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SOCIAL CAPITAL AND ITS IMPACT ON THE RESEARCH PRODUCTIVITY OF A STATE UNIVERSITY

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ABSTRACT – This paper explored how a state university can use its social capital to enhance its research productivity. As a concept, social capital suggests that people or organizations with the right type and kind of social networks are in a better position to attain their objectives compared to others belonging to a different kind of social network. That people or organization with the right kind of connection can occupy and use their position in their social network to address organizational concerns faster and much more effectively (Burt, 2000; Portes, 1998 as cited by Oh, 2004). As such, the social network theory proposes that one's network can enhance one's competitive edge by exchanging, replacing or combining their different organizational resources (Galunic and Rodan, 1998; Nahapiet and Ghoshal, 1998). One's social capital can either be structural, relational or cognitive or its combinations (Nahapiet and Ghoshal, 1998). Tsai and Ghoshal (1998) furthered Nahapiet and Ghoshal's framework when they examined how the different aspects of social capital can influence the transfer and knowledge exchanges among the different members of the network. Similarly, this paper proposes that the social capital of a unit can positively influence the research performance and output of a unit or an individual. Results validated Nahapiet and Ghoshal's Model which states that the presence of the structural and cognitive dimensions of social capital is important to the development of the relational dimension in organizations and the presence of the three dimensions is important to resource exchange and combinations. When viewed against the research performance of the university, it implies that individuals and those who have developed their structural, relational and cognitive capitals are better able to access, share, and exchange resources with others for better research performances. This further implies that a challenge for any research unit is how to motivate stronger interaction among project team members to generate more research output.

Keywords: Social capital, social network, research performance

INTRODUCTION

"It's not what you know that counts so much, but what matters is who you know" can aptly describe the social capital (SC) concept. It rests on the knowledge that one's social network, which might include one's family, friends, and colleagues in the organization, are important intangible assets, and provides the necessary support system. The social capital concept

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works for both individuals and groups (Woolcock & Narayan, 2000). As a concept, social capital "highlights the idea that people or groups with the right types of social connections can more effectively employ other types of capital they possess (such as financial resources, knowledge, skills, and abilities) to achieve their goals than those people or groups with social connections of a different type. People with the right connections occupy a position in the network of social exchanges that allows them to bring their resources to bear on problems in a more timely and effective manner" (Oh, 2004, p.861). It is "the contextual complement to human capital. That the people who do better are somehow better connected. Certain people or certain groups are connected to certain others, trusting certain others, obligated to support certain others, dependent on exchange with certain others" (Burt, 2000, p.3).

For state universities and colleges (SUCs), they are being challenged to bring their resources for generating, developing and commercializing innovative ideas and relevant research outputs to satisfy the needs and expectations of the industry and communities they serve, in the shortest possible time. Today's universities are expected to not only transfer but generate knowledge. While SUCs are expected to produce an increasing number of graduates and be knowledge generators (EMBO Report, 2007). They are also expected to perform a four-fold function that includes teaching, research, extension and production activities which are the basis for university leveling necessary for enhancing the legitimacy of the university in the community.

Hence, among SUC's, the research development and extension (RDE) offices have increasingly assumed an important role since they are responsible for generating, developing and commercializing innovative research into useful products, services, or technology for their different stakeholders (Iansiti and West, 1999; Thamhain, 2003). Given such important responsibility, the research and extension offices have to collaborate with one another to facilitate exchanges of knowledge, sharing and transfer of information, as well as the dissemination of new developments that are responsive to the needs of the market. Further, the RDE offices need to collaborate and deliberate on practical technical solutions for any potential product and process design problems (Chen et al, 2008). Apparently, one's social network is a key resource important for the performance of one's task. Further, being part of a network provides its members with a key organizational asset they can use for their tasks, provides the team with a sense of ownership or a collective sense of a shared social capital (Bourdieu, 1986).

Collaboration, according to the social network theory and the knowledge-based theory, is important to enhancing the competitive edge of organizations since it permits exchange of resources and allows for its different combinations (Galunic and Rodan, 1998; Nahapiet and Ghoshal, 1998). In another study, Nahapiet and Ghoshal (1998) suggested that social capital is an interdependence of the following aspects: structural, relational, and cognitive (p.244). Nahapiet and Ghoshal's SC Model was extended by Tsai and Ghoshal (1998) with a social capital and value creation framework where they examined how the different social capital dimensions influence the transfer of knowledge between network members. Taking off from Tsai and Ghoshal's (1998) theoretical proposition, this research empirically tests the correlation between the identified social capital dimensions to value creation, as measured by research productivity, in the Research Division of a state university.

STATEMENT OF THE PROBLEM

Social capital, as a concept, is difficult and complicated since individuals, organizations, and one's own network construes the concept differently (Bart, 2008). Moreover, Moran (2005) noted that there are few empirical studies done that evaluate the relation between the individual

social capital to their managerial and research performance. Similarly, Chen et al (2008) observed that empirical studies on how social capital can be used to enhance the productivity of RDE units are still wanting.

Productivity may be a central variable in management research; however, Ariani (2012) noted that it has not received much academic attention). It has to be noted that the bigger and larger one's social capital is, the better an individual or team performance could be because of their access to information and support from their network. The large social network leads to better role performance because of the increased motivation from many people who motivates and helps them. However, although significant knowledge is already available, the previous studies examined "the role social capital plays in the success of individuals and organizations, these studies have not focused on the social capital development process in the higher education institutions" (Aslam et al, 2013, p.27).

Given this background, this research intended to know "how social capital can contribute to the research productivity of a state university?" Hence, this paper empirically tested Tsai and Ghoshal's Social Capital and Value Creation Model to understand how Higher Education Institutions (HEI) can use their social capital to enhance the research productivity of their organizations. Specifically, this paper sought to:

1. Examine the relationship between the structural and relational aspects of social capital;
2. Examine the relationship between the cognitive and relational aspects of social capital;
3. Examine the presence of social capital measured in terms of the structural, cognitive and relational aspects and how it affects the exchange, utilization, and combination of organizational resources;
4. Determine how resource exchange and combination contributes to value creation and research productivity.

This research is anchored on Tsai and Ghoshal's Social Capital and Value Creation Model hence; this research is similarly taking and adopting their research propositions (referred here as P).

P_1: The social interaction tie (SIT), an indicator of the structural dimension of social capital, can lead to the development of trust and perceived trustworthiness, an indicator of the relational dimensions of social capital

P_2: Common organizational vision (an indicator of the cognitive dimension of social capital) can lead to the development of trusting relationships (indicator of the relational dimension of social capital)

P_3: The structural and the cognitive dimensions of social capital play a significant role in the development of trust and trustworthiness

P_4: The level of individual and organizational trustworthiness results in varying degrees of resource exchange and combination among individuals and organizations

P_5: The level of resource exchange and combination of an academic unit with other academic units is linked to their research performance.

Tsai & Ghoshal (1998) posited that social capital includes the structural dimension which is measured in terms of social interaction ties (SIT). The social interaction tie looks at the time spent with others, contact, and communication frequency. They further suggested that the presence of the structural dimension may lead to the formation of the relational dimension measured in terms of the level of trust and perceived trustworthiness (Nahapiet and Ghoshal,

1998:465). Moreover, the structural dimension highlights the important role of location in the social network. One's location in the network gives certain privileges such as using contacts to access information, to find jobs, or to access key resources.

The second social capital dimension is the cognitive dimension. This particular dimension highlights the importance of having organizational characteristics like shared vision across units, or a common framework for understanding the organizational vision, goals and behavior in the system. Within an organization, the presence of shared vision and/or a set of common organizational values aid individual and group actions to the advantage of the entire organization. According to Granovetter, the productivity of organizations is closely linked to social relations. However, Moran (2005) argued that the value of an individual or organization's social capital goes beyond the structural composition of one's network or its cognitive aspects but on the presence, quality and embeddedness of its relationship.

The third social capital dimension is the relational aspect. This particular concept refers to intangible organizational resources like trust and trustworthiness. It is suggested that trust is a characteristic of the relationship, but to be trustworthy is expected of the person who is part of the social network. The presence of trust and trustworthiness contributes to increased goodwill available to individuals or teams (Tsai and Ghoshal,1998) and enhances the presence of "the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet and Ghoshal, 1998: p. 243). Such goodwill "lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor" (Adler & Kwon, 2002: p. 23).

In this paper, the researcher used Tsai and Ghoshal's model; however, since the researcher is evaluating the impact of the different aspects of social capital to research output, then, the researcher used research productivity as a measure of value creation (see Figure 1).

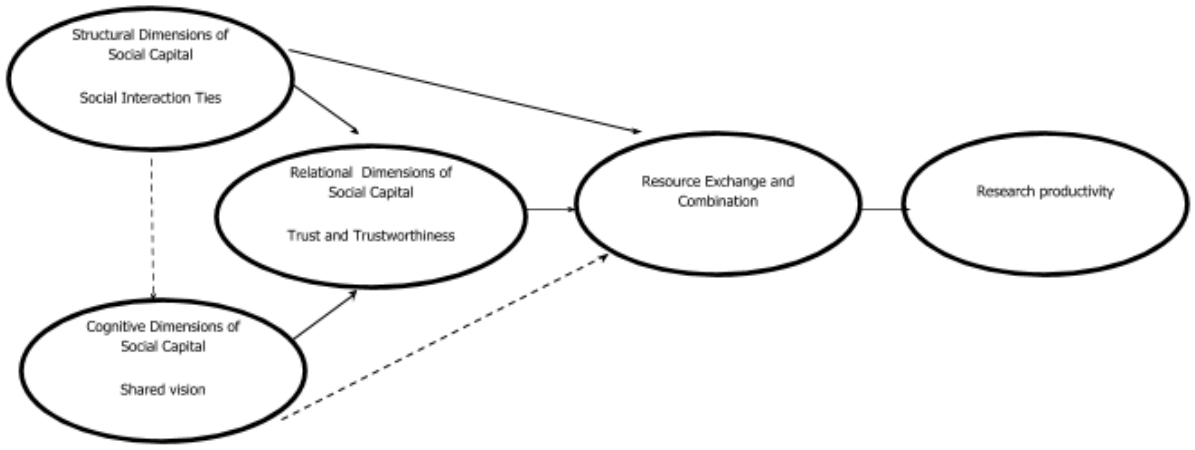

Fig. 1. Proposed social creation model and research productivity adapted from Tsai & Ghoshal's model

This research was conducted in 2014 in a state university in Region 5. This research interviewed a total of 33 faculty researchers and 5 Research Development and Extension (RDE) Coordinators, who were also faculty researchers. The research sample was identified through purposive sampling where the sample respondents and interviewees must be the research coordinator of their colleges or has been involved in research for the last two years. Personal interviews were done by the researcher to facilitate the data gathering process. Following Leana and Pil's methods for determining the internal organizational social capital, the researcher assessed the presence of the internal organizational social capital using Nahapiet and Ghoshal's (1998) structural, relational, and cognitive dimensions of social capital. Following Tsai & Ghoshal

(1998), both the relational and nonrelational data were asked during the interview. The survey instrument, which was adapted from Aslam et al (2013), was modified since the current study looked at the impact of social capital to research productivity. Hence, the phrase "my academic social network" was replaced by the word "unit" followed by a listing of the different academic units. To measure the research performance and productivity, the researcher used Reagans & Zuckerman (2001) indicator of productivity. The RDE Coordinator and researchers were asked to measure their productivity by assessing the different items in Table 1 and determining how many of these items were produced by the different academic units by an HEI in the last three years.

Table 1: Measures of research productivity

Item	0	1	2-5	More than 5
Position papers				
Project Proposals				
Published Scientific/technical articles				
Patents or patent applications				
Books (including editorships)				
Algorithms, blueprints, drawings etc				
Reports which remained within the unit				
Reports which circulated outside the unit				
Experimental prototypes of devices, instruments, components of devices etc				
Experimental materials				
Prototype computer programs				

Source: Reagans & Zuckerman, 2001

The research measured the presence of social capital in the university by assessing the strength of its structural, cognitive, and relational dimensions where the structural capital was measured in terms of their social interaction ties; the cognitive dimension in terms of their shared vision while the relational social capital was measured by the presence of trust and trustworthiness. Following Tsai & Ghoshal (1998), to collect the data, this research used a survey instrument, using Likert-type scales. The social capital dimensions were measured on a 7-point Likert Scale with points ranging from 1 = strongly disagree to 7 – strongly agree.

Data analysis. According to Woolcock and Narayan (2000), although it is difficult to determine the social capital either of individuals or groups it is not impossible. This research used descriptive statistics to determine the presence of the different social capital dimensions in the university. Further, the research adopted the protocol set by Tsai & Ghoshal (1998) who changed the individual level data into unit level data. It will be noted that the majority of the indicators used were relational while the propositions were prepared and tested at the unit level. Therefore, as suggested by Tsai & Ghoshal, a conversion of the responses was done by aggregating the individual responses into a unit-level measure for the different academic units. The researcher maintained the confidentiality of the result by coding each academic department while items in the research output were assigned a number i.e position paper = 1.

DISCUSSION

The aggregated rating at the unit level for the different social capital dimensions is shown in Table 2. It is posited that the structural dimension measured by the social interaction ties within the research network may "stimulate trust and perceived trustworthiness, which represent the relational dimension of social capital: (Tsai & Ghoshal, 1998: p.465). In this study, although

close contact is maintained (with an average rating of 4.16) among the different units, yet, the units and researchers do not spend so much time spent with the other units as seen in the average rating of 4.6 with frequency of communication faring only a little better at 4.96. These rather low ratings may be explained by the fact that the research function is an add-on function for the teaching personnel on top of the regular 21-unit normal teaching load given to faculty members. If one has a research activity, then, the faculty is just deloaded by a certain unit. Further, under the National Budget Circular (NBC) 461, only faculty members holding an associate professor rank are required to conduct research since this is a basis for their promotion while those with ranks of Instructor to Assistant Instructor are not required to do so since they are only evaluated based in the area of instruction that is based on their teaching effectiveness.

The social capital perspective states that if the different academic units are able to establish close social contact much more frequently with each other, the network actors might better know one another, might be more willing to share important information, and might be more open to establishing a common set of objectives and targets. In most cases, an individual who occupies a leading position in the social network is regarded as trustworthy by the other members of the said network (Tsai & Ghoshal, 1998). Within the social capital literature, trust and trustworthiness are used as indicators of the relational social capital (Tsai & Ghoshal, 1998: p.465).
In this research, the highest rating (μ=6.2) was given to the relational construct – truthfulness. This implies that the different faculty researchers coming from different academic units perceive members in their network as being truthful in dealing with one another and generally behaves in a consistent manner. However, although the different faculty researchers believe that their research network is honest and truthful, the reliability of some researchers coming from some academic units appears to be an issue since this construct was given a rather low rating of 4.92 among all the social capital measures. The rather low ratings given to reliability may be related to the existing structural capital, particularly in terms of the amount of contact among the different units. Again, during the survey period, the faculty researchers were expected to teach, have research, and provide some extension services; hence, limiting the time spent and the frequency of communication with other units.

Interestingly, the respondents strongly agree (μ = 6.17) on the need for shared organizational vision and are observed to have the same objective and interest in discovering new concepts and products; of learning with and from each other. Result of the research supports Tsai & Ghoshal's (1998) observation that when organization members share the same goals or interests, they are better able to realize the benefit from their resource exchange and combination activities and become eventual partners in either research or extension activities, willing to share resources and information. However, this research does observe one imperceptible contradiction in the result of the study: while the members scored high on shared vision, which is an antecedent to resource sharing and exchange, resource exchange was given a low mean rating of 4.8.

Table 2: Mean and Standard deviation for the different Social Capital Variables

	Mean	Standard Deviation
1. Social interaction: close contact	4.16	2.2
2. Social interaction: time spent	4.6	2.31
3. Social interaction: communication frequency	4.96	2.39
4. Trust: reliability	4.92	2.4
5. Trust: promises kept	4.71	2.31
6. Trust: consistency	6	1.41
7. Trust: truthfulness	6.2	1.1
8. Shared vision: across unit	5.8	1.79
9. Shared Organizational vision	6.17	1.33
10. Shared vision: learning from each other	6.17	1.33
11. Resource Exchange	4.8	2.14

This study posits that resource exchange is positively associated with research productivity - measured through the number of outputs generated for the last three years. All the academic departments reported producing more than five project proposals for the last three years but only one department produced a position paper highlighting their stand on a particular agri-related issue. Table 2 presents a cross-tabulation of the data generated illustrating the degree of social interaction, trust, vision, resource exchange with the research output by department.

Table 3. Cross-tabulation of Key Social Capital Measures with Research Output, 2014

Unit	SIT	Trust	Shared Vision	Research Exchange	Research Output *	
A	4.6	5.5	6.8	4.6	more than 5	(2, 3, 4, 7, 8)
B	4.2	4.3	5	2.8	2-5 products	(3,2,4,7,8,9)
C	4	5.4	7	3.1	2-5 products	(2,3,4,5,7,8)
D	4.1	5.1	7	4.2	more than 5	(1,2,7,8,10)
E	3.3	4.7	5.8	2.7	more than 5	(2,3,7,8)
F	2.9	4	4	3.2	2-5 products	(2,3,7,8)
G	4.1	5	7	4.3	2-5 products	(2,3,4)

* Items in parenthesis for research output refers to coded written products and/or prototypes

In the university, A (the Research unit) enjoyed the highest social interaction, trust, and research exchange rating of all the units. When cross-checked with the actual output for 2013, unit A received a total of 214 research proposals from the different academic units, published 37 scientific/technical articles, patent/copyright applications of 12 and circulated 95 research outputs. Next to A, units B , D & G enjoys the highest SIT ratings and this also relates to a higher output. Unit F, on the other hand has the lowest rating since, by their own account they became involved with research around two years ago. The trust ratings followed the same pattern with units C, D & G enjoying high trust ratings which, when viewed against their research output sees the 3 units having high research productivity. Again, units C,D & G got the highest ratings in terms of shared vision among the different academic departments.

Table 3 gives credence to the proposition that the greater the social interaction ties in a research unit, there is the increased possibility for a higher research exchange and productivity . For example, unit D, who enjoys close relationship with unit A, and enjoys an SIT rating of 4.1

is the most productive in terms of the number of research output generating more than 5 of items 1,2,7,8,10. In fact, for 2013 alone, data taken from the 2013 Annual report of the Research Division showed that they submitted a total of 24 research proposals, had the most number of externally funded research and the most number of faculty involved in research. Only one unit has an SIT rating of below 3 which can be explained by the fact that the said unit are mostly composed of faculty members with ranks of instructor and assistant professor hence, are not really required to conduct research. The aggregate structural rating for most of the academic units clustered around the rating of 4.16 -4.96 while the trust ratings are higher at a range 4.7-6. The unit level rating for the cognitive capital ranged around 5.8-6.2. Given the aggregate result for the three social capital dimensions, it is observed that those academic units who have a high structural rating measured through their social interaction ties and a high relational capital are able to generate more research output. Conversely, it was observed that those units with higher research outputs are those who enjoy dense ties with unit A. This clearly indicates that a challenge for that Research and Extension Division is knowing how to motivate interaction among project team members knowing that the project team may be composed of experts coming from different fields and possessed of "different expertise, abilities, knowledge, experience" (Chen, et. al, 2008) value system, and objectives.

CONCLUSION

The results of this study suggested that the research performance of an academic institution is influenced by the networks existing in the organization. This research aimed to establish the link between the social capital of a unit to the research output of a state university. The research proposed that there would be a positive relationship between the different dimensions of the social capital of a unit to its research output and such proposition was validated by the result of this research. Towards this end, this research attempted to contribute to the social capital literature as it applies to an academic institution and as it relates to the importance of social capital for enhancing the research output of the different academic units of a state university. Results confirm that when the academic units have greater network ties, more established structural, cognitive, and relational capital, it can lead to more resource exchanges and eventually, higher productivity.

Hence, the challenge for the Research Development and Extension Division to assist project teams face the many challenges and possibly, task conflicts they encounter in the conduct of a project by enabling communication and the development of enhanced social interaction ties, developing common goals and performance targets, and enhancing the relational environment so the teams could solve problems faster, and exchange information and knowledge.

IMPLICATION FOR FUTURE RESEARCH

In this study, the researcher empirically showed how social capital contributed to the research output of a state university. It recognizes that each academic unit has their own unique organizational assets and have different levels and kinds of network relationship. Hence, further research looking at how each academic unit utilizes their social capital resources may be pursued. Further, research may also be done on how other HEIs and research institutions utilize and combine their resources for increased research productivity; allowing them to better respond to the needs of their stakeholders and communities.

A limitation of this research concerns the measurements used. The very small population size did not adequately illustrate the rich relationship existing in an organization. Hence, further research allowing for a larger sample could be done. Further, a related study that evaluates the presence of networks in the university could be done. This would further provide insight

on improvements in the research environment so that the university and the different academic units can generate more research output that is responsive to the needs of the industry and its different stakeholders.

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