furthermore, we observed the significant effect of job security, as well as facility and credit accessibility on capability. In fact, they indirectly influenced self-sufficiency through capability. Our observations agreed with the previously reported results about job security (Amini and Boroumand, 2015; Akter et al., 2017; Amini et al., 2017; Hosseininia and Fallahi, 2017; Sell and Minot, 2018) and facility and credit accessibility (Khayyati and Aazami, 2014; Ganle et al., 2015; Garikipati et al., 2017). Furthermore, financial condition and interface, as well as risk-taking significantly affected capability. Results of the present study on indirect effect of those variables on self-sufficiency through capability are consistent with previously published ones (Mohammadi Yegane et al., 2014; Ganle et al., 2015; Yasouri and Javan, 2015; Garikipati et al., 2017; Mohammadi Yegane et al., 2014; Bosshagh et al, 2015; Ganle et al., 2015; Yasouri and Javan, 2015; Garikipati et al., 2017; Farahani and Hajihosseini, 2013; Yasouri and Javan, 2015; Amini et al., 2017; Han et al., 2019).

Suggestions

Based on the observations of our study, we would suggest various practices for the empowerment of villagers to access self-sufficiency. We suggest holding extension courses in various modes for the training of villagers (individually or as a group), considering the significant effect of social trust on capability. Course can be offered by a private extension company funded by the Agriculture Jihad Organization of the region. The issue results in increasing villagers' social trust, along with enhancing their awareness. We propose presenting different facilities to implement adopted decisions and policies for villagers' decision making and participation since social participation had a great impact on capability. Additionally, it is recommended to provide educational and extension programs bringing a basis for the role-playing and responsibility of villagers in collective participatory activities and units considering the impact of social cohesion on capability. We also are reporting the impact of social interaction on capability. Accordingly, establishing cultural and social centers in mosques and NGOs are suggested to develop cultural and social facilities in the villages for improving the villagers' spirit of co-operation as one of the main indices of social capital leading to cohesion, participation, interaction, and trust. We advise forming different rural cooperatives to change sale market from traditional to advanced external ones through purchasing and storing agricultural products for selling in proper time at desired price, considering the effect of market accessibility on capability. Given the effectiveness of job security on capability, developing local industries, industrial service sites, and rural cooperatives in the centers of rural systems is highly recommended. Accordingly, capability was affected by facility and credit accessibility, as well as financial condition and interface. Therefore, preparing an appropriate framework to develop micro-credits, especially for low-income and poor individuals in rural areas is suggested. Nonetheless, the framework should

be associated with strategic objectives, policies, and supportive packages for the poor in the form of micro-financing. The effect of risk-taking on capability, and recognition of feeling trust and security, valuing life, and having friendship and family relations was noteworthy. As the factors influencing and predicting the risk-taking rate of villagers, their higher trust in entourages and surrounding governmental institutions, more valuation for life, and stronger friendship and family relations result in increasing their risk-taking ability, risking rationally with greater calm more, and achieving higher successfulness in their business. Thus, strengthening the above-mentioned issues, especially enhancing the sense of security and trust is seriously proposed in rural community.

Authors' contributions

AG collected the data for this study and conducted the statistical analyses, AP, RES and MV developed the original hypotheses and designed the experiments, both authors have read and approved the finalized manuscript.

Declarations

Authors' contributions: AG collected the data for this study and conducted the statistical analyses, AP, RES and MV developed the original hypotheses and designed the experiments, both authors have read and approved the finalized manuscript.

Compliance with Ethical Standards: Protocol (no. 1400-IAU. 09.30.2019) was approved by the experimental ethics committee of Islamic Azad University, Ilam Branch.

Data availability statement: The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Consent to Participate: Not applicable.

Consent for publication: This study did not involve children or individual details, but 100% data usage.

Disclosure of potential conflicts of interest: Not applicable.

Informed consent: We decided, given voluntarily, to agree to publish our manuscript in "Science & Education" journal.

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References

1. Abbott, P., Tyler, M., and Wallace, C. 2006. *An introduction to sociology: Feminist perspectives*: Routledge.
2. Akpabio, I.A. 2009. "Women NGOs and rural women empowerment activities in the Niger Delta, Nigeria." Environment, development and sustainability 11 (2):307–317. doi: 10.1007/s10668-007-9112-5.

3. Akter, S., Rutsaert, P., Luis, J., Htwe, N.M., San, S.S., Raharjo, B., and Pustika, A. 2017. "Women's empowerment and gender equity in agriculture: A different perspective from Southeast Asia." Food Policy 69:270–279. doi: https://doi.org/10.1016/j.foodpol.2017.05.003.
4. Amini, A., and Boroumand, T. 2015. "Sociological explanation of influent factors on depopulation of rural areas." Journal of Applied Sociology 26 (1):137–154.
5. Amini, A., Sadeghian, F., and Zahedi, T. 2017. "Structural Modeling and Casual Interpretation of Rural Communities'Self-Evaluation of Quality of Lie and Its Determinants." Journal of Applied Sociology 28 (1):87–112. doi: 10.22108/jas.2017.21368.
6. Anabestani, A.A., and Sadeghi, F. 2014. "Evaluation of effective elements on villagers' tendency to the merger of villages and creation of new cities." Journal of Spatial Planning 4 (1):25–42.
7. Aziz, N., Nisar, Q.A., Koondhar, M.A., Meo, M.S., and Rong, K. 2020. "Analyzing the women's empowerment and food security nexus in rural areas of Azad Jammu & Kashmir, Pakistan: By giving consideration to sense of land entitlement and infrastructural facilities." *Land Use Policy* 94:104529. doi: https://doi.org/10.1016/j.landusepol.2020.104529.
8. Bank, W. 2007. *The World Bank Annual Report 2007*: The World Bank.
9. Bayat, N., Rastegar, E., Khorasani, M., and Nasab, A. 2011. "Recognition and analysis of effective factors on livestock economy decline in rural regions (case study: Mahdavyeh and Parydar-Malayer township)." Rural Research 2 (8):153–181.
10. Bosshagh, M.R., Taghdisi, A., and Taghvaei, M. 2015. "A Model for Explaining the Poverty in Rural Areas (Case Study: Chaharmahal Bakhtiari Province)." Journal of Research and Rural Planning 4 (3):37–39.
11. Daneshmehr, H., and Hedayat, O. 2018. "An Analysis of the Narrative of the Interest Groups about the Collapse of Social Capital among the Rural Production Cooperatives (Case of Study: Rural Production Cooperatives in of Kurdistan Province." Journal of Community Development (Rural and Urban Communities) 10 (2):207–230. doi: 10.22059/JRD.2019.71114.
12. Fotros, M.H., and Shahbazi, F. 2015. "A Study on the status of Povertyand inequality in urban and rural areas in Iran during the before and after the implementation of Targeted Subsidy Reform Law (1391 – 1381)." Quarterly Journal of Fiscal and Economic Policies 3 (9):7–36. doi: http://qjfep.ir/article-1-170-en.html.
13. Ganle, J.K., Afriyie, K., and Segbefia, A.Y. 2015. "Microcredit: Empowerment and disempowerment of rural women in Ghana." World Development 66:335–345. doi: https://doi.org/10.1016/j.worlddev.2014.08.027.
14. Garikipati, S., Agier, I., Guérin, I., and Szafarz, A. 2017. "The cost of empowerment: multiple sources of women's debt in rural India." The Journal of Development Studies 53 (5):700–722. doi: https://doi.org/10.1080/00220388.2016.1205734.
15. Ghanbari, y., Kazemi, z., Barghi, h., and askari, f.K. 2016. "Investigation and Identifing The Potentials, Capabilities and Limitations of Tourism Industry in Rural Areas Case Study: Meymand Village in Kerman County." *Geography and Territorial Spatial Arrangement* 6 (20):75–94. doi: 10.22111/GAIJ.2016.2693.
16. Group, W.B. 2014. "World development indicators 2014: World Bank Publications."
17. Han, W., Zhang, X., and Zhang, Z. 2019. "The role of land tenure security in promoting rural women's empowerment: Empirical evidence from rural China." Land Use Policy 86:280–289. doi: https://doi.org/10.1016/j.landusepol.2019.05.001.

18. Heydari Sareban, V. 2018. "Analysis of the Factors Improving the Sense of Social Justice (Case study: Ardabil City)." Geograghy and Territorial Spatial Arrangement 8:91–110. doi: 10.22111/GAIJ.2018.4148.
19. Heydari Sareban, V., Bakhtar, S., and Ziarati, M. 2018. "The impact of social capital on sustainable development of agriculture in rural areas (Case study: Kermanshah province villages)." Geography and Sustainability of Environment 8 (27):59–74.
20. Heydari Sareban, V., Bakhtari, S., and Taleihur, V. 2016. "Studying the Effects of Social Capital Components on the Empowerment of Rural Women in Sheyan Village of Eslamabad-e Gharb City." Journal of Woman and Society 7 (28):27–49.
21. Heydari Sareban, V., and Roknoddin Eftekhari, A. 2016. "Analysis of the influential factors on farmers' empowerment, case study: Adrabil province." Iranian Journal of Agricultural Economics and Development Research 47 (3):743–754. doi: 10.22059/IJAEDR.2016.60589.
22. Hosseininia, G., and Fallahi, H. 2017. "Factors affecting the development of rural entrepreneurship: a case study on the rural areas of Manoojan County." Journal of Rural Research 8 (1):22–37.
23. Imani Jajarmi, H., and Lak, A. 2018. "The Sociological Study of Divergent Actions in the Neighboring Villages of Aligoodarz and Their Impact on Community Development." Journal of Community Development 10 (2):297–322. doi: 10.22059/jrd.2019.71206.
24. Javanshiri, M., Bozarjomehri, K., Harati, O., and Mahmoudi, H. 2017. "The role of microcredits in the development of mountainous and plain rural areas (a case study of the villages of Kardeh and Miyan-velayat in the Mashhad County)." Rural Development Strategies 4 (2):157–180. doi: 10.22048/RDSJ.2017.61710.1580.
25. Khayyati, M., and Aazami, M. 2014. "Analysis of rural economic empowerment and its determinants (Case study: Rice producers in Rasht county)." Journal of Research and Rural Planning 3 (5):43–55.
26. Kord, B., and Abtin, A. 2013. "Review the Factors Affecting on Development of Rural Entrepreneurship in Sistan and Baluchestan Province (With Focus on Developing Rural Growth Centers, Developing in Formation and Communication Technologies and Empowerment of Rural Women)." Geography and Development 11 (32):14–11. doi: 10.22111/GDIJ.2013.1160.
27. Mohammadi Yegane, B., Cheraghi, M., and Yazdani, Z. 2014. "Analysis of the factors affecting the spatial distribution of poverty in rural areas, by emphasizing on the economic-social characteristics, case study: Mahmoudabad village, Shahin Dej Town Ship." Geography and Territorial Spatial Arrangement 4 (13):83–96. doi: 10.22111/GAIJ.2014.1775.
28. Moradi, Z., Zadeh, A., and Rostami, F. 2019. "Identification barriers of agricultural development from farmers perspective of the Qaratureh district." Rural Development Strategies 5 (3):311–327.
29. Qanbari, Y., and Ansari, R. 2015. "Identify and Explaining the Social and Economic Factors Affecting Rural Women Empowerment (Case Study: Rostam County)." Journal of Research and Rural Planning 4 (11):1–4.
30. Samian, M., Saadi, H., Asadi, M., Mirzaei, K., Ansari, E., Ahmadihagh, E., and Soleymani, A. 2017. "The role of fishing cooperatives on social–Economic and cultural development of rural areas of Bord Khun city of Bushehr, Iran." Journal of the Saudi Society of Agricultural Sciences 16 (2):178–183. doi: https://doi.org/10.1016/j.jssas.2015.06.001.
31. Sell, M., and Minot, N. 2018. What factors explain women's empowerment? Decision-making among small-scale farmers in Uganda. Paper presented at the Women's Studies International Forum.

32. Taleb, M., and Bakhshizadeh, H. 2013. "Rural governance and rural cooperatives in Iran." Journal of Community Development (Rural and Urban Communities) 4 (2):25–46. doi: 10.22059/JRD.2013.30285.
33. Taleb, M., Mirzaie, H., and Naderi, A. 2012. "Evaluation of the role of public participation in rural development projects (Case study: combining plans in rural areas)." Journal of Community Development (Rural and Urban Communities) 4 (1):18–11. doi: 10.22059/JRD.2012.28895.
34. Yasouri, M., and Javan, F. 2015. "Analysis of Limitation in Rural Economy Diversification Case: Upper Ashkevar in Rudsar County." Quarterly Journal of Space Economy & Rural Development 4 (13):19–37. doi: http://doi.org/10.18869/acadpub.serd.4.13.19.

Tables

Table 1. Results of assessing the measurement models of latent variables on villagers' self-sufficiency

Hidden variable	Number of questions	Cronbach's alpha coefficient (Alpha≥0/7)	Composite reliability coefficient (CR≥0/7)
Social trust	11	0.770	0.99
Social participation	10	0.751	0.94
Social cohesion	9	0.829	0.97
Social interaction	8	0.820	0.98
Market accessibility	7	0.918	0.99
Job security	10	0.943	0.98
Facility and credit accessibility	6	0.940	0.99
Financial condition	3	0.901	0.98
Financial interface	9	0.957	0.99
Risk-taking	7	0.904	0.98
Self-sufficiency	15	0.953	0.99

Table 2. Fit indices of the model for measuring independent variables

Fit index Variable	CMIN	Df	CMIN/df (≤3)	CFI (≥0.90)	GFI (≥0.90)	NFI (≥0.90)	AGFI (≥0.90)	RMR (≤0.1)	RMSEA (≤0.08)
Social trust	35.966	26	1.383	0.995	0.983	0.981	0.956	0.052	0.032
Social participation	36.042	24	1.502	0.987	0/982	0.962	0.985	0.049	0.037
Social cohesion	18.999	24	1.461	0.996	0.989	0.987	0.961	0.022	0.035
Social interaction	8.798	7	1.257	0.999	0.994	0.994	0.970	0.030	0.026
Market accessibility	18.014	7	2.573	0.994	0.986	0.991	0.946	0.045	0.065
Job security	30.917	20	1.546	0.997	0.984	0.991	0.956	0.024	0.038
Facility and credit accessibility	1.720	2	0.860	1.000	0.998	0.999	0.984	0.008	0.000
Financial condition	-	-	-	1.000	1.000	1.000	-	0.000	0.000
Financial interface	25.773	16	1.611	0.997	0.985	0.993	0.985	0.016	0.040
Risk-taking	13.626	7	1.947	0.996	0.990	0.993	0.959	0.021	0.040

Table 3. Assessing the model for measuring capability factor by using confirmatory factor analysis

Factor	Variable	Standardized factor loading	Standard error	T	R^2	CR
Capability	**Social trust**	0.411	0.040	8.201	0.169	0.99
	Social participation	0.540	0.031	11.221	0.291	
	Social cohesion	0.448	0.031	9.033	0.200	
	Social interaction	0.511	0.034	10.973	0.261	
	Market accessibility	0.514	0.037	11.108	0.264	
	Job security	0.869	-	-	0.755	
	Facility and credit accessibility	0.899	0.028	24.651	0.808	
	Financial condition	0.900	0.015	24.723	0.811	
	Financial interface	0.903	0.040	24.845	0.815	
	Risk-taking	0.788	0.030	19.260	0.620	

Table 4. Fit indices of the model for measuring mediator dependent variable

Fit index	CMIN	Df	CMIN/df	CFI	GFI	NFI	AGFI	RMR	RMSEA
Variable			(≤3)	(≥0.90)	(≥0.90)	(≥0.90)	(≥0.90)	(≤0.1)	(≤0.08)

Table 5. Evaluating the model for measuring self-sufficiency by using confirmatory factor analysis

Factor	Variable	Standardized factor loading	Standard error	t	R^2	CR
Self-sufficiency	How hopeful are you in improving your income in the future years?	0.796	0.044	20.010	0.633	0.99
	To what extent can your current livelihood meet the needs of your family in the future?	0.773	0.043	19.805	0.598	
	To what extent do your agricultural activities meet the needs of you and your family in long term?	0.756	0.049	18.272	0.571	
	To what extent is current income enough for you and your family livelihood?	0.733	0.051	17.416	0.538	
	Considering severe climate changes and their effect on your production rate, to what extent can you meet your basic needs in long term?	0.674	0.053	15.233	0.455	
	To what extent can non-agricultural incomes meet your livelihood needs in your perspective?	0.642	0.053	14.230	0.412	
	To what extent can agricultural product insurance help you earn a secure income from agriculture?	0.644	0.053	14.302	0.415	
	To what extent are your agricultural land size and livestock number suitable to meet your livelihood needs in the future?	0.618	0.055	13.465	0.382	
	To what extent do government policies ensure your future in agriculture in your perspective?	0.679	0.051	15.441	0.461	
	To what extent can the implementation of subsidy reform plan benefit your future income?	0.661	0.053	14.841	0.437	
	Given your dependents, do you think your current income can meet their needs in the future?	0.763	0.049	18.626	0.583	
	Considering the water resources status available for you, to what extent can you continue agricultural (livestock) activities in the future in your perspective?	0.766	0.049	18.641	0.587	
	To what extent do you currently have accessibility to enough, appropriate, and healthy food?	0.828	0.042	21.545	0.685	
	To what extent has your income met your family expenses this year?	0.809	0.039	236/23	655/0	

In general, how appropriate do you assess your livelihood conditions	0.900	-	-	810/0

Table 6. Fit indices of the model for measuring final dependent variable

Fit index Variable	CMIN	Df	CMIN/df (≤3)	CFI (≥0.90)	GFI (≥0.90)	NFI (≥0.90)	AGFI (≥0.90)	RMR (≤0.1)	RMSEA (≤0.08)
Self-sufficiency	87.716	61	1.438	0.995	0.971	0.982	0.943	0.031	0.034

Table 7. The parameters related to paths along with significance level

Hypotheses			Estimated parameter (Estimate)	Standard deviation (SD)	Critical ratio (CR)	Significance level (P)
Social trust	→	Capability	0.421	0.040	8.464	0.000
Social participation	→	Capability	0.556	0.030	11.781	0.000
Social cohesion	→	Capability	0.461	0.031	9.390	0.000
Social interaction	→	Capability	0.525	0.035	11.968	0.000
Market accessibility	→	Capability	0.545	0.038	11.452	0.000
Job security	→	Capability	0.568	-	-	-
Facility and credit accessibility	→	Capability	0.893	0.028	24.521	0.000
Financial condition	→	Capability	0.894	0.015	24.591	0.000
Financial interface	→	Capability	0.903	0.040	25.140	0.000
Risk-taking	→	Capability	0.800	0.030	19.934	0.000
Capability	→	Self-sufficiency	0.933	0.005	20.524	0.000

Table 8. Fit indices of the model for measuring final independent variable

Fit index variable	CMIN	Df	CMIN/df (≤3)	CFI (≥0.90)	GFI (≥0.90)	NFI (≥0.90)	AGFI (≥0.90)	RMR (≤0.1)	RMSEA (≤0.08)
Self-sufficiency	342.639	233	1.471	0.986	0.933	0.985	0.906	0.461	0.036

Figures

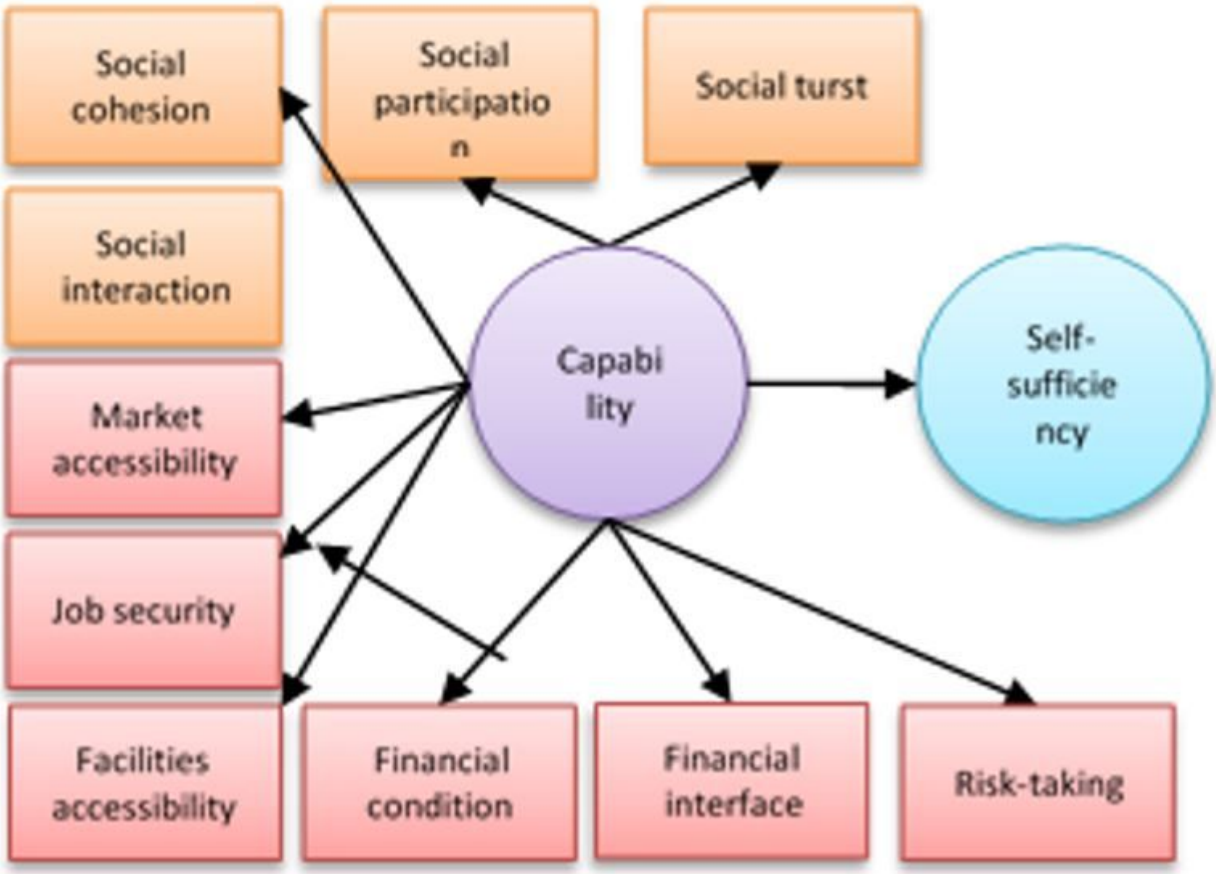

Figure 1

The theoretical framework of the study

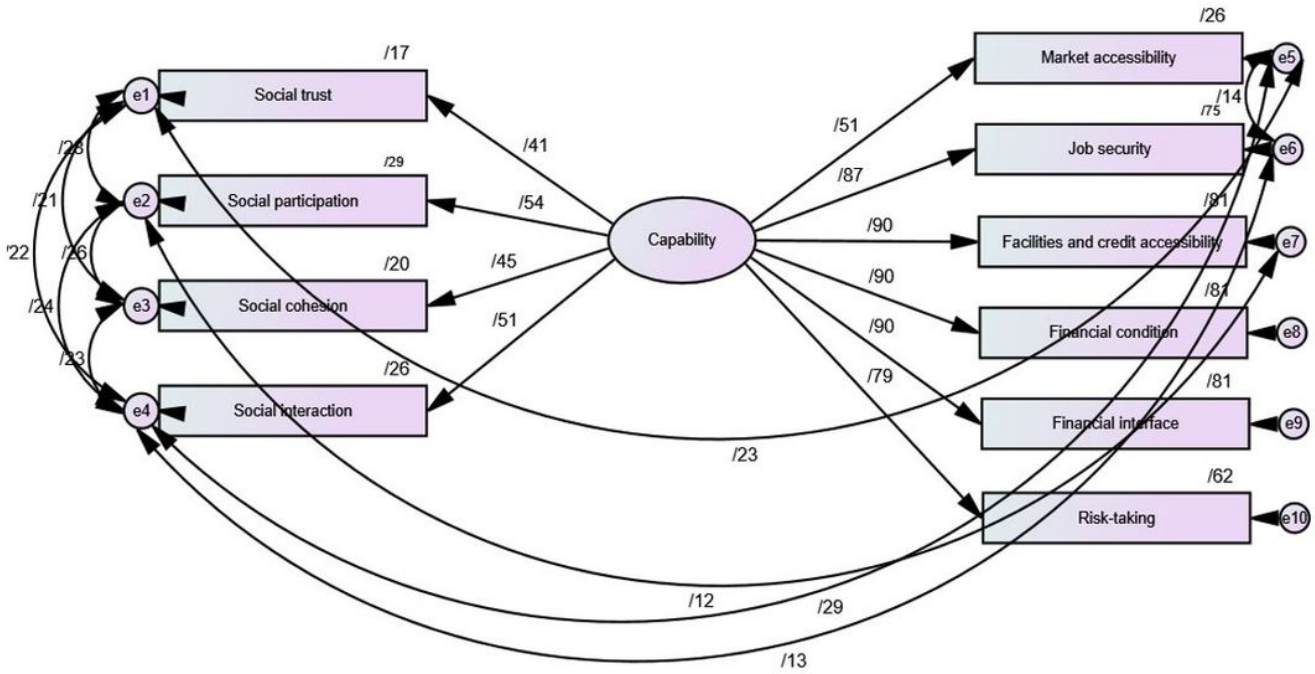

Figure 2

The structural model for the effect of independent variables on capability

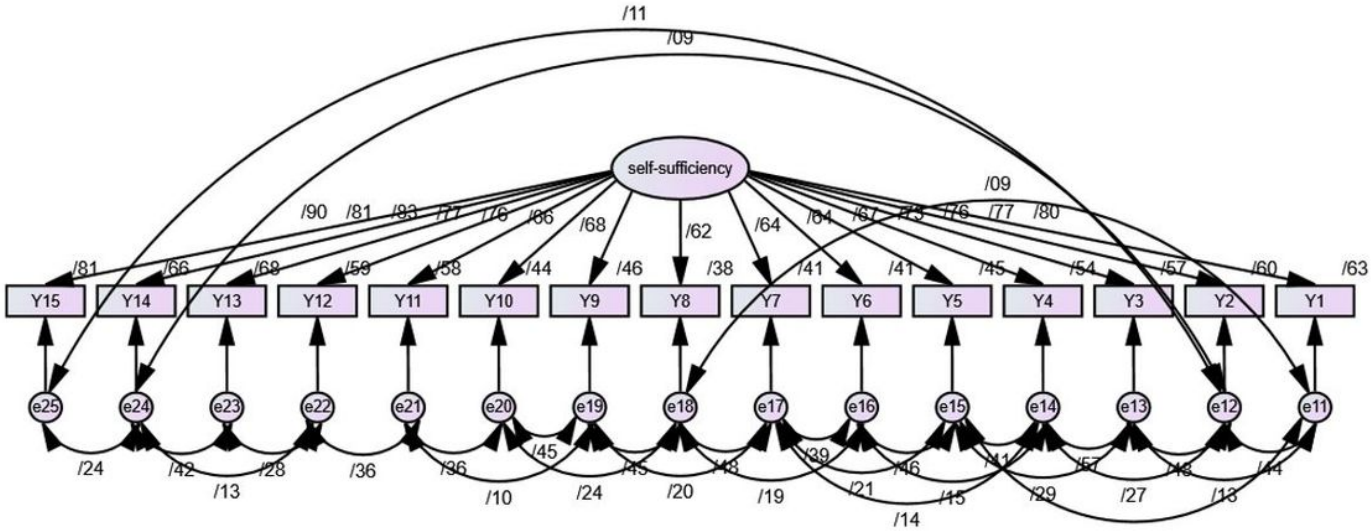

Figure 3

The structural model for the effect of latent variables on self-sufficiency

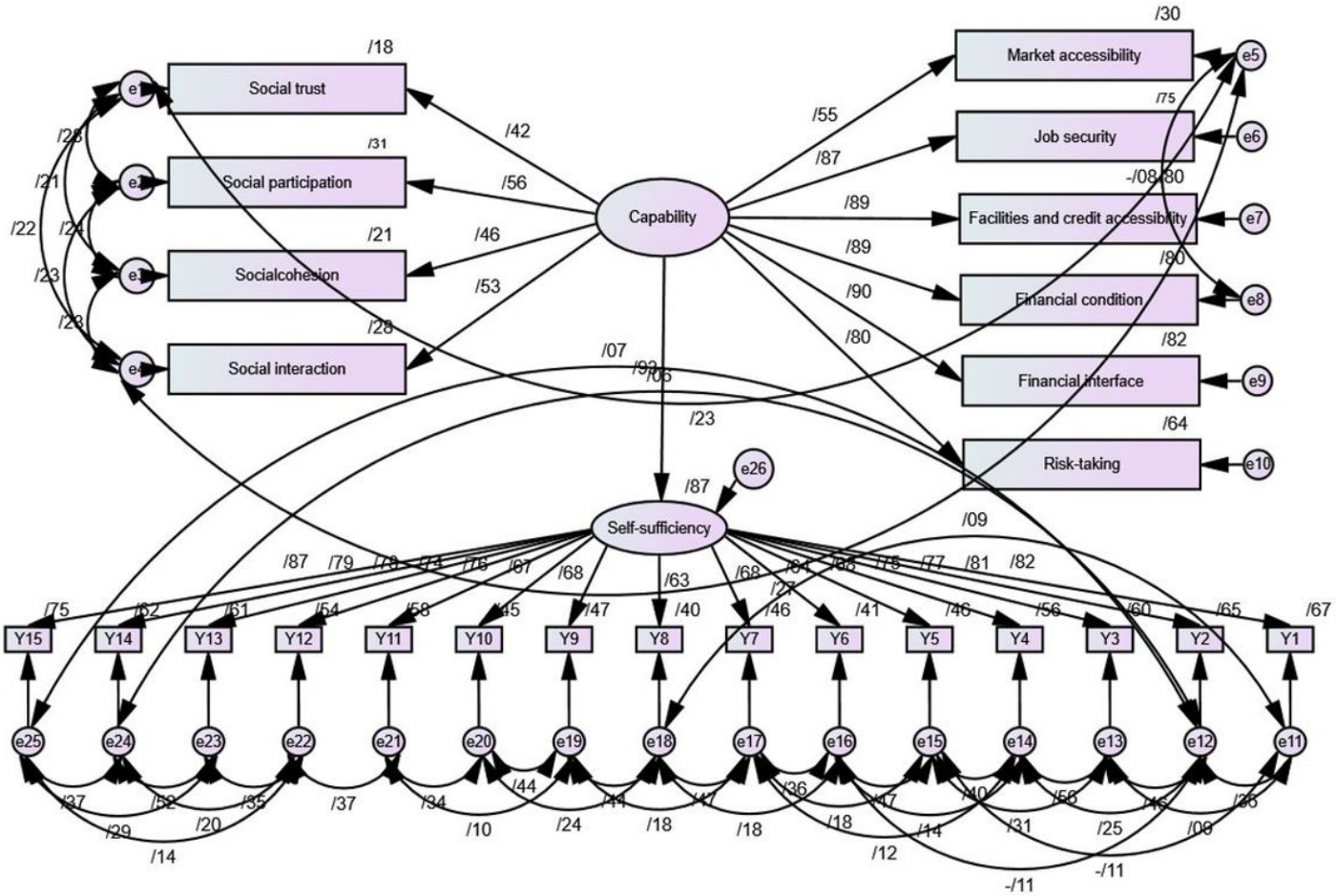

Figure 4

The self-sufficiency model for villagers in Zanjan province