American Journal of Business and Management
Vol. 2, No. 2, 2013, 106-113
DOI: 10.11634/216796061302331

Social Capital and Value Creation: A Replication of 'The Role of Intrafirm Networks' by Wenpin Tsai and Sumantra Ghoshal

Monica Lester

Hampton University, VA, USA

Social sciences researchers commend the scientists in the field of natural science for their history of replication and reproduction of scientific research. Such advocates for replication warn that business research is frequently built on a foundation that is ever evolving and necessitates the replicating of theoretical work. Following this logic, this paper is a replication of the celebrated 1998 article by Tsai and Ghoshal, *Social capital and value creation: The role of intrafirm networks*. Replication was conducted utilizing Structural Equation Modeling. The data was collected by the original researchers through a survey administered by mail. The survey comprised questions rated using a Likert scale. Findings mostly support Tsai and Ghoshal's results with the exception of the relationships among constructs measuring trustworthiness, resource combination and sharing, and product innovation. Utilizing the before-mentioned constructs and the same analysis as Tsai and Ghoshal--structural equation modeling (SEM); the replicated model presented in this paper shows a non-recursive relationship versus Tsai and Ghoshal's recursive model. All in all, we contend that the replicated model presented in this paper agrees with current literature and is a more comprehensive model than the one offered by Tsai and Ghoshal.

Keywords: SEM, Tsai and Ghoshal, social capital, intrafirm social capital, replicated analysis

Introduction

The term social capital is commonly used to describe the relational resources, embedded in personal ties that served as a benefit to individuals in community social organizations (Jacobs, 1961; Loury, 1977, Runyon, et al., 1998). Recent research has applied this concept to a broader range of social phenomena, including relations inside and outside the family (Coleman, 1988), relations within and beyond the firm (Burt, 1992) the organization-market interface (Baker, 1990), and in medical and mental health (Runyon, et al., 1998). The influence that social capital has on these ranges of social phenomena, has compelled business scholars to consider its impact among entities such as firms, corporate departments, and business units. All in all, social capital is a construct that can be measured on the individual, familial, group, firm, community, and national level. However, because the interest of this project is to examine a prior analysis relating to intra-firm social capital, other measures of the construct, social capital, are considered outside the scope of this article.

In 1998, Tsai and Ghoshal published an article claiming to measure social capital among business units. They focused on the relationships among 15 different business units of a multiunit company. The interaction among these firms was to represent the three dimensions of social capital: relational, structural, and cognitive. Hence, the model that Ghoshal and Tsai came up with portrayed the constructs representative of the dimensions of social capital on an intra-firm level.

This paper heeds the call made my researchers such as Morrison, Matuszek, & Self (2010) for more replicated studies of business research. Therefore, this study attempts to reproduce the research of Ghoshal and Tsai's 1998 study on intrafirm networks. It is our goal to either expand the understanding of such networks or confirm Ghoshal and Tsai's findings.

Measures

Cognitive social capital is described as the shared paradigm that facilitates a common understanding of collective goals and proper ways of acting in the social system. This dimension of social capital is reflected in the model by the construct, ***Shared Vision***. ***Shared Vision*** allows participants of social capital to align their individual goals while creating common rules to interact by. ***Shared Vision*** also has a trust component, for two parties cannot agree on common efforts without trusting one another's motives and intentions. Tsai and Ghoshal (1998) utilized a two-item measure of shared vision. The

items were: (1) Our unit shares the same ambitions and vision with other units at work, and (2) People in our unit are enthusiastic about pursuing the collective goals and missions of the whole organization. These items were assessed on a seven-point Likert scale with 1 being strongly disagree and 7 being strongly agree. They then averaged the three responses from each business unit. And finally, they hypothesized a path to the abstraction, ***Trust.***

The construct, ***Trust***, is a reflection of relational social capital and is a governance mechanism for embedded relationships (Uzzi, 1996). Relational social capital refers to assets that are rooted in social relationships. Relational social capital is best captured by constructs that mediate a structural social relationship (i.e. trust, trustworthiness, loyalty, and reciprocity). Tsai and Ghoshal (1998) measured ***Trust*** using two relational matrices created from the responses to the following questions:

1. Please indicate the units which you believe you can rely on without any fear that they will take advantage of you or your unit even if the opportunity arises.
2. In general, people from which of the following units will always keep the promises they make to you?

In distinguishing between the structural and the relational dimensions of social capital, the authors relied on Granovetter's (1992) distinction between structural and relational embeddedness. According to this view, the structural dimension of social capital includes social interaction. The location of an actor's contacts in a social structure of interactions provides certain advantages for the actor. People can use their personal contacts to get jobs, to obtain information, or to access specific resources. These human resources can also be used to secure more intangible resources such as confidence and encouragement. Hence, structural social capital is reflected in the model by the construct, ***Social Interaction Ties***. Interaction was measured by two standardized "betweeness" indexes using a sample size of 15 (Tsai & Ghoshal, 1998, p. 469). Together, these three dimensions of social capital are hypothesized to lead to resource exchange and combination among business units. This resource exchange and combination is then believed to lead to value creation for the business unit in terms of product innovation.

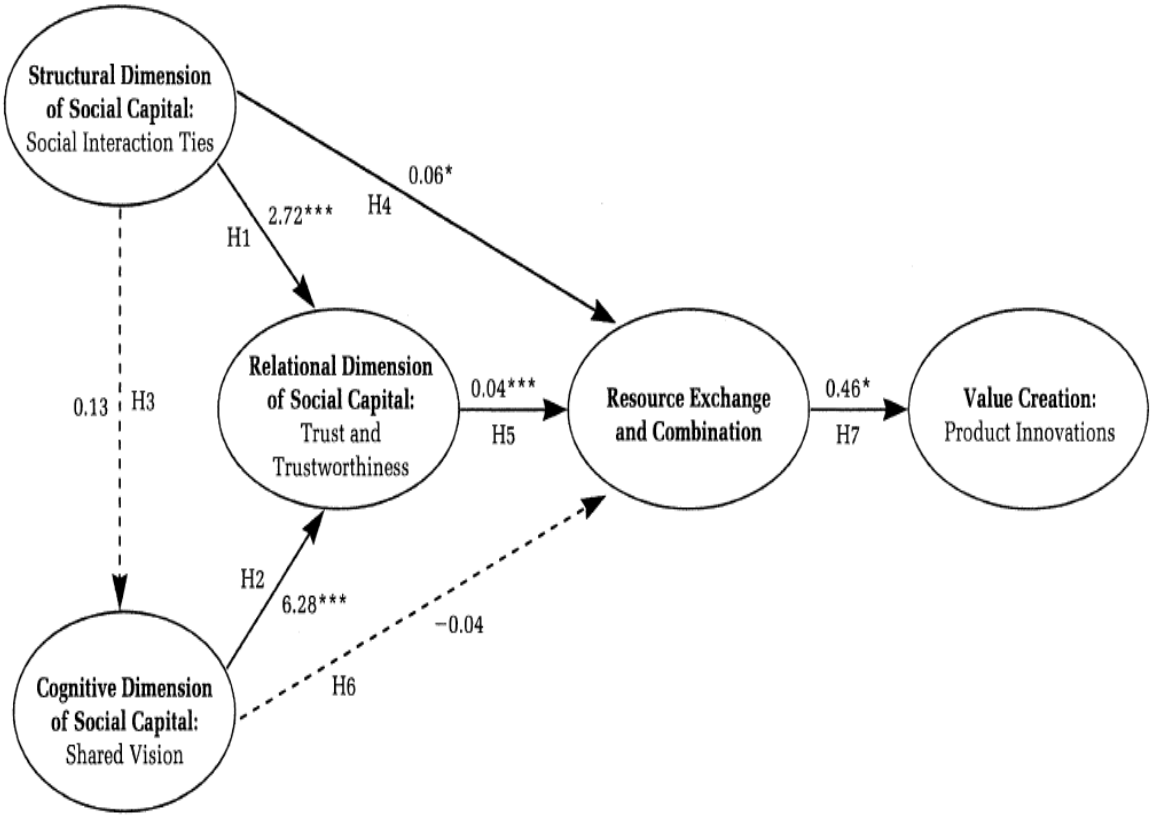

Figure 1. A model of social capital and value creation. Source: Tsai & Ghoshal (1998).

When two parties begin to trust each other, they become more willing to share their resources without worrying that they will be taken advantage of by the other party. Thus, cooperative behavior, which implies the exchange or combination of resources, may emerge when trust exists. Cooperative behavior is also necessary for product innovation. When pursuing the goal of innovating, one important factor is attitude. When discussing joint effort product innovation among businesses, Waarts, van Everedingen, and van Hillegersberg (2002) reported that early stages of the diffusion process adoption tends to be especially driven by a combination of internal strategic drives and attitudes of the firm. In other words, product innovation has a trust component.

This trust dimension of product innovation is not reflected by Ghoshal and Tsai's model; however, when replicating their data, such a connection was revealed. Without the literature to explain why trust and product innovation are associated; on the surface, unidimensionality, an important assumption in SEM, appears to be violated. However, considering the missing bit of information attaching a trust component to Product Innovation (also known as the sole measure of ***Value Creation*** by Tsai and Ghoshal), the replication of Tsai and Ghoshal's model appears more valid than the original model.

Tsai and Ghoshal (1998) argued that new sources of value are generated through novel deployments of resources, especially through new ways of exchanging and combining resources. In order to take advantage of such innovation, they believed that firms needed to reallocate resources, to combine new resources, or to combine existing resources in new ways. Similar arguments appear in the literature on organizational/product innovation. For example, several researchers have claimed that innovation requires diverse resource inputs and combinative capacities. Thus, Tsai and Ghoshal (1998) posited that the processes of resource exchange and combination may be associated with innovation that may serve as an indicator for value creation.

Expounding upon the process of value creation, the trust dimension is best highlighted by considering the actors of the firm. More specifically, firms are not the allocators of firm resources, but people are. Even within the same company, it is common for each business unit to have its own goals that relate to profit, expenses, costs, and overall success. This is also true for individuals. Therefore, in order for one party, whether an individual or a business unit (a group of individuals), to believe another will work in its best interest, trust must facilitate the exchange between the two parties. This element of intra-firm social capital is never discussed by Tsai and Ghoshal (1998), but it has been documented by many scholars in the social sciences. For instance, trust-in-management has been found to mediate the relationship between perceptions of organizational support and employee commitment (Whitener, 2001).

In the management field, a common, but alternative theory utilized in explaining social capital is through motivational processes of social exchange theory and the norm of reciprocity (Blau, 1964; Homans, 1961). Social exchange can explain the relational social capital among human resource practices, trust-in-management and employee commitment (Eisenberger, Fasolo, & Davis-LaMastro, 1990; Settoon, Bennett, & Liden, 1996; Wayne, Shore, & Liden, 1997). A stream of research rooted in social exchange theory has shown that employees' commitment to the organization derives from their perceptions of the employers' commitment to and support of them (Eisenberger, Fasolo, & Davis-LaMastro, 1990; Settoon, Bennett, & Liden, 1996). The two parties in the before mentioned studies can easily be replaced by two business units. Tsai and Ghoshal(1998) does just this.

Tsai and Ghoshal (1998) point out that social capital is a concept rooted in the structure and content of relationship that can be conceptualized and operationally defined at many different levels of analysis. (i.e. individual, organizational, and inter-organizational). However, although Tsai and Ghoshal identify the dimensions of social capital and attempt to measure them on an inter-organizational level, they underestimate the mediating effects of trust.

Like perceived organizational support, trust develops through a social exchange process in which one party interprets the actions of another party and reciprocate in kind. ". . . The gradual expansion of the exchange permits the partners to prove their trustworthiness to each other. Processes of social exchange, consequently, generate trust" (Blau, 1964, p. 315).

During these social exchanges, tangible and intangible resources are traded. This action is captured in Tsai and Ghoshal's study via the construct: ***Resource Exchange and Combination.*** Resource Exchange and Combination is a single-item measure created from four questions that were eventually aggregated into a single matrix.

In the traditional or closed innovation models, inputs come from internal and some external sources – customer inputs, marketing ideas, marketplace information or strategic planning inputs. Then, the R&D organization proceeds with the task of inventing, evolving, and perfecting technologies for further development, immediately or at a later date (Docherty, 2006). This process can take weeks, months, or even years. Hence, a strong trust

component is necessary for parties to engage is the trading and combination of resources which lead to value creation in terms of product innovation. Hence the final construct used in Tsai and Ghoshal's model is ***Value Creation***. Value creation was measured by a single-item measure. The respondents were asked: On average, how many product innovations per year were produced in your unit during the recent past (from 1993 to 1996)? And, the responses to this question were validated by the headquarters' managers.

Hypotheses

The hypotheses of the original study are listed below. Those with asterisks were found to be unsupported by Tsai and Ghoshal's assessment of their model:

Hypothesis **1**. The centrality of a business unit in inter-unit social interaction will be positively associated with the level of its perceived trustworthiness.

Hypothesis **2**. The extent to which a business unit shares a vision with other units and with the organization as a whole will be positively associated with the level of its perceived trustworthiness.

Hypothesis* **3. The centrality of a business unit in inter-unit social interaction will be positively associated with the extent to which it shares a vision with other units and with the organization as a whole.

Hypothesis **5.** The level of a business unit's perceived trustworthiness is positively associated with the extent of the resource exchange and combination the unit engages in with other units in the organization.

Hypothesis* **6. The extent to which a business unit shares a vision with other units and with the organization as a whole will be positively associated with the extent of resource exchange and combination the unit engages in with other units in the organization.

Hypothesis **7**. The extent of resource exchange and combination a business unit engages in with other units will be positively associated with the unit's level of product innovation.

Results

Figure 1 represents the original article's research model with the maximum likelihood parameter estimates. Five of the seven predicted links were significant. Social interaction had a significant, positive effect on resource exchange and combination ($p < .05$). Furthermore, social interaction showed a positive direct effect on trustworthiness ($p < .001$). Therefore, Hypotheses 1 and 2 were supported. Contrary to predictions in Hypothesis 3**,** no evidence supported a direct effect of social interaction on the existence of a shared vision. Hypothesis 5 was confirmed, as shared vision showed a significant, positive effect on trustworthiness ($p <.001$). This model revealed that social interaction and shared vision were quite different from each other, and they both promoted assessments of high trustworthiness. In other words, firm social interaction and shared vision are two different sources of trustworthiness. At the same time, it would appear that strong social interaction is not a prerequisite for creating a shared vision. Trustworthiness was found to be positively associated with resource exchange and combination ($p <.001$). The more trustworthy an actor was, the more other actors would exchange (or combine) resources with the actor. So, Hypothesis 4 was supported. Hypothesis 6, however, was not confirmed. Shared vision did not show a direct effect on resource exchange and combination in our sample. In other words, our data suggest that a shared vision can influence resource exchange and combination only indirectly, via its influence on trust. Finally, Hypothesis 7 was supported. Resource exchange and combination did create value for the firm through a significant, positive effect on product innovations ($p < .05$).

Replication

Utilizing a sample size of 15 business units, the replication was able to produce fit statistics similar to those of the original model. In Table 1, the fit statistics our model produced are to the right Tsai and Ghoshal's model fit statistics are to the left. Like Figure 1, Figure 2 represents a model with the maximum likelihood parameter estimates. We found that the endogenous indicator Trust Promises, abbreviated TrustPro, wanted to associate with both endogenous constructs, Value Creation and Trustworthiness. Although non-significant (t-value of 1.15), 34% of the variance in TrustPro wanted to correlate with construct, Value Creation. In addition, 84% of the variance in TrustPro correlated with the variance of the construct, Trustworthiness. This path was significant with a t-value of 5.20.

The Lambda X Matrix, shows the correlation/ covariance between exogenous variables and latent exogenous constructs. Indicator SVunit significantly correlated with construct, ***Shared Vision***, with a t-value of 2.67 and 70% covariance. SVorg was a reference variable, so no t-value was reported. This variable was coded as a perfect indicator of ***Shared Vision***. The same is the case for variable SItimesp. This variable was coded as a perfect indicator of the exogenous construct, Social Interaction. SIclscon had a t-value of 4.78 and shared 15% more variance with the construct, Social Interaction, than SItimesp.

Hence, close contact seems to have a more positive impact on social interaction than times spent.

The Beta Matrix, which is the coefficient matrix for latent endogenous constructs showed no significant correlation. The same was true for the Gamma Matrix, none of the relationships among the exogenous and endogenous construct were significant. Although non-significant, The PHI Matrix revealed that the endogenous construct, Social Interaction, did not correlate with itself 100%. However, its covariance with ***Shared Vision***, the second endogenous construct, was 48%.

SMC's (Squared Multiple Correlations) is the percent of variance in the item that is explained by the construct. For the Y-variables, the constructs seem to do an adequate job explaining the variance in all variables except Product Innovation, which is at 27%. The X-variables all have SMC's of 50% or higher. SVunit has exactly 50%. This is somewhat disappointing, but not major.

AVE (Average Variance Explained) by each construct from its indicators is evidence of convergent validity. AVE should be .5 or higher (Hair, Black, Babin, & Anderson, 2010). Hence, we calculate the AVE for the constructs: Product, Resource, Trustwor, Shared V, and Social I. The AVE's of were Product (.27), Resource (1.00), Trustwor (.97), Shared V (.76), and Social I (.87). All constructs, except Product, show evidence of convergent validity.

Construct validity is comprised of numerous sub-dimensions, all of which must be satisfied to achieve construct validity. These sub-dimensions of construct validity include: content validity, substantive validity, unidimensionality, reliability, convergent validity, discriminant validity, and predictive validity (Garver & Mentzer, 1999, p. 34). In general, the model that Tsai and Ghoshal propose lacks construct validity based on the results of the replication. Fornell (1983) states that construct validation is analogous to theory validation. So, this particular article does a poor job of validating theory although fit statistics reflect good fit between the model and data. However, Fornell (1983) does add that rather than relying on a method such as LISREL, which highlights efficient estimation with strong assumptions, it may be more important to concentrate on theory building with less efficient estimators and fewer assumptions. If Fornell is correct, then this model suddenly gains some power.

The error terms associated with each indicator are identified in the Theta Epsilon and Theta Delta Matrices. Theta Epsilon identifies the variance associated with the error terms of the endogenous indicators, while Theta Delta identifies the variance associated with the error terms of the exogenous indicators. The error term of Y-variable, ProdInn, is 73% and is significant, while the error terms of X-variable, SVunit, is significant at 50%. Thus, the variance of indicators ProdInn and SVunit is significantly error variance, not common or unique variance. ProdInn is a poor measure of the construct, Value Creation. Maybe, TrustPro, is just as good at measuring Value Creation. Although non-significant, the covariance it has with ***Value Creation*** is 7% higher than the covariance between Value Creation and ProdInn.

Total Effects= Indirect effects + direct effects. None of the total effects of the Eta's on Eta's are significant. For example, Value Creation is coded Product and the construct, Trustworthiness is coded, Trustwor. The total effects show that Trustwor has a 62% total effect on Value Creation. However, the t-value is only .41. The effect is not significant. The total effects of Eta on the Y-variables are significant ¼ of the time. Eta, Trustwor has an 88% total effect on Y-variable, ResEx (Resource Exchange). The effect is significant with a t-value of 3.13. None of the indirect effects of Eta on the Y-variables are significant. Therefore, the major effects of Eta's on Y-variables come from direct effects.

All in all, the effects and paths that create this model replication are too scattered and inconsistent to support Tsai and Ghoshal's hypotheses. The paths between Ksi, Social Interaction, and the Y-variables, ResEX, Trustrel, and TrustPro are non-significant; However, the effects that this Ksi has on the indicators appears to be significant.

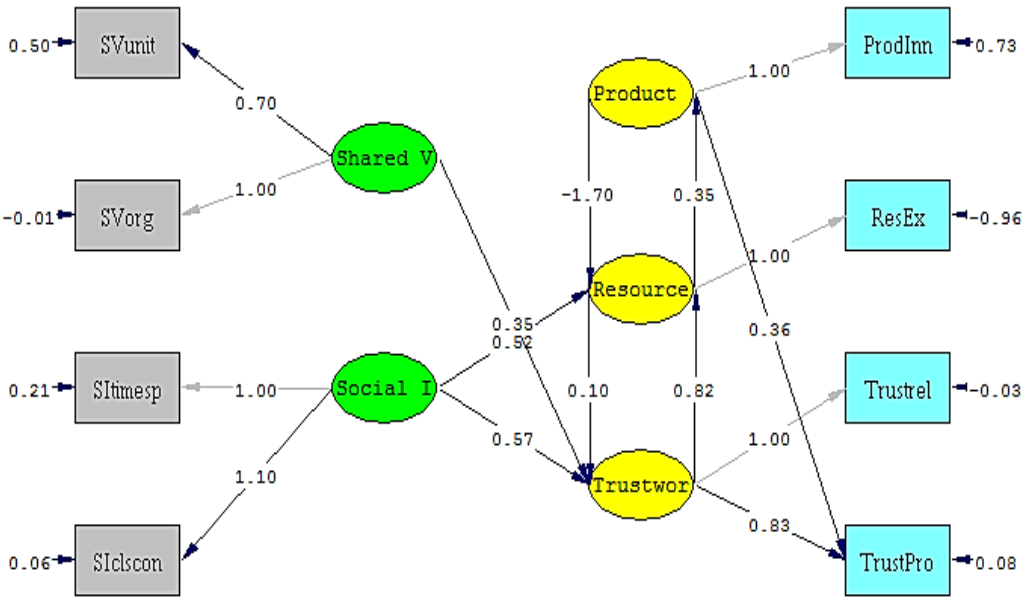

Figure 2.

The Q-Plot reveals the model has too much error. The plotted residuals show much variance away from the diagonal line. This coupled with the non-significant paths in the model leads me to reject all hypotheses. While theory supports the model and theory can also explain differences in the replication of the model, none of the Beta or Gamma paths have significant t-values. Some measures of the constructs do not seem to be adequate, and because single indicators were used in various cases, the poor indicators cannot be removed in hopes of using alternative and/or better indicators.

Although the fit statistics seem impressive, they are really measuring how well the data matches each model. The small sample size increases the likelihood of a type 2 error (Anderson & Gerbing, 1988); so this could be the major culprit in replicating the results of Tsai and Ghoshal. However, more data must be collected to confirm or disprove any relationship speculated by the before-mentioned hypotheses. Kelloway (1998) and Anderson and Gerbing (1988) recommend a sample size of at least 150; however, the sample size that Tsai and Ghoshal used was only 15. The fit of the model to data, in itself, conveys no information about the validity of the underlying theory; hence the goal of structural equation modeling is to (a) explain why variables are correlated and (b) and justified on theoretical grounds (Kelloway, 1998, p. 10). Tsai and Ghoshal justify the theoretical grounds and explained why variables are correlated; therefore, their article met the standards of SEM. However, we ascertain that an inadequate sample and inadequate measurements of the constructs has made this article inconclusive.

If an item was not a good indicator of a construct, the researcher would usually have some recourse; however the recommendations of Anderson & Gerbing (1988) could not be utilized because re-specification recommends:

1. Relating the indicator to a different factor
2. Delete the indicator from the model
3. Relate the indicator to multiple factor
4. Use correlated measurement errors

For all constructs, the original authors used less than the recommended 3 observable variables per construct (Hair, Black, Babin, & Anderson, 2010). But, the major violations seem to stem from the inaccurate reflection of the construct, ***Value Creation.*** If more was known about original questions utilized to construct the matrix, we could possibly identify why the replicated model is so different from the original. The original model seems to lack construct validity due to problems associated with the construct, ***Value Creation***. None the less, we conducted a difference of chi-squared test to determine which model fits the data better.

To compute chi-squared difference test, the difference of the chi-squared values of the two models in question is taken, as well as the difference of the degrees of freedom (Cheung & Rensvold, 2002). The original model has 15 degrees of freedom and the replicated model has 12 degrees of freedom (See Table 1).

Table 1. Comparison of fit statistics.

	Tsai and Ghoshal	Replication
Degrees of Freedom	15	12
Chi-Squared	7.94	7.13
Chi-Squared Significance	p-value=.93	p-value=.85
GFI	.89	.89
NFI	.95	.94

Similarly, the original model has a chi-squared value of 7.94, and the replication has 7.13. The difference in degrees of freedom for the two models is 3 and the difference between the chi-squared values is .81. After reviewing the chi-squared table, the difference between these models is not significant at either .05 or .01 level of significance. So, the null of a chi-squared test, which states there is no difference between the models, should not be rejected. And the model that is more parsimonious (with the largest degrees of freedom) should be selected (Cheung & Rensvold, 2002). However, in this case, we cannot follow protocol.

This chi-squared test supports our null that there is no difference between the original model and the replicated model when the complete theory of trust and product innovation is considered in conjunction with social capital theory. In conclusion, due to Tsai and Ghoshal's failure to consider Trust's relationship to Product Innovation, i.e. the sole indicator of ***Value Creation***, although the same data is used, the replication and the original are testing different theoretical foundations. We argue that considering the replicated model over the original model considers the complete theory connecting Trust, Social Capital, and Product Innovation, not a portion of the theory.

Conclusion

Due to this difference, our replicated model shows a non-recursive relationship among the constructs measuring, trustworthiness, resource combination and sharing, and product innovation. While, Tsai and Ghoshal (1998) demonstrate a recursive model, current literature on product innovation, trust, and resource sharing supports the non-recursive model; thus, further supporting the rational for choosing the replicated model over the original model. The findings of this replication, also supports the call of researchers, such as Morrison, Matuszek, & Self (2010), encouraging replication studies and analyses. Hence, although more difficult to interpret (Norman & Streiner, 2008), the replicated non-recursive model produces a more complete representation of theory. For, we contend that without proper representation and testing of the theory, the model is futile. Replication offers such a testing of theories and serves as a method of validation.

Furthermore, when investigating the effect of intellectual capital and organizational commitment on organizational performance; Lee and Huang (2012) suggested that a proper measurement of driving forces behind a firm's future performance remedies inadequate measure of past performance. The findings of this paper corresponds with that statement; and hence, further validates the findings.

References

Anderson, J. C., & Gerbing, D. W. (1988). Structural Equation Modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 411-423.

Bagozzi, R., & Yi, Y. (1988). On the evaluation of Structural Equation Modeling. *Academy of Marketing Science.*, 74-94.

Baker, W. (1990). Market networks and corporate behavior. *American Journal of Sociology*, 589-625.

Blau, P. M. (1964). *Exchange and power in social life.* New York: Wiley.

Burt, R. S. (1992). *Structural holes: The social structure of competition.* Cambridge, MA: Harvard University Press.

Cheung, G., & Rensvold, R. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, 233-255.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 95-120.

Docherty, M. (2006). Primer on 'open innovation': Principles and practice. *Visions (XXX)*, 13-15.

Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology*, 51-59.

Fornell, C. (1983). Issues in the application of Covariance Structure Analysis: A comment. *Journal of Consumer Research*, 443-448.

Garver, M. S., & Mentzer, J. T. (1999). Logistics research methods: Employing Structural Equation Modeling to test for construct validity. *Journal of Business Logistics*, 33-57.

Granovetter, M. S. (1992). Problems of explanation in economic sociology. In N. Nohria, & R. Eccles, *Networks and organizations: Structure, form, and action.* (pp. 25-26). Boston: Harvard Business School Press.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective.* New York: Pearson Education.

Homans, G. C. (1961). *Social behavior.* New York: Harcourt, Brace, and World.

Jacobs, J. (1961). *The death and life of great American cities.* New York: Random House.

Kelloway, K. E. (1998). *Using LISREL for Structural Equation Modeling: A researcher's guide*. Thousand Oaks, CA: Sage Publications.

Lee, Y.-J., & Huang, C.-L. (2012). The relationship between balanced scorecard, intellectual capital, organizational commitment and organizational performance: Verifying a 'mediated moderation' model. *American Journal of Business and Management*, 140-153.

Loury, G. (1977). A dynamic theory of racial income differences. In P. A. Wallace, & A. M. LaMonde, *Women, minorities, and employment discrimination* 153-186 Lexington, MA: Lexington Books.

Morrison, R., Matuszek, T., & Self, D. (2010). Preparing a replication or update study in the business disciplines. *European Journal of Scientific Research*, 278-287.

Norman, G. R., & Streiner, D. L. (2008). *Biostatistics: The bare essentials*. Shelton, CT: People's Medical Publishing House-USA.

Runyon, D., Hunter, W., Socolar, R., Amaya-Jackson, L., English, D., Landsverk, J., et al. (1998). Children who prosper in unfavorable environments: The relationships to social capital. *Pediatrics*, 12-18.

Settoon, R. P., Bennett, N., & Liden, R. C. (1996). Social exchange in organizations: Perceived organizational support, leader-member exchange, and employee reciprocity. *Journal of Applied Psychology*, 219-227.

Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal*, 464-476.

Uzzi, B. (1996). The sources and consequences of embeddedness for the economic performance of organizations: The Network Effect. *American Sociological Review*, 674-698.

Waarts, E., van Everdinger, Y., & van Hillegersberg, J. (2002). The dynamics of factors affecting the adoption of innovations. *Journal of Product Innovation Management*, 412-423.

Wayne, S. J., Shore, M., & Liden, R. C. (1997). Perceived organizational support and leader-member exchange: A social exchange perspective. *Academy of Management Journal*, 82-111.

Whitener, E. M. (2001). Do "high commitment" human resource practices affect employee commitment? A cross-level analysis using hierarchical linear modeling. *Journal of Management*, 515-535.