AN EXPLORATORY STUDY OF THE EFFECT OF SOCIAL CAPITAL ON SUPPLY CHAIN RELATIONSHIPS: THE CASE OF ROMANIA

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Abstract. *This study examines the relationship of social capital among buyers and their principal supplier and their most recently chosen supplier in Romania. The study provides an understanding of the transition from a command to a market economy. Responses from 96 managers were analyzed and revealed that supply chain practices are unevenly applied, the practices are used to greater degree with the principal supplier, and a statistically significant link was found between measures of the buyer's social capital and its supply chain relationships with the principal supplier. No such link was found between the buyer and its most recently chosen supplier.*

Key words: buyer, relationships, Romania, social capital, supplier, supply chain, transition.

1. Introduction

Beginning in the early 1980s a new model of interorganizational relationships between buyers and suppliers began taking shape in the United States and Europe based on emerging practices from Japanese manufacturing firms. The newer model provided lower costs, shorter development and production cycles, higher quality, and other interorganizational synergies (e.g., Ansari & Modarress, 1986, Schonberger, 1982). This model provided a large competitive advantage in the industrialized countries and was a shift away from the traditional adversarial transaction model that emphasized opportunistic short term gains for one party over the other (Womack, Jones, and Roos, 1990). The principal purchasing philosophy changes consisted of more cooperative and interdependent long-term relationships.

In the ensuing two decades this model of cooperative and interdependent and long-term relationships has become part of a larger concept referred to as supply chain management (SCM). The SCM concept involves "coordinating or integrating a number of product-related activities among supply chain participants to improve operating efficiencies, quality, and customer service in order to gain a sustainable competitive advantage for all of the collaborating organizations" (Wisner, Leong, and Tan, 2004).

To achieve the cooperative and interdependent long term activities among firms in the supply chain, however, requires the presence of social capital. Social capital is defined here as a social construct that has no liquid value, but it permits value-added activities (Coleman, 1990). Social capital facilitates the achievement of SCM goals that are otherwise difficult or impossible to obtain (Barrat 2004; Emiliani, 2003).

As SCM was introduced in many regions of the world with their varying degrees of economic and social development, there is some question as to the role of social capital to support the cooperative and interdependent activities that lead to the development of competitive advantage. One such region, the transition economies of Central and Eastern Europe (CEE), provides a large-scale laboratory experiment to understand the role of social capital and its support of cooperative and interdependent activities. Prior to 1989, the CEE countries relied on centrally planned systems to push raw materials and parts through the productive system to provide goods and services to end consumers. Supplier selection at the plant level based on competitive performance criteria was non-existent. By the end of the 1980s these economic systems were considered highly inefficient. The political system used to support the centrally planned economies became increasingly coercive to achieve the economic means that did not materialize. These coercive means were antithetical to social capital to achieve supply chain advantages. By the end of 1989, the populations in many of these countries brought down the economic and political systems (Glaser, Ilies, and Gica, 2008).

The fall of central planning and the coercive means used to push production through the CEE's supply chains led to the introduction of more liberal economic and political systems. Many of these CEE countries are now members of the European Union and are open to competitive forces, particularly from Western Europe and other industrialized nations as well as from other emerging and transition economies in the world. Based on the need to improve competitiveness, it is not known if SCM with its cooperative and interdependent activities has flourished in an environment that just a decade and a half ago was largely considered to be devoid of social capital. This study provides insight into the role of social capital and its effect on SCM practices in Romania, a transition economy.

2. Literature Review

In this section we will provide an understanding of social capital, SCM relationship practices, the association of SCM relationship practices and social capital, and end with two research questions.

2.1. What is social capital?

Social capital is a construct that, while known in the fields of psychology and sociology, has been received more recently in the field of economic thought (Dasgupta, 2005). Early writings of social capital were based notions of trust. Trust is a broad construct and exists at a variety of social study disciplines (Worchel, 1979). In personality theory, trust is viewed as a socialized trait conditioned by the environment. Luhman (1979) provided a detailed view of the environmental forces that act on the personality. He stated that trust exists in an abstract state of infinite boundaries, complexity, and time. Certainty exists only in the present, and trust reduces complexity by viewing the future as an extension of the present. Although trust is illusory, because it lacks complete knowledge, it still requires a degree of foreknowledge to exist.

Luhman (1979) continued by defining the absence of trust as chaos. Mistrust and distrust are not opposites. Mistrust reduces chaos by delimiting relationships proven untrustworthy. Thus, chaos acts at odds with trust and mistrust. Humans, as the basic units of a social system, generate trust by extending to other humans under a state of uncertainty and by not extending to those whom they know and feel they cannot trust. Trust is based on reciprocal relationships. People trust those who have proven themselves trustworthy.

From a social psychology approach, individual trust is based on interpersonal exchanges that foment or eradicate trust (Worchel, 1979). Barber (1983) added that trust reduces social complexity and chaos if safeguards are used to avoid the misuse of power and if people practice pro-social behaviors.

Lewis and Weigert (1985b) included cognitive, affective, and behavioral trust in a social psychology context. These dimensions do not exist exclusively of each other. Cognitive trust refers to the knowledge that other individuals and organizations are trustworthy based on their actions. Cognitive trust is an acknowledgment that an individual or organization is capable of fulfilling an expectation. It acts as the basic core of trust. Affective trust encompasses the deeper shared involvement of individuals within and between groups. Affective trust follows cognitive trust as a social reality that binds individuals as group members. It is here that relationships emerge and become evident. Finally, behavioral trust involves the acting out of cognitive and affective states of trust. Trust implies the same behavioral expectations from others that one would expect from oneself.

Understanding the influence of social capital among organizations in other societies requires a higher level explanation of trust. Social capital is considered as the accumulation of trust at a macrosocial level (Dasgupta, 1988) and rests on several elements. These elements are comprised of the level of trustworthiness of the social system, the obligations held between individuals and groups in that society (Coleman, 1990), and the presence of a densely linked network of individuals and organizations (Marsden, 1992).

Social capital also serves as a resource to arrange transactions in the future that cannot be enforced by law or formal sanctions alone. Social capital is an institution that facilitates economic exchange and runs counter to the self-interested, rational, and utility-maximizing assumptions of neoclassical economics (Coleman, 1990). Social capital, notwithstanding the difficulty of measurement (Dasgupta, 2005) provides for greater economic performance than in its absence (Svendsen and Sorensen, 2006).

Social capital, however, can be degraded. Lewis and Weigert (1985a) referred to the reduction of social capital as regression from social holism to social atomism. In their discussion, social holism refers to an active network of individuals, and organizations, whereas social atomism refers to a societal condition in which individuals belong, largely, to few cohesive groups and networks are largely absent. Some of the factors that lead to the destruction of social capital are social instability, ideologies that exclude other social members, forced dependency of social members (Coleman, 1990), and the pervasive and unwarranted distrust of others (Barnes, 1981). Historical evidence provides an excellent example to demonstrate that the reduction of social capital can be effected on a society (Putnam, 1993). Indeed, this was the condition created in the last two decades of the centrally planned era in Romania (Dimancescu, 2004).

Social capital has also been shown to provide support for the SCM practices. Chu and Fang (2006), Claro-Pimentel, Borin de Oliveira; and Hagelaar, (2006); and Myhr and Spekman (2005), found support for the notion that social capital among buyers and suppliers leads to greater commitment to SCM relationship practices. In a broad indictment of dependence on electronic communication and management structure, Barrat (2004) found that these were insufficient to create efficient collaboration. Social capital was a required element to achieve effective SCM relationship practices among firms. In the following section we discuss our study's SCM relationship practices.

2.2. Supply chain management relationship practices

Supply chain management (SCM) relationship practices exist as interdependent resource-sharing activities between buyers and suppliers in a variety of industries. The SCM practices consist of supplier development, early supplier involvement, evaluation and certification, and total cost management.

The first of the SCM practices, supplier development, serves primarily to bring existing suppliers into a closer relationship with the buyer organization. These programs provide ongoing assistance in transferring technology and elements of organizational culture from the buyer to the supplier. Supplier development improves incoming material quality and upgrades the supplier's delivery performance, service, cost reduction, and technical abilities (Watts and Hahn, 1993; Lo and Yeung, 2006). The technology transfer process may include assistance in the form of loaned equipment, buyer provision of the supplier's input materials, and financial assistance (Nishiguchi, 1994). Schonberger (1982) found that supplier development programs also act to indoctrinate or educate the supplier according to the buyer's needs. He likens it to corporate apprenticeship and missionary teaching, in which the buyer organization socializes the supplier to attitudes, practices, and values held by the buyer.

In the second practice, early supplier involvement (ESI), suppliers participate with the buyer at an early stage in the design process. Potential ESI outcomes include lower design costs, shorter cycle time, and access to the supplier's latest technology (Dobler, Burt, & Lee, 1990). Early supplier involvement provides a framework in which suppliers work interactively with buyers based on performance specifications.

Performance specifications provide the parameters under which the product or material will be used and allow the supplier to suggest designs to improve quality, processes, and materials. Performance specifications also lower the buyer's costs by using the supplier's expertise to reduce post-design revisions and shorter cycle times. ESI also places the buyer and supplier in a dependent arrangement. To reduce uncertainty caused by interdependency, buyers usually practice ESI with trusted suppliers (Mikkola and Skjott-Larsen, 2006).

Evaluation and certification (EC), the third SCM practice used in this study, involves working with a select group of certified suppliers. Using adversarial supplier relations, to the contrary, the buyer works with a larger number of competing suppliers to avoid dependence on a single source of supply. As with supplier development and ESI, a reduced supplier base creates a higher degree of interdependency between the supplier and the buyer. Nishiguchi (1994) reported that the number of suppliers a buyer sources from and the number of buyers a supplier provides to decrease in an interorganizational cooperation setting.

The selection and maintenance of a reduced supplier base requires an ongoing supplier evaluation process. The evaluation process involves the development of mutually agreeable criteria that promote growth and improvement rather than punishment (Nishiguchi, 1994). The evaluation should reflect tangible and intangible criteria. Tangible criteria refer to objective supplier performance measures such as process quality and on-time deliveries. Intangible measures generally refer to subjective qualities and may include quality of communication, trust, and sharing of information. Evaluation models based on tangible and intangible criteria provide an overall measure of the vendor’s ability to work with the buyer (Lo and Yeung, 2006).

The fourth practice, total cost management (TCM), serves to lower production costs are achieved through an emphasis on total cost management. By contrast, using adversarial supplier relations, the buyer negotiates contracts based on the lowest price possible. In this context, the supplier attempts to hide his cost structure to maintain current profitability. The total cost management approach focuses on reducing traditional costs such as factory overhead, direct labor, and direct materials costs as well as nontraditional measures such as selling and administrative costs (Hahn, Kim, & Kim, 1986). In essence, the total cost management approach attempts to examine all of the supplier’s relevant cost drivers and suggest a holistic cost-saving strategy. An exposed cost structure requires an appropriate profit margin and good-faith bargaining to insure the supplier's viability (Ferrin and Plank, 2002).

2.3. Research questions

The literature provides a view that social capital is a multidisciplinary construct with the capacity to explain the cooperative nature of buyer and supplier relations. Social capital is a construct with explanatory influence on the SCM relationship practices between buyers and suppliers. For this study we provided the following general research questions:

1. What is the nature of the relationship of social capital on the use of SCM relationship practices, consisting of supplier development, early supplier involvement, evaluation and certification, and total cost management, between the buyer and the principal supplier?
2. What is the nature of the relationship of social capital on the use of SCM relationship practices, consisting of supplier development, early supplier involvement, evaluation and certification, and total cost management between a buyer and the most recently selected supplier?

3. Methodology

The methodology presented here discusses the number and characteristics of subjects, measures, procedures, and the data analysis tools used to test the study's hypotheses.

3.1. Subjects

For this study we surveyed supply chain managers who acted as key informants for each of the firms selected from the Bucharest-based manufacturing companies of the Major Companies of Romania (mcir.doingbusiness.ro) list. The key informants were asked to provide information on their level of social capital and their SCM relationship practices with their principal supplier and their most recently selected supplier. Based on a large effect size from studies using the same or related constructs, a minimum sample size of approximately 60 organizational responses was calculated.

3.2. Measures

The measures and their translation from English to Romanian are described in this section. The dependent variable, SCM relationship practices consisting of supplier development, early supplier involvement, evaluation and certification, and total cost management, is a composite of items adapted from Flynn et al. (1995), Hendrick and Ellram (1993), and this study's principal researcher. Social capital was operationalized using the Organizational Trust Inventory, Short Form (OTI-SF) developed by Cummings and Bromiley (1996).

Using a questionnaire developed in one language and cultural setting for use in another setting requires a translation of both language and cultural meanings. To ensure conceptual equivalence and validity of the scales, an *a priori* back translation technique was used (Riordan & Vandenburg, 1994) when translating from English to Romanian.

3.3. Procedure

The procedure used to gather data for this study involved an on-site administration of the paper-and-pencil questionnaire. Surveys were personally delivered and retrieved during a three week period yielding 96 usable questionnaires.

4. Data Analysis

The first data analysis procedure provided measures of descriptive statistics including mean data of the buying firms. The second procedure consisted of procedures to verify and improve the statistical conclusion validity of the variables for later analysis, such as corrections for missing data and internal reliabilities for the independent and dependent variables. The final part of the study provided Pearson correlations to determine whether to support the research questions.

4.1. Descriptive statistics

A review of descriptive statistics of the buying firms provides findings of the underlying issues related to the research questions. The buyer firms were reported to have been in existence an average of 28 years (standard deviation = 26) with an average of 686 workers (standard deviation = 851). The buyer firms reported to have worked with their principal supplier for an average of 14 years (standard deviation = 12.8 years) buying an average of 46 percent of their input materials (standard deviation = 24 percent) from these suppliers. With their most recently selected suppliers, buyers had sourced from them for just under two years (mean = 1.73 years, standard deviation = 1.2) and were buying an average of 11.4 percent (standard deviation = 14 percent) of their input materials. The buying firms largely predated the Revolution of 1989 and are a combination of privatized and state owned firms with the choice to change suppliers as required by these firms. In addition, the buyer's relationship with their principal suppliers on average also predated the Revolution of 1989.

4.2. Variable validation

In the second part of the analysis, the data were checked for missing data. Due to the low incidence and nonsystematic pattern of missing data in the scales, the mean substitution procedure was used (Roth, 1994). An *a posteriori* internal reliability was conducted on the independent and dependent variables using Cronbach's alpha (α). A minimum alpha of .50 was used as convention for internal reliability (Nunnally, 1967). The reliabilities were consistent with threshold values for new and exploratory research, as seen in table 1.

Table 1

Descriptive statistics of variables

Independent and dependent variables by supplier status	Mean	Std. Deviation	Scale Alpha
Social Capital w/Principal Supplier	5.64	0.88	0.74
Social Capital w/Recently Selected Supplier	5.65	0.89	
Supplier Development- Principal Supplier	4.61	1.27	0.86
Supplier Development - Recently Selected Supplier	4.29	1.45	
ESI- Principal Supplier	4.55	0.99	0.66
ESI- Recently Selected Supplier	4.39	1.11	
Evaluation and Certification- Principal Supplier	5.54	0.77	0.58
Evaluation and Certification - Recently Selected Supplier	5.44	0.97	
Total Cost Management- Principal Supplier	4.13	1.25	0.74
Total Cost Management - Recently Selected Supplier	4.00	1.15	

The Likert orientation (1 = strongly disagree, 4 = neutral, and 7 = strongly agree) in the OTI-SF and the SCM relationship practices scales was designed to indicate low to high agreement with the positive statements as found in each scale. The negatively worded statements were recoded to indicate the opposite value. The means for these scales varied from a high of 5.64 for social capital toward the buyer's principal supplier to a low of 4.00 for using total cost management practices with the most recently selected supplier. None of the SCM relationship practices were found to reach beyond a measure of moderate use (Likert scale measure = 6) and the use of total cost management practices was found to be a nearly neutral or non-existent practice when working with both the principal and most recently selected suppliers.

4.3. Correlation analysis of variables

In the third analytical procedure, a review of the correlations provides support for some of the study's research questions. In the analysis of the relationship of the buying firm's social capital and the corresponding SCM relationship practices with its principal supplier, three of the four relationships examined exhibited a statistically significant relationship, as seen in table 2. For example, the relationship of social capital was found to be related to supplier development (.333), early supplier development

(.300), and total cost management (.269). All of these relationships were found to be statistically significant ($p<.01$). We did not find a statistically significant relationship between the buying firm's measure of social capital and its evaluation and certification practices with its principal supplier.

The analysis of association for the supplier's social capital of its most recently selected supplier and SCM relationship practices did not yield any relationships. That is, no relationship was found between the measures for social capital and the four SCM relationship practices.

Table 2

Correlations of social capital and SCM relationship practices

	Correlation* Social Capital (Principal Supplier)	Correlation* Social Capital (Recently Selected Supplier)
Supplier Development	.333(**)	.132
Early Supplier Involvement	.300(**)	.135
Evaluation and Certification	.095	.177
Total Cost Management	.269(**)	.080

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

5. Discussion

Analyses for the two research questions regarding the role of social capital of Romanian buyer firms toward their principal and the most recently selected supplier reveal support for the notion of social capital's role in this transition economy. We have also provided some limitations for interpreting the study's findings. Finally, we discuss future directions for research on the role of social capital in the emerging and transition economy supply chain environments.

5.1. Analysis and implications

Research question 1 was an exploratory inquiry to develop an understanding of the role of social capital of Romanian firms in their treatment of their principal suppliers. From purely descriptive statistics, we developed a cursory snapshot perspective of the Romanian firms. We found that they are medium-sized forms that for the most part have been in existence since before the Revolution of 1989. They were part of the country's and Soviet bloc's centrally planned economy and therefore were originally embedded in a command-economy supply chain. Presently, though, they are either privatized or state owned enterprises in a transitional market economy and are not constrained by law, in either case, in their ability to choose suppliers. Nonetheless, they chiefly rely on suppliers they have worked with, on average (14 years) since before the fall of the centrally planned era and they buy a large quantity (46 percent) of their inputs from these suppliers. Here we found long term interdependent relationships.

The Likert scale results also show us that some of the newer SCM relationship practices are not used to any large extent. The only SCM relationship practice used to a moderate degree (5.54) was the evaluation and certification of suppliers. Perhaps, as part of the ISO 9000 guidelines, to which many Romanian firms adhere, there would be a requirement for ongoing evaluation and certification activities. Total cost management is basically a non-used activity showing that Romanian buyers are not reaching into their suppliers' businesses to acquire lower overall cost structures.

Finally, in support of research question 1, we find strong support for the notion that social capital explains the use of SCM relationship practices. We found support for this in three of the four correlations for supplier development (.333), early supplier involvement (.300), and total cost management (.269), all of which were statistically significant ($p < .01$). We also surmise that the prevalent ISO 9000 practices requiring evaluation and certification practices were perhaps the more important explanation for this variable and the buyers were no longer dependent on social capital for evaluation and certification activities. That is, buyers were evaluating and certifying their suppliers due to their ISO 9000 requirements but not necessarily out of the underlying social capital norms that had developed between them and their suppliers.

Research question 2 was a probative query to better comprehend the function of social capital of Romanian firms in their dealings with their most recently selected suppliers. The most recently selected suppliers were chosen after the fall of central planning and therefore their initial relationship is based on factors most likely found in ISO 9000 supplier selection criteria or in some market based or other decision. In addition, the most recently selected supplier provides a lower percentage of the buyer's input materials.

The Likert scale results of the SCM relationship with the most recently selected suppliers, as in their SCM relationships with the principal suppliers, show us that few of the newer supply chain relationship practices are used to any extent. Moreover, in each case the buyers reported performing the SCM relationship practices with their most recently selected supplier to a lesser degree than with their principal supplier. The least used activity of all, total cost management, exhibited a mean of 4.00, which is essentially neutral or non-use of this SCM relationship practice. That is, Romanian buying firms were again shown not accessing their most recently selected suppliers productive system to reduce total costs.

Based on the correlation analysis between social capital of the firms toward the most recently selected supplier regarding the SCM relationship practices (i.e., supplier development, early supplier involvement, evaluation and certification, and total cost management), we find scant evidence of the influence of social capital and SCM relationship practices with the most recently selected supplier. None of the four correlations provided any statistically significant results. We deduce that social capital is currently active in the SCM relationships that were created during the centrally planned era. This finding creates two changes in perspective: 1) social capital, which may have been destroyed during the Ceauşescu era, is present and was not degraded into a state of social atomism over the long term (Lewis and Weigert 1985a), and 2) there appears to be way to transition from centrally planned command economy relationships to the newer SCM relationships based on social capital.

5.2. Limitations of the study and future research

We provided in this section a listing of the limitations posed by the nature of the research. The limitations are listed according to the threats they pose to statistical conclusion, internal, construct, and external validities (T. D. Cook, Campbell, & Peracchio, 1990). To support statistical conclusion validity and reduce the probability of non-significant findings, an *a priori* power of the test was conducted (Cohen, 1988). To buttress the internal validity and control for spurious situational events, the process for identifying the respondent and delivering and collecting the survey was implemented in a standard procedure.

To manage construct validity we treated what we identified as the most serious threats: 1) language translation issues 2) scale reliability, and 2) common method variance. When crossing language, cultural, and industrial development barriers, assuaging threats to construct validity assumes a prominent role (Riordan & Vandenburg, 1994). An a priori translation procedure was used to strengthen content validity and an a posteriori reliability analysis. Cronbach's alpha for internal reliability was used (Riordan & Vandenburg, 1994). Each of the scales scored above the alpha threshold of .50 as suggested by Nunnally (1967) for exploratory studies. Finally, we attempted to reduce the presence of common method variance, defined here as the potentially erroneous relationship found between two variables when no relationship exists. The error is generally attributed to a biased response facilitated by a common method of data collection (Podsakoff & Organ, 1986). The two procedural methods used to circumvent common method variance were the use of multi-item scales and placement of the dependent variable at the end of the questionnaire (Spector, 1987).

To sustain the external validity of this study, defined as the generalizability across populations (Bracht & Glass, 1968), we randomly selected the companies from a listing of Major Companies of Romania 2000 (mcir.doingbusiness.ro) in several industrial sectors from clothing and food production to metalworking and the automotive parts industry. The findings are generalizable to the population of Romanian manufacturing firms as well as the other transition economies in CEE and the former Union of Soviet Socialist Republics.

Research on social capital and its influence on SCM relationship practices is a new and uncharted field. Many theoretical and empirical gaps exist in the literature. To fill these gaps, the most pressing recommendation for future research consists of extending this research model to other transition and emerging economies.

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