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Social capital and innovation of firms: Evidence from the tenant firms in Ethiopia

[1] K Sambasiva Rao, [2] Hailemariam Gebremichael

[1] Professor, Department of Commerce and Management Studies, Andhra University, Visakhapatnam, Andhra Pradesh, India
[2] Research Scholar, Department of Commerce and Management Studies, Andhra University, Visakhapatnam, Andhra Pradesh, India

Abstract
The objective of this study was twofold. First, was to determine the relationship between social capital and innovation of firms. The other objective was to investigate the extent to which social capital has an impact on innovation of firms in Ethiopia. In this research social capital has been measured in three dimensions: structural, cognitive and relational dimensions of social capital. The researchers have tested individual and collective effect of these three dimensions of social capital on innovation of firms. Innovation has been measured by four parameters: product innovation, process innovation, organizational innovation, and marketing innovation. We used e-mailed survey among 137 tenant firms (firms which joined and/or graduated to/from the Business incubation centers available in Ethiopia) to collect the data and obtained 113 full responses which were appropriate for this research. The result of this study indicates that there exists very low negative but not statistically significant relationship between social capital and innovation of firms. Moreover, the result of this study shows that the three dimensions of social capital (structural, cognitive and relational) have no statistically significant impact on the likelihood of tenant firms to innovate.

Keywords: social capital, innovation, Business incubation, firms, Ethiopia

Introduction

Hirschman (1978 cited by Conor, 2007) [8], writing about why some areas had more successfully developed their economies than others, said that it was the capacity of people in an area to locate and exploit resources which in other areas were under-utilized which was more important than having optimal combination of resources available in the first place. What inspired people to successfully exploit resources and locations where the presence of what he described as a binding agent. Binding agent varies from place to place, but they were usually a variant on the propensity of people to collaborate effectively, to be innovative and outward and forward looking. In 1920 Marshal had claimed that the factors which affected the performance of industrial districts were somehow linked together. Iyer *et al.* (2005) [26] described Marshall's insight as possibly an early recognition of the importance of social capital.

There has been a shift in the way management scholars' view of the firm from the traditional models of opportunism and market failure ideas (Williamson, 1975) [55] to a more socialized perspective of the firm, in which organizations are social communities where individual and social expertise is transformed into economically useful products and services (Kogut & Zander, 1992) [32]. These newer theories argue that the firm's principal purpose and source of competitive advantage are the creation and dissemination of firm-specific knowledge (Kogut & Zander, 1996) [33]. The implication here is that if firms can develop the capabilities for creating and sharing knowledge, then these capabilities can be used to generate organizational advantage. Implicit in this new perspective of the firm is the notion of social capital (Linda *et al.*, 2014). Then after, the concept of social capital was carried by Burt (1992) [4] to the management field by focusing on relations beyond and within firms and has been applied to many industries (Spence *et al.* 2003) [52]. Besides, the concept of social capital has been developed by sociologists like Coleman (1988) [6], political scientists such as Putnam (1995) [47] and economists like Woolcock and Narayan (2000).

The importance of social capital as a determinant of innovation has received much theoretical attention over the last years. It is now assumed that the acquisition of knowledge by firms does not only depend on the market or the hierarchy, but also on the social capital accumulated within regions through networks of interaction and learning. Standing in contrast with the transaction cost theory based on the assumption of opportunism and the resulting conditions of market failure, the supporters of the social capital theory argue that firms have capabilities for creating and sharing knowledge that improve their innovative capabilities. The particular capabilities of firms for creating and sharing knowledge are seen as resting on formal and informal regional institutions (Landry *et al.*, 2002) [34].

Moreover, several studies have emphasized the importance of social capital as a determinant of innovation (Lyndon M *et al.*, 2015; Farhad and Ali A., 2014) [37, 17]. Researchers have found that social capital encourages cooperative behavior, thereby facilitating the development of new forms of association and innovative organization (Putnam, 1993; Nahapiet and Ghoshal, 1998) [46, 41, 54].

The impact of social capital on innovation can be different depending on the analytical levels (firm, national, regional and international). Additionally, the relationship between social capital and innovation has found conflicting results, either positive (Coleman, 1988, 1990; Putnam, 1993; Jahangir *et al.*, 2013) [6, 46, 28], negative (Chou *et al.* 2006, Dasgupta, 2000) or both (Fukuyama, 1999) [20], or partial positive effect of trust and associational activity (which are sub-constructs of social capital) on innovation (Dakhli and De Clercq, 2004) [12, 13].

The purpose of this study is to determine the relationship between social capital and innovation and also to examine the

impact of social capital on innovation at the firm level. Therefore, this paper tests the impact of the three dimensions of social capital (structural, cognitive and relational) on the innovation of tenant firms in Ethiopia. Incidentally, based on the theoretical foundations elaborated above, the hypothesis of this research is as follows:

Ho: Social capital will not significantly explain the variation in innovation of tenant firms in Ethiopia.

The next section of this paper reviews the literature on social capital and innovation of firms. Section three presents the data, methodology, measuring instrument. The results and discussion are in section four. We come to an end with the conclusion of this study on section five.

Review of Literature

Social Capital

Originally, social capital was used as a metaphor to explain the situation where some people have advantages over other people because of their connections or networks of relationship. Subsequently, the metaphor was transformed into the concept of a "capital" that is used to complement the other forms of capital (i.e., from the basic definition of economics for a capital in a tangible sense as a factor of production, e.g., money and resources, to the definition of a capital in an intangible sense such as human capital, e.g., the stock of knowledge). Three distinctive scholars from different fields are considered to have contributed to the state of knowledge on social capital in modern usage. These three scholars, who work independently from different perspectives but have come up with a coherent definition of social capital that consists of personal connections and interpersonal interaction, are a French sociologist named Pierre Bourdieu, an American sociologist named James Coleman, and an American political scientist named Robert Putnam (J. Field, 2003) [27].

The definitions of the social capital given by Burt, Putnam, and Knoke are narrated under which are suitable for this study.

- Friends, Coworkers, and many common acquaintances where through them you get a chance to be used as a financial capital and human capital (Burt, 1992) [4].
- The characteristics of a social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit (Putnam, 1995) [47].
- The process by which social actors create and mobilize their network connections within and between organizations to gain access to the resources of other social actors (Knoke, 1999) [31].

Dimensions of Social Capital

According to Nahapiet and Ghoshal (1998) [41, 54], there are multiple aspects or facets of social capital, thus, it is helpful to group these different facets into clusters which could be referred to as dimensions of social capital. Table 1 below summarizes the three different dimensions of social capital: the structural dimension, relational dimension and cognitive dimension along with their associated facets and explanations of each element.

Table 1: Dimensions of social capital

Dimension	Facet	Explanation
Structural dimension	Network ties	The specific ways that the actors in the networks related to each other.
	Network configuration	The pattern of linkages between all members of the network.
	Network stability	The rate of change in membership of the network.
Relational dimension	Trust	The social judgments of the actors in the network and the assessment of costs or risk associated with the judgments.
	Norms	The degree of consensus among the actors in the network that indirectly controls their actions.
Cognitive dimension	Shared language and codes	The common ways for the actors in the network to communicate and understand each other.
	Shared goal	The degree of common understanding and approach to the achievement of the tasks shared by all of the actors in the network.

(Munkongsujarit, 2013) [40].

Scholars agree that the structural dimension is an antecedent to both cognitive and relational dimensions. Tsai & Ghoshal (1998) [41, 54] explains how individuals must first have shared experiences and relationships over time to develop a common vision and purpose, as well as trust, norms, and identity. In fact, the structural dimension establishes the interactions between actors that are essential to building a more personal relationship. Moreover, the cognitive dimension is an antecedent of the relational dimension of social capital. The reason is that shared goals and narratives may lead to shared norms and obligations, as well as to enhance feelings of trust and identity (Arregle, *et al.*, 2007; Pearson, *et al.*, 2008).

Innovation

The definition of innovation has developed over time and been interpreted very differently (Sauber & Tschirky, 2006) [49]. Innovation has continued to be a subject of interest to scholars from a number of different disciplines, including economics, business, engineering, science, and sociology. Arising from this, the concept has hence been viewed differently to the extent of introducing a debate as to what constitutes innovation (Cooper, 1998) [10]. It has hence come into view as a multidimensional concept which includes various dimensions like product-process-market-organizational, incremental-radical, sustaining-discontinuous and technological – non-technological innovations. Any shift in the production function was to be seen as an innovation (Sileshi Talegeta, 2014) [50].

According to the Organization for Economic Co-operation and Development (OECD), innovation is the implementation of a new or significantly improved product, or process, a new marketing or organizational method in business practices, workplace organization or external relations. However, the broad definition of innovation can be more narrowly categorized as the implementation of one or more types of

innovations, for instance, technological or non-technological innovations. Therefore, four types of innovations are distinguished under (Jaramillo *et al.* 2001; OECD/EU/Eurostat, 2005). This is the definition used in this study.

Types of Innovation

1. Product Innovation

The process of developing and bringing new or substantially better products or services to market has been consistently used in the literature to define product innovation (Hauser *et al.*, 2005). A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components, and materials, incorporated software, user friendliness or other functional characteristics (OECD/EU/Eurostat, 2005).

2. Process Innovation

While product innovation focuses more on the market, process innovation is more internally concentrated (Damanpour and Gopalakrishnan, 2001). Fagerberg *et al.*, (2004) in The Oxford Handbook for Innovation summarize process innovation as new or significantly improved methods of the production or manufacturing process. According to the Organization for Economic Cooperation and Development (OECD/EU/Eurostat, 2005), process innovation is the implementation of a new or significantly improved production or delivery method.

3. Marketing Innovation

There have been many definitions of marketing innovation developed in the literature. For example, marketing innovation is referred to as innovation in marketing or new marketing techniques in the context of strategic organizational behavior and patterns (Robinson and Pearce 1988). Marketing innovation is the capacity to re-conceive the existing industry model in ways that create new value for customers, undermine competitors, and produce new wealth for all stakeholders (Hanvanach, *et al.*, 2003) [23]. According to OECD marketing innovation is defined as the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing (OECD/EU/Eurostat, 2005).

4. Organizational Innovation

Organizational innovation has been consistently defined as the adoption of an idea or behavior that is new to the organization (Daft and Becker 1978, Hage, 1980) [11, 22]. According to the Organization for Economic Cooperation and Development (OECD), organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations (OECD/EU/Eurostat, 2005). This is the definition used in this research.

Social Capital and Innovation

Because of the important role of firms in the economy and new technologies, the concept of innovation has drawn much attention in firms' literature. Despite their limited access to resources, these entities often show good innovation results (Rosenbusch *et al.*, 2011) [48]. Social capital is one of the popularly and frequently used concepts to explain the innovative process. Social capital can influence innovation in different ways: first, innovation requires the convergence of different knowledge pertaining to different members of an organization which is provided by social capital (Song and Thieme, 2006; Zheng, 2008; Farhad and Ali, 2014 and Lyndon *et al.*, 2015) [51, 58, 37, 17]. Second, social capital facilitates innovation through motivating cooperation and coordination between different members/units in an organization (Nahapiiet and Ghoshal, 1998; Leana and Pil, 2006; Brooks and Nafukho, 2006; Goyal and Akhilesh, 2007) [41, 36, 3, 41, 54]. On the other hand, it corresponds to initiating new product strategies positively (Hsieh and Tsai, 2007) [25]. Moran (2005) [39] highlights the relational aspect of social capital through investigating the level of personal understanding and the concept of trust in communications and argues that when there are close relationships between members, they are more motivated toward new innovative ideas and could change ideas into the successful project (Lavado *et al.*, 2010) [35].

Social capital theorists suggest that innovation can be increasingly generated by social capital and the high level of social capital is not only vital for the effective functioning of societies but it also has a positive effect on innovation in the new knowledge economy. In a narrower view, innovation firms are affected by the structural dimension (social interaction ties) and Cognitive dimension (shared vision) of social capital (Tsai and Ghoshal, 1998; Keka, 2007) [41, 54]. Another study concludes that creating social capital has an association in enhancing innovation by improving knowledge performance of businesses (Cooke & Wills, 1999). In Dakhli and De Clercq (2004) [12, 13] work also partially supports the positive effects of social capital on innovation. Zali, *et al.* (2011) [57] had shown more detailed relations between networks of entrepreneurs and innovation. The global network of entrepreneurs, composed of the market, professional, experience, job and private network, positively affects innovation. They also argue that the economic actors with low level of social capital in the new economy might have an experience of unwieldy transaction costs, search and information costs, bargaining costs, decision cost (Landry *et al.*, 2002) [34], lack of coordination, duplications of effort, and costly contractual dispute (Fountain and Atkinson, 1998) [18].

Methodology

We systematically gathered the basic inputs for the study by using primary data sources – questionnaire - from all the entrepreneurs who joined and/or graduated to/from the incubation centers available in Ethiopia. To obtain the highest accuracy a complete enumeration of all the 137 firms (a census inquiry) were covered under this study.

Description of Variables and Measuring Instrument

In this study two main variables are explored: the dependent (regressed) and independent (explanatory or regressor). The dependent/regressed variable is innovation and that of the regressors/explanatory/independent variables are the dimensions of social capital of the entrepreneurs, which are expected to have a significant contribution to innovation of firms in Ethiopia. The following are highlights of the descriptions of the dependent and independent variables.

Social Capital

Measuring an entrepreneurs' social capital is not an easy task. This is partially due to the fact that there has still not been a satisfactory definition of the concept. This study uses Nahapiet and Ghoshal's (1998) [41, 54] dimensions of social capital to measure firms' social capital, which distinguishes between three dimensions: structural, cognitive and relational social capital. The structural social capital dimension measures the configuration of linkages between the entrepreneurs, the number and intensity of available relationships, how members address each other, and the proportions of strong, weak or conflicting relationships. The second dimension, cognitive social capital, measures the resources providing shared representations, interpretations, and systems of meaning among the entrepreneurs. Relational social capital measures the personal relationships entrepreneurs have developed through a history of interactions including trust, norms, obligations, and identity.

Innovation

In this study to measure the firms' innovativeness, the researchers employed the Community Innovation Survey (CIS) - with some modification - which is developed based on the principles of the Oslo manual. The Community Innovation Survey (CIS) restrains construct (product, process, marketing and organizational innovations) to measure firms' innovation. Product innovation of firms was measured based on their introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components, and materials, incorporated software, user friendliness or other functional characteristics. The process innovation of firms was measured based on the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Moreover, marketing innovation of firms has measured the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing (OECD/EU/Eurostat, 2005).

Following the OSLO Manual, the CIS also provides three variables for measuring organizational innovation: new business practices for organizing procedures; new methods of organizing work responsibilities and decision making; new methods of organizing external relations with other firms or public institutions. Examples of new business practices are introduction changes in operations and supply chain management (e.g., quality systems, lean production) or business re-engineering. A new method of organizing work refers to, for example, decentralization, changes in functional form or training systems. Finally, a new method of organizing external relations is tight with alliances, partnerships or outsourcing. The question behind these four constructs (product, process, marketing and organizational innovations) is if the firm has introduced them for the first time as result of strategic decisions (OECD/EU/Eurostat, 2005).

Results and discussion

One hundred thirty-seven questionnaires were sent to the respondents via e-mail and out of the 137 questionnaires, one hundred thirteen of them were returned back to the researchers with a full response. Accordingly, the analysis of this study is based on the number of filled questionnaires obtained.

Pearson's Product Moment Correlation Coefficient

On this study Pearson's Product, moment correlation Coefficient was used to determine the relationship between each dimension of social capital and innovation of firms in Ethiopia.

The result on table 2 below indicates that there is very low positive, but not statistically significant relationship between structural social capital and innovation of firms ($r = 0.059$, $p > 0.05$). The result also presents a very low negative, but not statistically significant relationship between cognitive social capital and innovation ($r = -0.070$, $p > 0.05$); relational social capital and innovation ($r = -0.082$, $p > 0.05$). As far as the association between the overall social capital and innovation of firms is concerned from the table 2 below, there exists very low negative, but not statistically significant correlation at 95% confidence level.

Table 2: The relationship between social capital and innovation of firms Correlations[1]

		structural	cognitive	Relational	Overall social capital	innovation
structural	Correlation	1				
	Sig. (2-tailed)					
cognitive	Correlation	.208*	1			
	Sig. (2-tailed)	.027				
relational	Correlation	.122	.054	1		
	Sig. (2-tailed)	.198	.572			
Overall social capital	Correlation	.684**	.734**	.505**	1	
	Sig. (2-tailed)	.000	.000	.000		
innovation	Correlation	.059	-.070	-.082	-.046	1
	Sig. (2-tailed)	.536	.460	.386	.625	

*. Correlation is significant at the 0.05 level (2-tailed)

**. Correlation is significant at the 0.01 level (2-tailed)

Source: Developed by this Research, 2017

There is contradictory evidence on the relationship between social capital and innovation of firms. This finding is consistent with the result presented by Chou *et al.* (2006) and Dasgupta (2000) who reported a negative relationship between social capital and innovation of firms. On the contrary, Coleman (1988, 1990) [6], Putnam (1993) [46], Knack and Keefer (1997),

[1] A pair wise correlation below 80% indicates the absence of series problem of multicollinearity in the regression equation as indicated in the above correlation matrix.

Onyx and Bullen (2000) [43], Fritsch (2004) [19], Jahangir *et al.* (2013) [28] and Sud F. C. *et al.*, (2014) [53] reported a positive relationship between social capital and innovation of firms.

Multiple Regressions

Regress Innovation of firms on Social capital

Hypothesis

Ho: Social capital will not significantly explain the variation in innovation of firms in Ethiopia

Ha: Social capital will significantly explain the variation in innovation of firms in Ethiopia

The results of the multiple regression analysis regressing Innovation on Social capital are presented in Table 3 below. The coefficient of multiple correlations between innovation and social capital, as indicated by Multiple R in Table 3 is 0.135. Looking at the model summary, the R-square is .018, which means that the three dimensions of social capital (structural social capital, cognitive social capital, and relational social capital) can explain about 1.8% of the change in innovation. The other 98.2% of the variation in innovation is explained by variables not included in this study.

The researchers use the overall F-test to determine whether the three dimensions of social capital (structural social capital, cognitive social capital, and relational social capital) have a significant impact on the innovation of firms.

Accordingly, Using a 0.05 level of significance, the critical value of the *F* distribution with 3 and 109 degrees of freedom is approximately .676 (see table 3 below). Because the P value = .569 > 0.05, the researchers may not reject the Ho and concluded that social capital does not have a significant impact on the likelihood of firms' innovation in Ethiopia.

Table 3: Regress innovation of firms on social capital

Multiple R		.135				
R Square		.018				
Adjusted R square		-.009				
Standard Error		.14881				
Degree of Freedom						
Regression		3				
Residual		109				
F		.676				
Sig		.569				
Variable		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
	(Constant)	1.994	.223		8.961	.000
	Structural	.034	.038	.087	.891	.375
	Cognitive	-.027	.031	-.083	-.860	.392
	Relational	-.042	.046	-.088	-.925	.357

Source: Developed by this Research, 2017

Conclusion

This research looked into the impact of social capital on innovation of firms (firms which joined and/or graduated to/from the Business incubation centers) in Ethiopia. Specifically, the study has addressed two issues of relevance in social capital and innovation of firms' analysis.

The first issue examined the relationship between social capital and innovation of firms. There is contradictory evidence on the relationship between social capital and innovation of tenant firms. Some studies reported a negative relationship between social capital and innovation of firms. On the contrary, some reported a positive relationship between social capital and innovation of tenant firms. The result of this study indicates that there exists very low negative but not statistically significant relationship between social capital and innovation of tenant firms.

The second issue examined the impact of the entrepreneurs' social capital in fostering innovation of their firms. Thus, the result shows that the three dimensions of social capital (structural, cognitive and relational) have no statistically significant impact on the likelihood of tenant firms to innovate at 95% confidence level.

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