

## **Rural Social Capital: Can the Development of Economic Driven Enterprises for Sustainability and Competitiveness Rely on Rural Experts' Opinion in the Republic of South Africa?**

V.M. Mmbengwa  
National Agricultural Marketing Council and North West University  
Republic of South Africa

S. Laurie, C.P. du Plooy, T. Ramathavhana and M. Mtileni  
Agricultural Research Council  
Republic of South Africa

H.D. van Schalkwyk  
North West University  
Republic of South Africa

**Keywords:** rural, enterprises, development, livelihoods

### **Abstract**

**The opinions of the rural experts (in particular their insights on sustainable enterprise development) are often overlooked in favour of those from metropolitan areas in South Africa. The aim of this study was to find out whether there were social and human capital resources to support the developmental goals which inform the partnership between government and the Agricultural Research Council. In this study, four rural provinces namely Mpumalanga, KwaZulu-Natal, Eastern Cape and Limpopo provinces were evaluated. Both qualitative and quantitative research methodologies were executed in the study. A multinomial logit regression model (MNL) was used in the analysis of the data. The results revealed that there were strong evidence indicating that the rural and horticultural experts are of the opinion that there are no social and human networks between ARC and developing farmers that may be essential in the support of sustainable enterprise development for smallholder farmers. On the contrary, the results also showed that there were no evidence to support the claim by other experts (such as horticultural technicians and peri-urban experts), whose' opinions seem to acclaim the existence of such a linkages. In view of these findings, it is recommended that new policies be developed to strengthen the networks between government and its partners in order to ensure such developments in favour of smallholder farmers. Strategies to strengthen these networks (amongst stakeholders) may improve the development of the ailing, non-economic and livelihood based farming in South Africa.**



## INTRODUCTION

Social capital is defined as good will, fellowship, mutual sympathy and social intercourse among a group of individuals and families who in turn form the social unit. According to Bourdieu (1986), social capital refers to the aggregation of the actual or potential resources embedded in durable social relationships. This implies that individuals should invest in their social relationships to secure access to social resources. Putnam (1995), Lee (2013) and Joshi and Aoki (2014) describe the concept of social capital as a function of trust, norms and networks in the community. Various researchers such as Eklinder-Frick et al. (2014) conclude that the concept of social capital can best be defined as a representation of immaterial assets and liabilities which influence the conditions for cooperation between individuals or firms.

As defined by Coleman (1990), social capital is the social structures, institutions and information channels that facilitate collective action. Nahapiet and Ghoshal (1998) further defined social capital as the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. In defining the concept of social capital, researchers seem to have a common focus but fail to agree to a single definition. This may be because defining the concept of social capital requires all encompassing and complex social variables which may be dictated by social constructs. Contemporary researchers have confirmed the emergent popularity and increasing attention of the concept of social capital in the last decade (Horn et al., 2014).

Thus, current researchers appear to investigate social capital concepts in the context of the relationships between individuals and organizations. Hence, it is often noted that the social capital concept is widely utilised in the supply chain management field to secure contracts (Horn et al. 2014). In addition, this concept has also become increasingly popular in a wide range of social science disciplines (Huanga and Aaltiob, 2014). Despite its popularity in both social and business disciplines, it appears that there seem to be limited exploitation of its theoretical lens in the South African entrepreneurial and sustainable enterprise development spheres especially in regard to the ailing smallholder agricultural sector. This is because networks with social capital are in one way or another associated with political patronage or corporate injustice (corruption). In China, where the concept of social capital is associated with *guanxi*, which points to the importance of trust, obligation and reciprocity in social interactions, social capital is a catalyst for successful business ventures (Bian, 1994; Gold et al., 2002; Yang, 1994). It is understood that to establish the right *guanxi* and to be included in the in-group is a necessity for successful and sustainable business.



## LITERATURE REVIEW

Some decades ago, during the “golden age” of post-war development, the theory and practice of economic development suggested a separation between economy and society (Koutsou et al., 2014). In the past a number of states were dominated by economic development policies which were aiming at stabilizing markets (Triglia, 2001). According to this author, social capital was not considered as a prerequisite for development during those periods. The revival of interest in social capital since the late 1980s was due to the collapse of state socialism, which put an end to the debate about the prevalence of capitalism or socialism (Alexandropoulos, 2010), as well as to the dynamic manifestation of the consequences of globalization and the incorporation of risk in the economy (Koutsou et al., 2014). While the term social capital is relatively new, the concept dates back to the likes of Toqueville, Tonnies and Durkheim and the early development of social theory (Fisher, 2014).

However, more recent developments that affect social, political and economic theory have encouraged researchers to re-examine the impact of social capital in economic development (Bourdieu, 1986; Coleman, 1988, 1990; Putnam, 1995, 2000; Lin, 2004). Both Putnam and Coleman approach the concept from a social cohesion perspective, identifying its positive benefits but tend to neglect its negative impacts such as the development of exclusive networks (Fisher, 2014). In comparison, Lin (2004), positioned social capital theory in the economic sociology discipline and approached the concept from a social inequalities perspective, thereby asserting that most resources are concentrated in the hands of relatively few.

In studying the evolution of the theory of social capital, Bourdieu (1984) is one of three social theorists considered to be responsible for shaping of the contemporary understanding of social capital. He argued for the maintenance of class-based power in societies and also predicted its ability to transform economic advantage into other cultural advantages (Gibson et al., 2014). However, for the purpose of promoting social capital as a mega event legacy, Bourdieu’s conceptualization appears not to be relevant (Gibson et al., 2014). Indeed, it could be argued that in line with social theorists, mega-events are social control mechanisms used to divert attention away from societal inequalities (Eitzen, 2000; Gibson et al., 2014). As such, social capital, fostered by an event, will simply reinforce the status quo (Harvey, 1989).

Despite this claim, Bourdieu conceded that social capital is not something possessed by individuals, but rather is found in the connectedness of group members. In other words, social ties, reciprocity and obligations associated with social networks constitute the greatest form of social capital. If social capital is approached as a means of developing social ties among the disadvantaged, perhaps it might offer these groups an opportunity to gain advantage and power. Indeed, Coleman (1988) suggested that social capital could be applied to disadvantaged youth. According to social capital theory, social capital refers to resources that can be acquired through social relations i.e friends, family, and acquaintances (Burt, 1998; Coleman, 1988; Flap and Völker, 2001; Portes, 1998). Browne-Yung et al. (2013) demonstrate how social class and inequalities are socially reproduced through competition for limited stocks of relational social, economic, cultural and symbolic capital.



Bourdieu (1984) further argues that all cultural practices are closely linked to education level and social origins, and are class based. In addition, Bourdieu (1977) views social capital as being inequitably distributed in society which contributes to on-going inequities of power and the distribution of resources. Furthermore, Bourdieu (1986) argued that to use social capital successfully, economic, cultural and symbolic capital resources are required. Cultural capital is embodied through modes of presentation, institutionalised through educational qualifications and objectified through material goods such as objects. Symbolic capital is the capacity to define and legitimise dominant culture, aesthetic values, standards and style. The distribution of cultural and social capital exposes the non-economic hierarchies and power inequalities in society.

## BACKGROUND

The Agricultural Research Council (ARC) was created by the South African state to be the premier source of research, innovation and development. The institution has excelled in providing relevant research and innovation, resulting in a high number of quality commercial products. These achievements have led to the ARC becoming a key stakeholder in agri-business development, not only in South Africa, but also to the Southern African Development Communities (SADC). For the ARC to achieve these important milestones, the government of South Africa and ARC governance authority have resourced this institution to meet its global competitive goals and support its federal specialised institutes (Vegetable and Ornamental Plant Institutes, Livestock institutes etc). These specialised institutes provide specialised, systematic and organised services that drive well planned research and development programmes which are instrumental to the socio-economic development of rural South African communities.

These specialised institutes have strong partnerships with specialised centres, faculties or units in colleges and universities. On this basis, these institutes attract specialised human capital that drive (reinforce) the ARCs agenda of sustainable research and development. In the recent past, ARC has expanded its scope of work to venture into rural development (capacity building and enterprise development) by supporting rural entrepreneurs in partnership with the newly established Department of Rural Development and Land Reform (DRDLR) and Department of Agriculture, Forestry and Fisheries (DAFF). Although, there is little progress to date, researchers are confident of some serious breakthroughs and some rural experts hail the direction as quite important to the economies of the rural areas, where high poverty levels and the high incidence of skills migration to urban areas are disturbing.



## MATERIALS AND METHODS

### The aim of the study

The aim of this study was to find out whether there were social and human capital resources to support the new development goals in the partnership between government and the ARC.

### Study location

The study was initiated in the year 2012 and planned to end in 2016 (five years period). Thus, the study was deemed to be a longitudinal in nature. This paper reports only baseline information of the study. As per the contractual agreement between the stakeholders involved in the study, five South African provinces were selected for the first phase of the project as pilot project. At the time of this analysis, the data that was readily available analysis was from only four provinces (Limpopo, KwaZulu-Natal, Mpumalanga and Eastern Cape). District and local municipalities' project beneficiaries were selected based on their agricultural skills and potential.

### Sampling methods

Sampling methodology opted for in this study was purposive sampling design and this design led to unequal respondents. This method was chosen because there were no reliable database for small holder farming at time. Local stakeholders such as government extension officers, local government officials, provincial government directors, universities and college researchers were used as respondents.

### Data collection methodology

The study adopted qualitative and quantitative research approaches. In quantitative approach, the study used one on one interview processes aided by the survey questionnaires. Thus, quantitative data was collected. The qualitative approaches were applied to collect descriptive and detailed explanation from the respondents through various forums. These forums were organised with the aid of stakeholders. The role of local stakeholders were to identify the rural agrarian entrepreneurs and to invite them to a common meeting place where all stakeholders were advised of the development plan and respondents were asked for their permission to participant in the research and development plan. After receiving the permission from the respondents to conduct the research activities, the ARC was able to draw a project plan for engagement in the focus group discussions sessions with respondents.

### Data analysis

The data analysis used a multinomial logit model (MNL). This tool was preferred because both dependent and independent variables were categorical in nature (non-parametric).

**Model specification:** Multinomial logistic regression is known by a variety of other names such as multiclass LR, multinomial regression, softmax regression, multinomial



logit, maximum entropy (MaxEnt) classifier, conditional maximum entropy model (Greene, 1993). This type of regression is used when the dependent variable in question is nominal (equivalently *categorical*, meaning that it falls into any one of a set of categories which cannot be ordered in any meaningful way) and for which there are more than two categories. This model assumes that the data is case specific (meaning that each independent variable has a single value for each case). In addition, this model is used to model choices based on the assumption of independence of irrelevant alternatives (IIA), which is not always desirable. This assumption states that the odds of preferring one class over another do not depend on the presence or absence of other "irrelevant" alternatives (Greene, 1993). In this study, the following model was used to predict the probability of the observation  $i$  resulting in the out-come  $k$ :

$$F(k, i) = \beta_{0, \kappa} + \beta_{1, k} x_{1, i} + \beta_{2, k} x_{2, i} + \dots + \beta_{m, k} x_{m, i} \dots \dots \dots (1)$$

Where  $\beta_{m, k}$  is a regression coefficient associated with the  $m$ th explanatory variable and the out-come was  $k$ th. The regression coefficients and explanatory variables are normally grouped in vectors of size  $m + 1$  so that the predictor function can be written more compactly:

$$F(k, i) = \beta_k \cdot x_i \dots \dots \dots (2)$$

Where  $\beta_k$  is the set of the regression coefficient s associated with out-come  $k_1$  and  $x_i$

## RESULTS AND DISCUSSIONS

Table 1 shows the results of the summary of the variables under consideration in this study. According to the results of the cases that were processed, the rural local experts (87%) had the highest responses relative to other experts under consideration. In addition, the results of the linkages with ARC and enterprises were found to be 85.8 % relative to 7.6% of those enterprises that are not linked to ARC. According to the results, female respondents were in majority (53.5%) compared to male counterparts.



**Table 1. Case processing summary for the variables under consideration**

Variables	Responses & Respondents	N	Marginal Percentage
Linkages with ARC-VOPI	Yes	247	85.8
	No	22	7.6
	Uncertain	19	6.6
Experts	Rural local experts	250	86.8
	Peri-urban experts	3	1.0
	Horticultural technicians	9	3.1
	Horticulturalists	24	8.3
	Other experts	2	0.7
Gender of the respondents	Male	134	46.5
	Female	154	53.5
	TOTAL	288	100.0
	Missing	0	

In Table 2, the results of the model fitting, goodness of fit and pseudo  $R^2$  square analyses were presented. The results showed that -2 log likelihood values for the intercept term of this model was found to be 22.103 and this value decreased into 18.974 in the final model. This changes of -2 log likelihood values were found to be highly statistically significant at 5% confident interval  $\{\chi^2 (10, N=288) = 18.974, p = 0.041\}$ . The results for the model fit revealed that the null hypothesis for the perfect fit was tested by two methods Person and Deviance. According to the results, it was revealed that all these methods [Pearson  $\{\chi^2 (6, N=288) = 0.434, p = 0.999\}$  and Deviance  $\{\chi^2 (6, N=288) = 0.441, p = 0.998\}$ ] led to the acceptance of the null hypothesis that the suggested model fit perfectly at 5% confident interval. In addition, the results revealed that the inclusion of the categories of the experts variables caused a significant improvement in the model fitting at 5% confident interval  $\{\chi^2 (8, N=288) = 18.718, p = 0.016\}$ .

On the contrary, the inclusion of the gender variables did not have a statistically significant influence  $\{\chi^2 (2, N=288) = 0.251, p = 0.882\}$  on the change of the model fitting. Furthermore, the results of the Pseudo R- square which intend to show the variability of the dependant variable in the model was determined by three Pseudo R-squared methods. It was found that the Nagelkerke  $R^2$  analyses showed that 100% of the fluctuation of the dependent variables (linkages of the farming enterprises with ARC-VOPI) could be explained by the opinion of the experts and gender variables in the model. On the other hand, Cox and Snell and Mc Fadden R-square seem to suggest that the dependent variables could only explain about 6.4% and 6.5% respectively. Therefore this study considered the value of the variability as presented by the results of Nagelkerke R-square.



**Table 2. Model fitting and goodness of fit information**

Effect	$\chi^2$	DF	Sig
<b>-2 log likelihood</b>			
Intercept	22.103		
Final	18.974**	10	0.041
<b>Goodness of fit</b>			
a) Pearson	0.434	6	0.999
b) Deviance	0.441	6	0.998
<b>Likelihood Ratio</b>			
Intercept	0.000	0	
a) Experts	18.718***	8	0.016
b) Gender	0.251	2	0.882
<b>Pseudo R-Square</b>	<b>R<sup>2</sup></b>	<b>%</b>	<b>Decision</b>
a) Cox and Snell	0.064	6.4	Not selected
b) Nagelkerke	0.100	100	Selected
c) Mc Fadden	0.065	6.5	Not selected

**Keys:** \*\*\* =  $P < 0.01$ , \*\* =  $P < 0.05$ , \* =  $P < 0.1$

Table 3 present the results of the multinomial logistic regression estimates for the linkages of ARC- VOPI with the developing farm enterprises. According to the results, the effect of the rural local experts {Wald $\chi^2$  (1) = 781.245,  $p = 0.00$ } and horticulturalists {Wald $\chi^2$  (1) = .000,  $p = 0.00$ } were found to be highly statistically significant at 5% confident interval relative to other independent variables. This implies that there are sufficient evidences that both rural local experts and horticulturalists are in the main less likely to agree that there are linkages with the ARC-VOPI and developing farm enterprises compared to other experts. However, there are insufficient evidences which could attest the assertion that peri-urban experts and horticultural technicians were more likely to agree that there are perceived linkages with ARC-VOPI and developing farmers compared to other experts {Wald $\chi^2$  (1) = 0.00,  $p = 1.00$ }.

The results also show that the model predicts that the odds {exp ( $\beta$ ) = 2.098} of the rural local experts to disagree with others experts regarding the existence of the linkages of the ARC –VOPI institution and developing farming enterprises is 2.098 times higher compared to other experts. In addition, it was revealed that the odds {exp ( $\beta$ ) = 2.300} of denying the existence of the linkages with ARC VOPI and developing farmers by horticulturalist experts was 2.300 times higher as compared to others. These results appear to suggest that the horticulturists are the largest contender in refuting the existence of the aforesaid linkages.

Considering the fact that ARC –VOPI is the institution that was established to supply a specialised horticultural research and technology development services, the results may be seen as intuitive. In the other hand, the results may also be interpreted as suggesting that ARC –VOPI institution may have prioritised its core function of producing research and technology products in the expense of providing social mobilisation services whilst expecting other stakeholders to provide the necessary business linkages with their primary





clientele. In view of the picture presented by these results, it may be deduced that the developing farmers are less likely to benefit from the horticultural technological innovation generated by institute. On the other hand, it may be argued that the lack of strong linkages to these farmers may suggest a lack of accurate knowledge of the needs of the small holder farming and therefore, the human capital resources of the institute may be incapacitated to deal with the complexities that embody the small holder farming sector of South Africa. A counter agreement may also indicate that these farmers are not able to benefit from the social and human capital that the institute embodies, which may have a positive impact on their development and sustainability.

**Table 3. The estimated coefficients and odds ratios for the possible linkages of farming enterprises with ARC VOPI in the logit models.**

Responses	variables	$\beta$	SE	Wald	DF	SIG	Exp( $\beta$ ) (odds ratios)
Yes	Intercept	18.191	.512	1261.757	1	0.000	
	[Rural local Experts]	-15.377	.550	781.245***	1	0.000	2.098
	[Peri-Urban Experts]	0.099	5405.95 4	0.000	1	1.000	1.104
	[Horticultural Technicians]	0.011	3117.98 9	0.000	1	1.000	1.011
	[Horticulturalist]	-17.588***	0.000	0.000***	1	0.000	2.300
	[Others]	0°			0		
	[Male]	.203	.502	0.164	1	0.686	1.225
[Female]	0°			0			
No	Intercept	-0.009	6150.79 7	0.000	1	1.000	
	[Rural Local Experts]	0.323	6150.79 7	0.000	1	1.000	1.381
	[Peri-Urban Experts]	0.156	9607.07 2	0.000	1	1.000	1.168
	[Horticultural technicians]	0.017	7480.73 3	0.000	1	1.000	1.018
	[Horticulturalist]	-0.983	6150.79 7	0.000	1	1.000	0.374
	[Others]	0°			0		
	[Male]	0.316	0.639	0.244	1	0.621	1.371
[Female]	0°			0			

Keys: \*\*\* =  $P < 0.01$ , \*\* =  $P < 0.05$ , \* =  $P < 0.1$



This perceived lack of linkages may have a negative impact to the rural or developing farming enterprises in South African provinces in general and the poverty stricken provinces such as Limpopo, KwaZulu-Natal, Mpumalanga and Eastern Cape where food household food insecurity is rampant. In such areas, there has been a huge acknowledgement that developing farming plays role in mitigating socio-economic challenges by ensuring food security in poverty stricken households (Godfray et al., 2010). Furthermore, developing farming in the horticultural sector of South Africa could probably benefit immensely from their linkages with ARC VOPI as result of the high human resource capacity. It is known that products and services such as high quality seeds, plant protection technologies, food processing technologies and plant breeding and propagation technologies may quite necessary to resource developing farming to be the competitive in the agricultural sector. All these technologies were perceived to be one of the factors used by commercial farmers in their effort to improve their productivity and export potential of their goods to the lucrative international markets.

Taking the above into consideration, it appears that developing farmers are still not able to tap on the benefits of these technological innovations generated by the ARC-VOPI due to weaker linkages. Hence, they are reported as ailing and producing low quality products that may be less favourable to the niche markets (Oni et al., 2010), resulting in their products being used mostly for household consumption. Despite the efforts of the ARC VOPI to achieve an inclusive mission: "*The Agricultural Research Council is a premier science institution that conducts research with partners, develops human capital and fosters innovation to support and develop the Agricultural sector*", it is clear that the institute may have to reposition itself to improve linkages with developing farmers to achieve some of their key strategic developmental goals and objectives. These results may serve as a guide towards achieving their goal for ensuring that rural social capital in the developing farming sector is achieved.

## CONCLUSION

The aim of this study was to find out whether there were social and human capital resources to support the new developmental goals within the partnership between government and the ARC. The null hypothesis that there were possible linkages between ARC and developing smallholder farming enterprises was rejected by rural local experts and horticulturalists. These results suggested that rural local experts and horticulturalists were less likely to agree that there were any meaningful linkages with the ARC-VOPI and developing farm enterprises compared to other experts. Conversely, peri-urban experts and horticultural technicians were more likely to agree that there were appropriate linkages with ARC-VOPI and developing farmers compared to other experts, although there were no evidence to affirm this position.

Given the above empirical observation, it can be concluded that there were strong evidence within the primary industrial experts (i.e. local rural and horticultural experts) that suggest that there were no (weak) linkages between the ARC-VOPI and developing farmers. However, Shrestha et al (2015) found that smallholder developing farmers depend on the social capital linkages for their success. Using multiple case studies of the smallholder agricultural cooperatives in Western Hills of Nepal, Shrestha et al (2015) found that farmers' cooperatives could benefit from the development of social capital



resources and their maintenance. In view of the current findings (where experts have revealed that there were weak social capital linkages amongst the key innovators and smallholder farmers), it may be deduced that the smallholder farmers in South African provinces may be failing to achieve the socio-economic milestones as results of the weak social capital linkages (assuming that all things are equal). In addition, these results seem to reveal that there may be serious implications imposed by the weak social capital linkages with the entrepreneurs and other institutions. Hence, initiating research and development programme aimed at enhancing social capital development for small holder developing farmers in South Africa would possibly improve their competitiveness and success.

For the sustained social capital development, this study suggest that South African government and its partners should develop new policies with the aim to ensure that research and development institutions have strong links with their primary clientele. The implementation of the suggested policies, with regular monitoring and evaluation of their impact, may provide a guide on how to strengthen these weak networks going forward. With systematic social capital strategies between ARC-VOPI and primary clients, developing farming enterprises in South Africa may have an opportunity to become economically active enterprises as opposed to livelihood-oriented farming enterprises which are perceived to make little or no economic contribution.

#### **ACKNOWLEDGEMENTS:**

The authors would like to thank the Agricultural Research Council Vegetable and Ornamental Plant Institutes (ARC) and Agricultural Research Council Agricultural Economics at Hatfield, ARC head office and National Agricultural Marketing Council (NAMC) for the valuable support in the study.

#### **REFERENCES**

- Alexandropoulos, S. 2010. About trust: from cultural tradition to institutional politics. In Koniordos, S. (Ed.) *Social Capital*. Papazisis Publications. Athens: 45-98.
- Bian, Y.J. 1994. *Work and inequality in urban China*. State University of New York. Albany.
- Bourdieu, P. 1977. *Outline of a theory of practice*. Cambridge University Press.
- Bourdieu, P. 1984. *Distinction: a social critique of the judgement of taste*. Routledge. London.
- Bourdieu, P. 1986. The forms of capital. In Richardson, J.G. (Ed.), *Handbook of theory of research for the sociology of education*. Greenwood Press. UK.



Browne-Yung, K., Ziersch, A. and Baum, F. 2013. Faking till you make it: social capital accumulation of individuals on low incomes living in contrasting socio-economic neighbourhoods and its implications for health and wellbeing. *Soc. Science and Med.* 85: 9-17.

Burt, R.S. 1998. The gender of social capital. *Rationality and Soc.* 10: 25-46.

Coleman, J.A. 1990. *Foundations of social theory.* Cambridge: Belknap.

Coleman, J.S. 1988. Social capital in the creation of human capital. *American J. of Socio.* 94: 95-120. .

Eitzen, D.S. 2000. Social control and sport. In Coakley, J. & Dunning, E. (Eds.). Sage. London.

Eklinder-Frick, J., Eriksson, T.L. and Hallen, L. 2014. Multidimensional social capital as a boost or a bar to innovativeness. *Industrial Marketing Mngt.* 43: 460-472.

Fisher, R. 2013. A gentleman's handshake: the role of social capital and trust in transforming information into usable knowledge. *J. of Rural Stud.* 31: 13-22.

Flap, H.D. and Völker, B. 2001. Goal specific social capital and job satisfaction: effects of different types of networks on instrumental and social aspects of work. *Soc. Networks* 23(4): 297-320.

Gibson, H.J., Walker, M., Thapa, B., Kaplanidou, K., Geldenhuys, S. and Coetzee, W. 2014. Psychic income and social capital among host nation residents: a prepost analysis of the 2010 FIFA World Cup in South Africa. *Tour. Management* 44: 113-122.

Godfray, H. C. J., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., & Toulmin, C. 2010. Food security: the challenge of feeding 9 billion people. *Science*, 327(5967), 812-818.

Gold, T., Doug, G. and Wank, D. 2002. *Social connections in China. Institutions, culture and the changing nature of guanxi.* Cambridge University Press.

Greene, W.H. 1993. *Econometric Analysis*, fifth edition, Prentice Hall, Pp. 720-723.

Hanifan, L.J. 1961. The rural school community center. *Ann American Academic Pol. Social Sci.* 67: 130-138.

Harvey, D. 1989. *The condition of postmodernity.* Blackwell. Oxford.

Herian, M.N., Tay, L., Hamma, J.A. and Diener E. 2014. Social capital, ideology, and health in the United States. *Soc. Science & Med.* 105: 30-37.



Horn, P., Scheffler, P. and Schiele, H. 2014. Internal integration as a pre-condition for external intergration in global sourcing: A social capital perspective. *International J. of Production Eco.* 153: 54-65.

Huanga, J. and Aaltiob, I. 2014. Guanxi and social capital: networking among women managers in China and Finland. *Int. J of Intercultural Rel.* 39: 22-39.

Joshi, A. and Aoki, M. 2014. The role of social capital and public policy in disaster recovery: a case study of Tamil Nadu State, India. *Int. J. Disaster Ris. Red.* (in press).

Koutsou, S., Partalidou, M. and Ragkos, A. 2014. Young farmers' social capital in Greece: trust levels and collective actions. *J. of Rural Stud.* 34: 204-211.

Lee, D.Y. 2013. The role of attachment style in building social capital from a social networking site: the interplay of anxiety and avoidance. *Comp. in Human Beh.* 29: 1499-1509.

Lin, N. 2001. Building a network theory of social capital. In Lin, N., Cook, K. & Burt, R. (Eds.), *Social capital: theory and research*. Aldine de Gruyter. New York.

Nahapiet, J. and Ghoshal, S. 1998. Social capital, intellectual capital, and the organizational advantage. *Acad. of Management Rev.* 23(2): 242-266.

Oni, S. A., Maliwichi, L. L., & Obadire, O. S. (2010). Socio-economic factors affecting smallholder farming and household food security: a case of Thulamela local municipality in Vhembe District of Limpopo Province, South Africa. *African Journal of Agricultural Research*, 5(17), 2289-2296.

Portes, A. 1998. Social capital: its origins and applications in modern sociology. *Ann. Review Socio.* 24: 1-24.

Putnam, R. 2000. *Bowling alone: the collapse and revival of American community*. Simon & Schuster. New York.

Putnam, R.D. 1995. Bowling alone: America's declining social capital. *J. Democracy* 6(1): 65-78.

Shrestha, R. K., Cameron, D. C., Coutts, J., & Cavaye, J. (2015). Building and Maintenance of Social Capital in Rural Farming Community of the Western Hills of Nepal. *International Journal of Asian Business and Information Management (IJABIM)*, 6(3), 28-41.

Trigilia, C. 2001. Social capital and local development. *European J. of Social The.* 4(4): 427.



Yang, M.M. 1994. Gifts, favors and banquets: the art of social relationships in China. Cornell University Press. New York.

