The role of social capital in empowering rural community for reducing environmental hazards: the case study of Khodabandeh, Iran

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ABSTRACT

Social capital approaches consider the empowerment of societies against disasters, which enable rural communities to recover from the negative effects of hazards. Social capital is a mediator for collective action and can help people build common property resources. Not only can social capital improve access to natural resources, it can also improve access to physical capital. Using the descriptive and analytical survey, this article analyzes the impact of social capital on managing an earthquake in the villages of Khodabandeh in northwest of Iran. The findings indicate that according to the single sample T test as well as the opinions of local authorities and household heads. The components of attitude and cohesion have the strongest direct effect on reducing vulnerability at the level of households and rural authorities, the component of trust has the strongest indirect effect, and the network component has no indirect effect on either level.

1. Introduction

Looking at the world data testifies to the fact that within the last two decades, natural disasters have occurred more frequently than the past and have brought about devastating effects. According to a report by the International Disaster Database, during the years from 1980 to 1998 and 1999 to 2009, the number of reported disasters has increased from 1,690 to 3,886 (UNISDR 2008) whereas, within the same period, 140 natural disasters have been reported in Iran. However, it can be claimed that occurrence of a natural hazard is not automatically a disaster. But poor location of settlements, establishment of near-fault settlements, lack of warning systems, non-compliance with building codes, poor management systems, lack of public awareness can make natural hazards a disaster (UNISDR 2008). Meanwhile, earthquake is one of the most devastating natural disasters that threaten human settlements. Earthquakes are one of the most powerful natural phenomena that can impose substantial human and economic losses on societies (Kamranzad et al. 2020). The top five countries that have been most frequently affected by damaging earthquakes are China, Indonesia, Iran, Turkey, and Japan, with 16%, 10%, 8%, 4.5%, and 4% of all damaging earthquakes, respectively (OECD 2018; CRED 2020). According to the United Nations report, in 2003, Iran ranked first among the countries of the world for the number of earthquakes more intense than 5/5 Richter and it is one of the highest rated countries for being vulnerable to earthquake and the number of death tolls in this accident. Based on the same report, earthquake is the most prevalent among natural disasters in Iran and its testimony is the high magnitude earthquakes that occasionally shake various regions of this country resulting in irreparable financial and life damages (CRED UNISDR 2018; UN 2015). Iran is characterized by dispersed seismic activities, very large earthquakes with long return periods and large seismic gaps along multiple faults (Hamzezade and Mahood 2009; Kaljee and Chen 2011; Kais and Islam 2016). Besides, according to official reports, 17.6% of devastating earthquakes of the world belongs to Iran. Hence, in the context of the earthquake vulnerability, Iran can be classified as a country with high vulnerability to geophysical hazards, since 32% of the area, 70% of the population and 67% of the gross national product is exposed to the risk of earthquake natural disasters. Sustainable livelihood approach, as one of these paradigms, pays attention to empowering local communities instead of focusing solely on reducing damages with the purpose of creating communities that are able to withstand and recover from the adverse effects of hazardous events.

Over the past decades, the United Nations has also altered its paradigm in disaster management from relief and rescue operations after disaster to risk reduction and preparedness before disaster. One of these efforts is local empowerment and benefiting from the social capital of regions. Societies possessing this capital will provide a proper platform for the formation of a capable, accountable, and efficient civil society. In addition, democratic civil institutions will grow in such an environment. The social capital is so important that in its absence, other capitals will lose their effectiveness since without this capital, other capitals will not be optimally used and in the society that lacks sufficient social capital, other capitals will be wasted (Falk and Kilpatrick 2005; Flora 2001). However, due to the vulnerability of the country, especially in the rural areas, the role of social capital in this regard has not been considered and evidence suggests that in rural development planning, planners and policy makers of rural development do not pay attention to the issue of social capital. The role played by villages, especially in the event of a disaster, in fact, it is obvious that social capital is lacking in the rural development of this country. Regarding to the location of the Khararood village along the Great Soltanieh fault, and the existence of numerous main and secondary faults around this area, the susceptibility of the area to earthquakes, the purpose of the present research is to answer the following questions:

I) Is the existing social capital in the study area sufficient for the management of earthquake disaster?
II) Which dimensions of social capital play an effective role in reducing vulnerability in sample villages both at level of households and rural authorities of the region?

2. Theoretical foundations of the research

2.1 Social capital

Social capital is one of the latest conceptions of social sciences acting as a bridge between sociology, economics, planning and the policy underlying numerous interdisciplinary studies. It is the effective functioning of social groups through interpersonal relationships.

Over the past two decades, the concept of social capital has been accepted as a highly popular term used in a number of social sciences and definitions of social capital have been provided by various fields of study in different ways (Xue 2008). In other words, Considering the great importance of social capital and its impact on economic development, the existence of social capital, especially cohesion, participation and social trust, has an impact on the economic indicators of rural areas (Sonboli et al. 2021; Shayan et al. 2017). Sociologists and political scientists also define social capital as, a network of social relationships created by norms and mutual trust (Xue 2008; Woodhouse 2006). Unlike other capital, social capital does not exist physically, but it results from group and social interactions and norms, and on the other hand, its increase can lead to a serious drop in the level of the

expenses of public administration as well as the operating costs of the organizations (World Bank 1999). Patnam defines social capital as trust, norms, and communication networks, which facilitate the cooperation of actors to achieve mutual benefit.

In discussions of social capital, such issues as local participation and cooperation among individuals and groups, local trust, network development, and the extent to which institutional decision-making in local communities is important, can increase the ability of local communities to manage disasters and reduce the adverse effects of natural disasters (Roth 2022; Payanifar et al. 2022).

Thus, social capital appears as a common sense and civil responsibility and transforms society into something more than a set of individuals, which in this case it can be regarded as complementary to natural and human capital in the process of rural development and in enabling rural communities to manage and respond to the economic, social and environmental challenges, especially in relation to natural disasters as an effort to ensure sustainable development (Chou 2006).

2.2 Disaster management

Disaster management is a term used to control and reduce financial and health risks such as not construction of housing in high risk areas, taking preventive measures like consulting local engineers and building resilient housing, using durable materials, monitoring, insurance (Sutanta et al. 2010). The operational purpose of disaster management is the preparation and implementation of a comprehensive plan that can increase the ability of human settlements to reduce the impacts of disasters and deal with them without external assistance. The main purpose of disaster management is to save lives, reduce the number of injuries and decrease damage to property and assets of communities. In order to realize these goals, it is necessary to identify, within the framework of a program, the potential risks and methods of prevention and develop executive plans to reduce them. In some countries same as, Japan, Russia, Canada, and Australia have adopted a management approach for disaster management that includes prevention, preparedness, response and improvement based on a community-based approach (participation-oriented, people-oriented, attention to the situation of communities and risk assessment, attention to general progress, increasing community capacity to respond to events, people's participation in all stages of decision making for disaster management and emphasis on social capital, capacities, abilities and existing knowledge of local communities). Therefore, disaster management includes programs to decrease impacts and increase preparedness against disasters in order to reduce the vulnerability of rural communities. Disaster management can be considered an appropriate method of management when areas are identified and

classified according to the degree of vulnerability so that authorities can prioritize resources adequately and effectively and reduce the effects of disasters (Sharafi and Zarafshani 2011). In case the disasters occur, they try to reduce the effects, provide the required preparation, provide immediate relief and improve the situation until returning to the normal state and reconstruction (Aysan 2003).

2.3 Research methodology

The present research is applied type with a descriptive-analytical method. To collect data and information, two methods including librarian and fieldwork (completion of questionnaires) have been employed.

The statistical population of the study consists of 30 villages in Khararood rural district of which 14 villages have been selected using Cochran sampling and considering geographic zoning.

According to the census of 2011, these villages have a total of 6,090 households and 22,412 inhabitants of whom 150 households have been randomly selected as samples based on the modified Cochran formula. In order to achieve the desired results, a questionnaire for examining and assessing earthquake disaster management in rural areas has been prepared.

It consists of five components (trust, cooperation and participation, attitude, social networking and cohesion) and emphasizes on social capital from the perspective of the household heads and local authorities. For data analysis, descriptive statistics (mean and standard deviation) and inferential statistics (single sample t-test, Friedman test and analysis of variance) have been used. The one-sample t-test is a very simple statistical test. It is used when we have a sample of numeric variable, and we want to compare its population mean to a particular value. The one-sample t-test evaluates whether the population mean is likely to be different from this value.

The Friedman test test is similar to a oneway repeated measures ANOVA, however, the null hypothesis states that the K repeated measures or matched groups come from the same population or from populations with the same median (Siegel and Castellan 1988), the data on the dependent variable is measured on an ordinal scale. The test assumes the study involves one independent variable, and that the same participants are repeatedly observed under three or more conditions. Also, the present test bears some resemblance to the Wilcoxon matched pairs signed rank test.

The components and indicators related to social capital are:
1) Component of trust: includes such indicators as the acceptance of the opinions of local architects and experts, trust in other villagers in the event of a crisis, in the dehyar for the pursuit of affairs, among the people, and in the functions of the Islamic

Council of the village, the temporary welcoming of family members or neighbors in case of destruction or damage to housing, the acceptance of the views of local architects, of the role of guidance, leadership and supervision of the Islamic Council and the dehyari, of the members of the Council and the dehyar as reliable local managers, the adoption of housing plans provided by local authorities, of the use of force and coercion for the supervision of construction, attention to the housing reinforcement regulations, and to the principles of Hadi projects.

2) Component of participation: includes indicators of cooperation with all rural inhabitants, with voluntary groups in providing first aid, with other villagers in deportation, search, transfer and treatment of the injured, participation in the reconstruction of public infrastructure of the village, cooperation with local institutions in rural affairs, consultation with local architects and engineers in building resilient housing, the tendency for temporary residence in camps provided by local institutions during the earthquake, cooperation with local architects and civil engineers in choosing the method of construction, collaboration for relief and rescue in case of accidents.

3) Component of attitude: includes indicators of belief in cooperation in rural affairs, the role of group collaboration in changing common values over time and improving the relations between neighbors and villagers, the level of villagers' awareness about the construction of resistant buildings, access to the technical knowledge of villagers, the level of awareness about rural vulnerability, the effectiveness of participation in training workshops, the usefulness of participating in the trainings provided by the cooperation of governmental and local organizations, the extent of obeying building codes, engineering regulations, benefiting from the local architects and trained workforce in construction.

4) Component of network: includes indicators of participation in training courses for coping with earthquake-induced injuries, attention to information and personal experience, to the use of experience of damaged villages, the role of relief and rescue training in reducing injuries, of the Islamic Council in increasing cooperation, of dehyari in establishing the relationship between the neighboring villages, of the Council and the village in establishing relationship between villagers and related institutions, of existing services in the village, the ability of local rural institutions to provide services, the role of the council and the executive in facilitating laws and financial services, the ability of the Islamic Council and dehyari in making a link among the village, other villages and city, availability and access of local institutions to appropriate equipment and financial resources.

5) Component of social cohesion: includes indicators of participation in meetings and public hearings in the village, attention to social tasks of the villagers, discrimination in the supervision of local engineers and representatives, in referring someone to receive credit, in the council's and dehyar's decision-making based on interests, the role of group collaboration in reducing vulnerability and better recovery power, willingness to consult with local architects and expert, willingness to participate in plenary sessions and workshops about enhancements in the village, group decision-making, attention to common and public interests in local management discussion, the existence of common economic and financial incentives among villagers to increase cooperation.

Khararood village is located in the eastern parts of Khodabandeh district, near the Avaj district of Qazvin province. Topographically a large part of the region is the continuation of rough edges of western Kharqan (located in Qazvin province). Most of the rural settlements of the region are located in the Qeidar-Noorabad Miankoohi plain, the northern skirts of Kharqan Mountains and the margin of Khararood River. In zoning the relative risk of earthquakes in Iran, this region is identified to be a part of the Southern Alborz area.

3. Results

The descriptive findings of this research indicate that based on the percentage of age, from the total sample size for the household heads 14.6% are (20–30 years), 62.1% (31–40), 16% (41–50) and 7.3% (51 years and above). The age group of 31–40 with 62.1% and the age group of 51 and older with 7.3% constitute the highest and the lowest number of respondents, respectively. From the total sample of authorities, the age group of 31–40 with 51.5% and the age group of 51 years and older with 3% make up the highest and the lowest number of respondents. Moreover, among the households, 89.3% of respondents were male and 10.7% were female while among the authorities, 96.96% were male and 3.04% were female. Regarding the view of household heads and based on single sample t test, the analysis of numerical mean of the components of social capital of the villages under study indicates the high percentage of these components for earthquake disaster management in the studied villages. Calculating the range of spectrum of existing social capital components which fluctuate from 1 to 5 based on the Likert spectrum, this rate is evaluated to be more than numerical desirability (3) for all dimensions, trust with 3.37% has the highest and network with 3.03% has the lowest mean. Also, the difference of all components of social capital from the numerical desirability 3 has been positively evaluated.

Tab. 1 The significance of social capital components of household heads and rural authorities based on difference from the optimum and the t-test.

| Components | Numerical Desirability Test 3 | | | | | | | | | | |
| | Household Heads | | | | | Rural authorities | | | | | |
	Mean	T-test statistics	Degree of freedom	Significance	Difference from the optimum	Mean	T-test statistics	Degree of freedom	Significance	Difference from the optimum
Trust	3.37	7.35	149	0.00	0.37	3.38	4.05	32	0.00	0.38
Participation	3.31	6.60	149	0.00	0.31	3.37	3.95	32	0.00	0.37
Attitude	3.21	4.37	149	0.00	0.21	3.37	3.37	32	0.00	0.37
Network	3.03	1.03	149	0.302	0.03	3.40	3.40	32	0.00	0.40
Cohesion	3.33	7.30	149	0.00	0.33	3.48	4.11	32	0.00	0.48

Source: Research findings

According to Friedman test (Tab. 2), there is a significant difference between the mean social capital components of household heads and rural authorities at alpha 0.01 level; among household heads, the highest average is devoted to cohesion and the lowest to network and among the authorities the highest is dedicated to trust while the lowest is for participation.

Regarding the role of social capital in decreasing vulnerability, in other words, managing earthquake disaster, after theoretical examination and defining vulnerability indicators, firstly, the vulnerability of each village was ranked according to the Topsis model, and then it was used as a dependent variable in illustrating the path analysis model. Therefore, fit regression model of factors affecting disaster management among household heads has 0.643 positive effect and among rural authorities 0.623 on earthquake disaster management (Tab. 3).

According to Tab. 4, using the fit regression model, the factors and indicators affecting disaster management in the study area were determined from the viewpoint of the household heads and the authorities of the sample villages. The results indicate that the relationship between disaster management and social capital components is quite significant.

As illustrated in Tab. 5, looking at the ß values, it is obvious that a unit of variation in the standard deviation of social capital components (trust, participation, attitude, network and cohesion) will cause

Tab. 2 Comparing the mean rank of social capital components of household heads and rural authorities based on Friedman test.

| Components | Household Heads | | Rural authorities | |
	Number	Friedman average	Number	Friedman average
Trust	150	3.27	33	3.17
Participation	150	3.23	33	2.76
Network	150	2.35	33	2.98
Attitude	150	2.85	33	2.94
Cohesion	150	3.31	33	3.15
K^2	50.922		1.511	
Degree of freedom	4		4	
Significance level	0.000		0.825	

Source: Research findings

Tab. 3 Factors affecting disaster management among household heads and rural authorities using fit regression model.

| Household Heads | | | | Rural authorities | | | |
Criterion error	The adjusted coefficient of determination	The coefficient of determination	Multiple correlation coefficient	Criterion error	The adjusted coefficient of determination	The coefficient of determination	Multiple correlation coefficient
0.741	0.631	0.643	0.802	0.789	0.623	0.553	0.778

Source: Research findings

Tab. 4 The factors and indicators affecting disaster management of the area from the viewpoint of the household heads and authorities based on the fit regression model.

Components	Household heads						Rural authorities					
	Sum of squares	Degree of freedom	Square mean	F test statistic	Significance level		Sum of squares	Degree of freedom	Square mean	F test statistic	Significance level	
Regression effect	1.426	5	0.285	51.91	0.000		0.270	5	0.054	8.915	0/000	
Remaining	0.791	144	0.005				0.164	27	0.006			
Total	2.217	149					0.434	32				

Source: Research findings

Tab. 5 Social capital and the impact of earthquake disaster vulnerability based on the ß values.

Variable name	Household heads					Rural Authorities				
	Non-standard coefficients		Standard coefficients	T	Significance level B	Non-standard coefficients		Standard coefficients	T	Significance level B
	B	B error	B error			B	B error	B error		
y-intercept	1.366	0.54	–	25.509	0.000	1.282	0.107	–	11.968	0.000
Trust	−0.061	0.012	−0.306	−5.201	0.000	−0.045	0.037	−0.209	−1.203	0.240
Participation	−0.030	0.013	−0.144	−2.338	0.021	−0.017	0.043	−0.077	−0.384	0.704
Network	0.026	0.016	−0.091	−1.641	0.103	−0.062	0.032	−0.309	−1.954	0.061
Attitude	−0.068	0.012	−0.335	−5.539	0.000	−0.009	0.035	−0.040	−0.264	0.794
Cohesion	−0.051	0.013	−0.234	−3.980	0.000	−0.060	0.026	−0.348	−2.340	0.027

Source: Research findings

−0.306, −0.144, −0.335, −0.091 and −0.234 Units of variation among households and −0.209, −0.077, −0.309, −0.040 and −0.348 Units of variation among rural authorities in reducing the impact of earthquake disaster vulnerability in the villages of the study area.

The research path analysis model (local authorities) with regard to the relationship between variables can express the direct and indirect effects of independent variables on the dependent variable through correlation coefficient Based on the results of Tab. 6 regarding the total effects, trust with −0.623 at the level of household heads and −0.407 at the level of rural authorities has the highest impact and network with −0.091 at the level of the household heads and −0.040 at the level of the authorities has the least effect. Concerning the direct effect of social capital on reducing vulnerability, the components of attitude in the household heads and cohesion in rural authorities

have the highest direct effect. Regarding the indirect effects, the trust component has the highest effect in both households and authorities. Moreover, network component has no indirect impact on reducing vulnerability neither at households nor rural authorities.

4. Conclusion

Empowerment is a key concept in social development and it is considered as an important strategy for regional and rural development. One of the most important challenges of rural development is not paying sufficient attention to the social capital of residents of these areas for disaster management. The purpose of this study was to investigate the role of empowerment of villagers in dealing for reducing environmental Hazards for reducing environmental hazards in

Tab. 6 Total direct and indirect impacts of social capital components at households and rural authorities.

Variable	Household Heads			Rural Authorities		
	Direct effects	Indirect effects	total	Direct effects	Indirect effects	total
Trust	−0.306	−0.317	−0.623	−0.209	−0.198	−0.407
Participation	−0.144	−0.099	−0.243	−0.077	−0.164	−0.241
Attitude	−0.335	−0.088	−0.423	−0.309	−0.039	−0.348
Network	−0.091	0	−0.091	−0.040	0	−0.040
Cohesion	−0.234	−0.014	−0.248	−0.348	−0. 003	−0.351

Source: Research findings

rural areas of Khararood village in in Khodabandeh city, in Northwest of Iran. While attention to social capital can play a key role in improving the planning process for rural development for relevant specialists and facilitating the participation of villagers in better implementation of the program.

Moreover, it can be of great importance in disaster management through interacting with other aspects of capitals leading to building trust, mutual relations, exchange of experiences and collective cooperation. In social capital discussions, issues such as local participation and cooperation between individuals and groups, local trust, network development, and the extent to which institutional decision-making in local communities is accepted, can increase the ability of local communities to manage natural disasters.

The local community structure with decentralized decision-making through social networks using normative behavior along with trust and mutual cooperation reduces the effects of accidents. Social capital as an important asset will increase the ability of individuals, groups and associations to confront and cope with crises caused by disasters. Therefore, contrary to the past, which focused more on reducing physical vulnerability, in recent years, social capacity has been strengthened by planners to reduce human losses. In other words, taking into account the restricted capacity of governmental and non-governmental organizations at the local level to provide assistance to all people, neighbors and locals are the first who help the victims, so some measures should be taken towards strengthening social capital in rural areas.

The findings of the present research indicate that the numerical mean of the value of social capital components of the villages surveyed from the viewpoint of the heads of households and the authorities of the villages based on the single sample T-test demonstrate the high percentage of social capital components for the management of earthquake disaster in the studied villages. Calculating the range of spectrum, the existing social capital components are evaluated to be more than numerical desirability (3) for all dimensions and trust with 3.37% has the highest and network with 3.03% has the lowest mean among the households while cohesion with 3.48% has the highest and network and participation with 3.37% the lowest mean among the authorities. Also, the difference of all components of social capital from the numerical desirability 3 has been positively evaluated. According to Friedman test, there is a significant difference between the mean social capital components of household heads and rural authorities at alpha 0.01 level. The results of path analysis indicate that regarding the total effects, trust with −0.623 at the level of household heads and −0.407 at the level of rural authorities has the highest impact and network with −0.091 at the level of the household heads and −0.040 at the level of the authorities has the least effect. Concerning the direct effect of social capital on

reducing vulnerability, the components of attitude in the household heads and cohesion in rural authorities have the highest direct effect. Regarding the indirect effects, the trust component has the highest effect in both households and authorities. Moreover, network component has no indirect impact on reducing vulnerability neither at households nor rural authorities.

References

Aysan, D. (2003): Architecture and Rehabilitation Planning. Translated by Falahi. Shahid Beheshti University Publications, Tehran (in Persian).

Bodin, Ö., Crona, B. (2008): Management of natural resources at the community level: exploring the role of social capital and leadership in a rural fishing community. World Development 36(12), 2763–2779, https://doi.org/10.1016/j.worlddev.2007.12.002.

Centre for Research on the Epidemiology of Disasters (CRED). EM-DAT (2020): The International Disaster Database. Available online: https://www.emdat.be.

Chou, Y. K. (2006): Three simple models of social capital and economic growth. Journal of Socio-Economics 35(5), 889–912, https://doi.org/10.1016/j.socec.2005.11.053.

CRED UNISDR (2018): Economic Losses, Poverty and Disasters 1998–2017. The Centre for Research on the Epidemiology of Disasters (CRED): Brussels, Belgium, https://doi.org/10.13140/RG.2.2.35610.08643.

Falk, I., Kilpatrick, S. (2005): What is social capital? A study of interaction of rural communities. Sociologia Ruralis 40(1), 87–110, https://doi.org/10.1111/1467-9523.00133.

Flora, J. L. (2011): Social capital and communities of place. Rural Sociology 6(3), 481–506, https://doi.org/10.1111/j.1549-0831.1998.tb00689.x.

Hamzezade, H., Mahood, M. (2009): Estimation of coda wave attenuation in east central Iran. Journal of Seismology 13, 125–139, https://doi.org/10.1007/s10950-008-9130-2.

Kaljee, L., Chen, X. (2011): Social capital and risk and protective behaviors: a global health perspective. Adolescent Health, Medicine and Therapeutics 2, 113–122, https://doi.org/10.2147/AHMT.S26560.

Kamranzad, F., Memarian, H., Zare, M. (2020): Earthquake risk assessment for Tehran, Iran. ISPRS International Journal of Geo-Information 9(7), 430, https://doi.org/10.3390/ijgi9070430.

OECD (2018): Financial Management of Earthquake Risk; Organisation for Economic Co-operation and Development (OECD): Paris, France. Available online: https://www.oecd.org/finance/insurance/Financial-management-of-earthquake-risk.pdf.

Payanifar, N., Sedaghatzadegan, S., Mousavi, M., Rafiey, H. (2022): The role of social indicators in institutional interactions (case study: charities and the Imam Khomeini Relief Foundation in Iran). Quarterly of Social Studies and Research in Iran 11(2), 545–567, https://doi.org/10.22059/jisr.2022.340226.1289.

Roth, F. (2022): Social capital, trust, and economic growth. Intangible Capital and Growth, 167–185. In Contributions to Economics. Springer, https://doi.org/10.1007/978-3-030-86186-5_8.

Shaikh, M. K., Islam, M. S. (2016): Community capitals as community resilience to climate change: conceptual connections. International Journal of Environmental Research and Public Health 13(12), 1211, https://doi .org/10.3390/ijerph13121211.

Sharafi, L., Zarafshani, K. (2011): Vulnerability assessment, the starting point for risk management in droughts. Regional Planning Periodical 1(1) (in Persian).

Shayan, M., Raisi, M. K., Mohammadi, M. (2017): Investigating the impact of social capital on improving the economic indicators in villages of Zarindshahr. Haft Hessar Journal of Environmental Studies 24(6), 18–37. Available online: http://hafthesar.iauh.ac.ir/article-1 -567-en.html.

Siegel, S., Castellan Jr, N. J. (1988): Nonparametric Statistics for the Behavioral Sciences. 2nd ed. New York: McGraw-Hill.

Sonboli, Z., Jalali, M. and Z. Parvaneh. (2021): Analyzing the impact of the social capital on the performance of rural municipalities (case study: Sonqor and Kolyai County). Journal of Research and Rural Planning 10(4), 101–116, https://doi.org/10.22067/JRRP.V10I4.88419.

Stone, W. (2001): Measuring social capital: towards a theoretically informed measurement framework for researching social capital in family and community life, 54–67. Australian Institute of Family Research Paper No. 24.

Sutanta, H., Rajabifard, A., Bishop, I. D. (2010): Integrating spatial planning and disaster risk reduction at the local level in the context of spatially enabled government. In: GSDI 12 World Conference: Realizing Spatially Enabled Societies, Singapore. Available online: http:// gsdiassociation.org/images/gsdi12/80.pdf.

UN (2015): Transforming Our World: The 2030 Agenda for Sustainable Development; United Nations (UN): Geneva, Switzerland.

UNISDR (2008): United Nations International Strategy for Disaster reduction. Links between disaster risk reduction, development and climate change; A briefing for Sweden's Commission on Climate Change and Development, Geneva. www.unisdr.org.

Woodhouse, A. (2006): Social capital and economic development in regional Australia: A case study. Journal of Rural Studies 22(1), 83–94, https://doi.org/10.1016 /j.jrurstud.2005.07.003.

Xue, L. (2008): Social Capital and Employment Entry of Recent Immigrants to Canada, Evidence from the Longitudinal Survey of Immigrants to Canada (LSIC). Available online: https://www.canada.ca/en /immigration-refugees-citizenship/corporate /publications-manuals/social-capital-employment -entry-recent-immigrants-canada.html.