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IPSERA

2003

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MPRA Paper No. 9157, posted 17 Jun 2008 00:34 UTC

## EMPIRICAL STUDY OF INSTITUTIONS: ROMANIA

Daniel A. Glaser-Segura<sup>a</sup> - Laurentiu Dan Anghel<sup>b</sup>

<sup>a</sup>Our Lady of the Lake University, San Antonio, USA - <sup>b</sup>University Conferencier, Romania

### Summary

This study incorporates an institutional theory framework in which social norms affect interorganizational cooperation (IC). Empirical findings from a survey of 96 Romanian manufacturing firms support proposed hypotheses. Interorganizational trust is positively related to IC. Individualism and collectivism (indcol) exhibits a statistically significant relationship with IC. JIT/TQM presents a positive relationship and also supports the hypothesis that it serves as a superordinate goal over interorganizational trust and indcol to foster interorganizational cooperation.

### Acknowledgement

This project has been funded in part by the National Academy of Sciences under the [Collaboration in Basic Science and Engineering Program/Twinning Program] supported by Contract No. INT-0002341 from the National Science Foundation. The contents of this publication do not necessarily reflect the views or policies of the National Science Foundation, nor does mention of trade names, commercial products or organizations imply endorsement by the National Academy of Sciences or the National Science Foundation.

**Keywords:** trust, individualism, collectivism, institutions, superordinate goal, JIT, TQM

### Educator and Practitioner Summary

The findings support the notion that trust and individualism and collectivism affect the way organizations cooperate. Many supply management textbooks ignore the role of trust and culture. While trust and culture influence interorganizational cooperation in a positive manner, JIT/TQM poses a stronger positive effect.

### Introduction

Interorganizational cooperation offers a principal method to restructure the economies of the post communist countries. Hirschman (1958) discusses the role of strong linkages between suppliers and buyers that support a nation's or region's economic development. Womack, Jones, and Roos (1990) detailed the emergence of interorganizational cooperation in the industrialized nations as a major improvement for organizational competitiveness. Interorganizational cooperation provides lower costs, shorter development and production cycles, higher quality, and other interorganizational synergies (Ansari & Modarress, 1990;

Schonberger, 1982). Little is known, however, of interorganizational cooperation in the post-communist economies. It may be practiced in these economies largely by foreign firms, and the expected synergies from a multilevel supply chain among national-owned and managed firms may not exist.

Some of the resistance to introducing interorganizational cooperation in a post-communist economy, such as Romania, may be due to institutional factors. Institutions were regarded as having a major effect on the formation of interorganizational cooperation in Japan during the 1960s (Nishiguchi, 1994) and in the US and Europe since the 1980s (Lewis, 1995). Two major institutions mentioned in the literature that influence interorganizational cooperation are interorganizational trust and individualism and collectivism (Coleman, 1990; Hirschman, 1958).

Smith, Carroll, and Ashford (1995) stated that "a new market ethos, sometimes oriented toward new total quality management (TQM) philosophies, also underscores the need for cooperation throughout organizations" (p. 9). Organizations faced with changing quality, delivery time, and cost performance requirements may demand that their suppliers cooperate more closely, such that they become an extension of the buyer's supply chain capabilities. In this sense, JIT and TQM practices serve as superordinate goals to assist or in some cases overcome institutional constraints.

While interorganizational cooperation is used extensively in the industrialized nations, little research has been conducted on its use in post-communist countries. The Romanian industrial setting poses a unique research environment not found in industrialized nations. First, the Ceausescu legacy is one of diminished social capital and its organizational equivalent, interorganizational trust. Social capital has no liquid value, but it permits value-added activities (Coleman, 1990) and is recognized throughout history as a major factor of social order (Shapin, 1994). Social capital facilitates the realization of objectives that, in its absence, are impossible. Social capital is created when human relationships are aligned to expedite performance.

Second, individualism and collectivism, a cross-cultural institution, is acknowledged as a factor in the manner in which people cooperate or compete with one another. Hirschman (1958) cited various shortcomings of highly collectivist societies in regard to economic development. The lack of interdependence and linkage among entrepreneurs and managers is the most typical distinction of collectivist countries, such as Romania. At the social level, Hart (1988) posed three forms of voluntary cooperation as influenced by collectivism: (a) kinship, based on extended family; (b) association, established on affection and shared experiences among friends; and (c) contract, based on the modern state and society. There is agreement among theorists that individualism and collectivism affects interorganizational cooperation but the jury is out on how it specifically works.

Finally, Romania is a remarkable environment for this study due to the transition that it is currently undergoing, particularly as it prepares for accession to the European Union. As Romanian state owned companies continue to be privatized and organizations find that the command market supply chain is disappearing, a new economic structure or supply chain is emerging. This revolution in the marketplace cannot be duplicated in any of the industrialized nations. Moreover, Romania is a singular environment among its other Central and Eastern European peers because of the time it has taken to shift. In research parlance, a larger spread of variance allows for a better confidence level in predictive power.

This study proposes an institutional framework in which interorganizational trust, individualism and collectivism, and JIT/TQM's superordinate effect are used to predict interorganizational cooperation. Interorganizational cooperation is defined here as a long-term cooperative and interdependent organizational superstructure between two distinct

<sup>a</sup> Ph.D., Assistant Professor of Management, Our Lady of the Lake University, School of Business, 411 S.W. 24<sup>th</sup> Street, San Antonio, Texas 78207, E-mail: glasd@lake.ollusa.edu, Tel: (210) 434-6711, Fax: (210) 434-0821

<sup>b</sup> Ph.D., University Conferencier, Academia de Studii Economice- București, Catedra de Marketing, Piața Romana No. 6, București, România, E-mail: lori@ase.ro, Tel: (40-1) 211-26-50, Fax: (40-1) 312-95-49

organizations to exchange complementary resources. This research attempts to answer the following hypotheses:

*Hypothesis 1:* Interorganizational trust is positively associated with interorganizational cooperation.

*Hypothesis 2:* Individualism is positively associated with interorganizational cooperation.

*Hypothesis 3:* TQM practices (statistical process control, product design, and customer focus), JIT practices (*kanban*, lot-size reduction, setup time reduction, and JIT scheduling), and their CIP (information feedback, management support, plant environment, and workforce management), are positively associated with interorganizational cooperation.

*Hypothesis 4:* The superordinate goal effect of TQM practices (statistical process control, product design, and customer focus), JIT practices (*kanban*, lot-size reduction, setup time reduction, and JIT scheduling), and their CIP (information feedback, management support, plant environment, and workforce management) explain variance with interorganizational cooperation better than interorganizational trust and individualism.

## 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.

### Subjects

The selection of subjects for this study involved several issues concerning the appropriate characteristics and number of respondents. To determine the appropriate subjects, the level of analysis used in this study exists at the plant level. The plants were randomly selected from the listing of Major Companies of Romania 2000, and consisted of Bucharest based-manufacturing companies. While the level of theory for this study is based at plant level, individual managers who act as key informants provided the data.

The key informant is defined here as the singular individual responsible for the implementation of purchasing policy and procedure in Romanian durable manufacturing organizations. The key informants were asked to provide information on their cultural values, as represented by *indcol*, the JIT/TQM practices in their organization, their level of trust in their suppliers, and their interorganizational cooperation practices with their suppliers.

Based on a large effect size from studies using the same or related constructs, methodology, and theoretical base (Flynn et al., 1995; Wagner, 1995), a sample size of approximately 60 organizational responses was calculated, however, the study is based on a response of 96 respondents.

### Measures

The measures and their translation from English to Romanian are described in this section. The independent variables included measures representing interorganizational trust, *indcol*, and JIT/TQM and were validated in research documented by their respective developers. The dependent variable, interorganizational cooperation, is a composite of items adapted from Flynn et al. (1995), Hendrick and Ellram (1993), and this study's principal researcher.

Interorganizational trust was operationalized using the Organizational Trust Inventory, Short Form (OTI-SF) developed by Cummings and Bromiley (1996). The OTI-SF contains 12

items that were extracted from the organizational trust inventory, long form used in the same construct validation study.

The *indcol* variable used in this study is based on a scale synthesized from the construct validation by Wagner (1995). Four factors were used from Wagner's study: 1) personal independence and self-reliance 2) work-alone ethic 3) subordination of individual needs to group interests, and (4) effect of individualism on group productivity.

JIT/TQM refers to the variety of manufacturing practices first used by Japanese manufacturers and subsequently adopted to varying degrees in most industrialized societies. The variables identified here refer to just-in-time (JIT), total quality management (TQM), and their common infrastructure practices (CIP) for JIT/TQM (Flynn et al., 1995). Flynn et al. described the procedures they used to establish the construct validity of the JIT, TQM, and the CIP for JIT/TQM scales. The underlying dimensions for JIT consist of *kanban*, lot-size reduction, setup time reduction, and JIT scheduling practices. The TQM practices are comprised of customer focus, product design, and statistical process control practices. The common infrastructure practices (CIP) variable for JIT/TQM is made up of information feedback, management support, plant environment, and workforce management.

The interorganizational cooperation construct consists of a multi-item scale based on work by Flynn and colleagues (Flynn et al., 1995), Hendrick and Ellram (1993), and this study's researchers.

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).

### 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 picked up during early December, 2001 and yielded 96 usable questionnaires. Respondents were asked to comment on their relationships with their principal suppliers.

## Data Analysis

The first data analysis procedure consisted of corrections for missing data, and an *a posteriori* construct validation adjustment based on factor analyses and internal reliabilities. The second procedure provided measures of descriptive statistics including means and correlations. The third procedure consisted of regression analysis for model testing.

### Data Checking

Before conducting the analysis, the data were checked for missing data. Few scales were missing data except for the JIT sub dimension of *Kanban*. In this sub dimension, 32 respondents of a total of 96 did not answer at least one of the three items. Anecdotal discussion indicated that many of the respondents had no concept of the term *Kanban* and thus left the questions blank. The *Kanban* scale items were eliminated from further analysis. Due to the low incidence and nonsystematic pattern of missing data in the remaining scales, the mean substitution procedure was used. This procedure is valid if less than 10 percent of a variable's data are missing. It replaces a missing data point with the mean for that variable's

case. The mean substitution procedure allows for the use of all cases while enhancing statistical power (Roth, 1994).

#### *A Posteriori Construct Validity: Factor and Reliability Analysis*

An a posteriori construct validity procedure, based on factor analysis and internal reliability, was conducted on the independent and dependent variables. This methodology is a requirement to maintain validity when using scales developed in one culture and transferred to another. In the first part of the procedure, each scale was rotated with within-scale factor analysis. Factor analyses measured the underlying dimensions. In this case, the intent was to isolate and measure a singular dimension for each scale. Scale items were retained if they loaded at a  $\pm .40$  or greater value on a unique factor with an eigenvalue greater than 1.0. In the case of a nuisance factor, the items were retained if the loadings on the second factor were below  $\pm .40$  (Flynn et al., 1995).

In the second part of the procedure, the internal reliabilities of the remaining scale items were evaluated using Cronbach's alpha ( $\alpha$ ), which measures the interrelationship of scale items. Cronbach's alpha does not measure underlying dimensions. A minimum alpha of .50 was used as convention for internal reliability (Nunnally, 1967). Scale items were removed if the original scale alpha was less than 0.50 and the remaining items resulted in a higher alpha.

Based on the factor analyses and internal reliability procedures, scales for customer focus (TQM) and JIT scheduling were removed from further analyses. Moreover, workforce management was found to contain two factors which were named Participative Management (CIP4) and Continuous Improvement Environment (CIP5).

#### *Descriptive Statistics and Correlation Analysis*

A review of scale descriptive statistics and correlation analysis provides some preliminary findings. The Likert orientation (1 = *strongly disagree* and 7 = *strongly agree*) in the interorganizational trust, TQM, JIT, CIP and interorganizational cooperation scales is 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. In the case of the Indcol scales, the smaller values reflect collectivism and the larger values indicate individualism.

The means for these scales varied between 1.98 for Indcol4 and 6.27 for CIP4. Trust1 (Interorganizational Trust) is moderately high among buyers and suppliers. The means for Indcol are inconsistent as a group. Indcol3 (Subordination of Individual Needs to Group Interests) indicates moderate individualism, while Indcol2 (Work Alone Ethic) and Indcol4 (Effect of Individualism on Group Productivity) indicate moderate collectivism. The TQM and JIT scales range between 5.39 and 6.06, while the common infrastructure practices (CIP) for JIT/TQM range from 4.99 to 6.27. Finally, Coop1 (Interorganizational Cooperation) had a mean of 4.7.

A review of the intercorrelations provided preliminary findings concerning the study's hypotheses. Interorganizational trust exhibited a statistically significant relationship with the dependent variable. Indcol1 and Indcol4, while not statistically significant, exhibited opposite relationships with interorganizational cooperation. Almost all of the TQM, JIT, and CIP variables exhibited statistically significant relationships with interorganizational cooperation.

#### *Hierarchical Regression Analysis*

Hierarchical regression analysis was used to test the effect and rank of the independent variables on interorganizational cooperation. Hierarchical regression is a method in which independent variables are entered by sets in incremental steps, based on hypothesized

relationships, to analyze the cumulative effect of the independent variables on the dependent variable. At each step, the semipartial coefficient of determination ( $R^2$ ) is measured to determine the effect of the independent variable. The independent variables are made up of sets, which contain that variable's subdimensions. The value of hierarchical regression analysis of sets lies in its ability to compare the effect of one set of variables on the dependent variable over another. This is not possible under single level multiple regression, in which there is no distinction of  $R^2$  (Cohen & Cohen, 1983).

Indcol, TQM, JIT, and CIP each contain several variables and function as sets in this study. Interorganizational trust contains no subdimensions and is treated as a set with one element. Moreover, the superordinate goal relationship of JIT/TQM with interorganizational cooperation compared with the relationship of trust or indcol, as interpreted by a comparison of variance, can be assessed with hierarchical regression of sets.

The results of the testing for effect of the independent variables are shown in Table 1. Rating the effect of one variable set over another was accomplished through a comparison of the change ( $\Delta$ ) of  $R^2$  (Cohen & Cohen, 1983). The results indicate support of hypotheses 1 through 4. In hypotheses 1 and 2, interorganizational trust and individualism and collectivism demonstrate a statistically significant relationship with interorganizational cooperation ( $R^2 = .192$ ,  $p < .01$ ). For hypothesis 2, the relationship of indcol4 with interorganizational cooperation was statistically significant ( $t = -.2440$ ,  $p < .05$ ) as seen in table 1. Indcol4, Effect of Individualism on Group Productivity, established a negative relationship of individualism and interorganizational cooperation. Explained in another way, collectivism exhibits a positive relationship with interorganizational cooperation.

For hypothesis 3, TQM, JIT, and their CIP supported a statistically significant relationship with interorganizational cooperation ( $R^2 = .578$ ,  $p < .001$ ), although only two CIP variables demonstrated statistically significant effects: 1) Information Feedback (CIP1) ( $t = 2.439$ ,  $p < .01$ ) and 2) Continuous Improvement Environment (CIP5) ( $t = 4.743$ ,  $p < .05$ ). None of the TQM and JIT variables exhibited direct effects on interorganizational cooperation.

The  $\Delta R^2$  comparisons provided support for hypothesis 4. The hypothesized superordinate goal effect of JIT/TQM and their CIP explained variance with interorganizational cooperation better than trust or indcol. The difference ( $\Delta R^2 = 386$ ) between the full model ( $R^2 = .578$ ,  $p < .001$ ) and the interorganizational trust and indcol model by itself ( $R^2 = .192$ ,  $p < .001$ ) was larger.

The analysis provided support for the research model and its hypotheses. In addition to hierarchical regression analysis, a simplified model using stepwise backward regression and made up only of statistically significant variables provided  $R^2 = .557$ ,  $F = 20.375$ , and  $p < .000$  (see Table 2).

## **Discussion**

An in-depth discussion of the results is presented here. Analyses for each of the four principal hypotheses are discussed. These findings pose implications for academicians and practitioners alike. The limitations of these findings, based on the principal validity threats they pose, are also presented. Finally, future directions for research on interorganizational cooperation are presented.

## Analysis and Implications

The findings are discussed here in the order in which the hypotheses were presented. The first three findings deal with interorganizational trust, indcol, just-in-time (JIT), total quality management (TQM), and their common infrastructure practices (CIP). The ensuing findings deal with the superordinate goal effect of the JIT/TQM variables over interorganizational trust and indcol on interorganizational cooperation.

**Table 1: Hierarchical Regression for Comparison of Effect between Interorganizational Trust with Individualism and Collectivism and JIT, TQM, and CIP on Interorganizational Cooperation**

Variable	R <sup>2</sup>	ΔR <sup>2</sup>	F	T
Step 1				
Independent variable(s)	.192	N/A	3.857**	
Interorganizational Trust				3.010**
Individualism and Collectivism				1.970
Independence & Self-Reliance (Indcol1)				.537
Work Alone Ethic (Indcol2)				-.328
Subordination of Individual Needs to Group Interests (Indcol3)				-2.440*
Effect of Individualism on Group Productivity (Indcol4)				
Step 2				
Independent variable(s)	.578	.386	7.053***	
Interorganizational Trust				2.003
Individualism and Collectivism				2.901**
Independence & Self-Reliance (Indcol1)				1.310
Work Alone Ethic (Indcol2)				-.797
Subordination of Indvid Needs to Grp Interests (Indcol3)				-2.399*
Effect of Individualism on Group Productivity (Indcol4)				
TQM, JIT, and CIP				
Product Design (TQM2)				-.104
Statistical Process Control (TQM3)				.499
Lot Size Reduction (JIT2)				.304
Setup Time Reduction (JIT3)				-.373
Information Feedback (CIP1)				2.439*
Top Management Support (CIP2)				-.393
Plant Environment (CIP3)				.667
Participative Management (CIP4)				.082
Continuous Improvement Environment (CIP5)				4.743*

\* Significant at the 0.05 level.

\*\* Significant at the 0.01 level.

\*\*\* Significant at the .001 level.

**Table 2: Backward Step Regression for Best Model Effect between Interorganizational Trust, Individualism and Collectivism, JIT, TQM, and CIP on Interorganizational Cooperation**

Variable	R <sup>2</sup>	ΔR <sup>2</sup>	F	T
Final Model after 10 iterations				
Independent variable(s)	.557	N/A	20.375***	
Continuous Improvement Environment (CIP5))				6.178***
Independence & Self-Reliance (Indcol1)				3.192**
Interorganizational Trust				2.467*
Effect of Individualism on Group Productivity (Indcol4)				-2.296*
Information Feedback (CIP1)				2.939**

\* Significant at the 0.05 level.

\*\* Significant at the 0.01 level.

\*\*\* Significant at the .001 level.

Hypothesis 1 probes the predictive relationship of interorganizational trust with interorganizational cooperation. A discussion of the literature provides a strong theoretical base for this hypothesized relationship (Smeltzer, 1997). The regression analysis supports this relationship and the underlying institutional economics framework of this study.

Hypothesis 2 investigates the role of indcol towards interorganizational cooperation. According to the literature, individualists generally do not develop strong ties with members of their group and are inclined to cooperate with members of their own and other groups, given a positive cost-benefit return. Collectivists, by contrast, cooperate and extend to members of their own group and behave competitively with members of other organizations (Triandis et al., 1994).

The finding for the relationship of the indcol variable set with interorganizational cooperation was statistically significant, however, two opposite relationships emerged in the indcol variable set. The Independence and Self-Reliance variable had a positive effect of individualism on interorganizational cooperation, as found in hypothesis 2. The Effect of Individualism on Group Productivity variable, however, exhibits a positive relationship between collectivism and interorganizational cooperation. Perhaps, the institutional values of group solidarity and concern for fellow workers, as was found prior to the Revolution of 1989, is still pervasive in Romanian society among managers. The sum of all responders for this variable was rated at 1.98 (1 = collectivistic 7 = individualistic). Notwithstanding the direction of the relationships, a significant finding was discovered. This finding supports the overall notion that institutions such as indcol are related to organizational structure (North, 1990). Indcol is related to the manner in which organizations cooperate or compete with each other. In this case, buyers view their fate as tied to that of their suppliers.

Hypothesis 3 explored the existence of a positive relationship between JIT/TQM with its CIP and interorganizational cooperation. JIT, TQM, and their CIP were found to possess a statistically significant relationship with interorganizational cooperation. As used in this study, JIT consists of *kanban*, lot size reduction, setup time reduction, and JIT scheduling. Due to construct validity issues, *Kanban* and JIT Scheduling were removed from further analyses. Some of the respondents in the study provided comments concerning JIT in Romania. These managers generally expressed curiosity about JIT as a practice. Thirty two of the 96 managers surveyed left between one and three questions regarding the *Kanban* practice blank. JIT in Romania may be considered a novel set of practices known principally by academicians and consultants, but is unknown to a large degree in many manufacturing plants. While the Romanian responders may be using isolated waste reducing practices to improve productivity, the factor and reliability analyses demonstrated that these are not coherent and systematic industrywide JIT practices.

TQM emphasizes the quality improvement role in an organization. TQM, as used in this study, is comprised of customer focus, product design, and statistical process control. As with JIT, some of the TQM practices are not practiced systematically. The Customer Focus variable was dropped from further study due to low factor and reliability values. One of the principal tenets of TQM states that customers determine the quality issues in any production or service environment. Romania manufacturers may still be struggling with customer quality issues that remain from management values inherited from the pre-Revolution era. Under the former command market regime, the government often dictated quality levels in addition to pricing, quantity, logistics, scheduling, and other plant level decisions.

The CIP variables support both JIT and TQM. These variables were found to have a stronger effect on interorganizational cooperation than the JIT and TQM variables, as seen in the last regression model in table 7. In addition, these variables exhibited more robust factor and reliability analysis values. These practices tend to reflect the support role of management towards workers and the plant installation. The JIT and TQM practices, on the other hand are systematic practices that are generally designed to reduce waste and improve quality. This finding may be a legacy of the pre-Revolutionary period. Under the socialist system, workers and management were considered equals. Management at all levels of production was elected

by workers from their own ranks. In this sense, management treatment of workers was more than egalitarian. Managers owed workers their loyalty. This approach also explains the dichotomous effect found in the two indcol variables. Perhaps, managers are both self-reliant and yet conscious of their proletarian roots. Therefore, while some of the CIP practices are extensions of practices found under the formerly communist system, some of the quality and waste reducing aspects of JIT/TQM are relatively unknown.

According to social identity theory, a superordinate goal will unite distinct social groups when institutions may work against cooperation. When institutions act to support cooperation, the superordinate goal will still provide a larger explanatory role for cooperation (Sherif et al., 1961). JIT/TQM requires cooperation between buyers and suppliers. This requirement is used to achieve lower costs, shorter development and production cycles, higher quality, and other interorganizational synergies (Ansari & Modarress, 1986; Nishiguchi, 1994).

Hypothesis 4 delved into the superordinate goal effect of JIT/TQM and its CIP as a stronger predictor of interorganizational cooperation than interorganizational trust and Indcol. This hypothesis was tested by comparing the difference ( $\Delta$ ) between the semipartial coefficient of correlation ( $R^2$ ) values of hierarchical regression models (Cohen & Cohen, 1983). The difference ( $\Delta R^2 = 386$ ) between the full model and the interorganizational trust and indcol model by itself was a stronger predictor. JIT/TQM functions as a superordinate goal to bring organizations into closer relationships.

#### *Limitations of the Study*

Behavioral survey research involves limitations which deal with people and the organizations where they interact. Despite improvements in methodology and computation, behavioral survey research is an inexact science (Mitchell, 1985). Serious inquiry requires a listing of the limitations posed by the nature of the research to qualify its contribution to the field of behavioral science. Although research limitations interact, they are listed in this section according to the threats they pose to internal, construct, and external validities (T. D. Cook, Campbell, & Peracchio, 1990).

According to Mitchell (1985), internal validity refers to the certainty with which a causal relationship between two variables can be inferred. The threats to internal validity in correlation research are quite different from those posed to experiments. The principal threats discussed here deal with the spurious situational events and third variables that may be related to the independent or independent variables.

To control for spurious situational events, the process for identifying the respondent and delivering and collecting the survey was implemented in a standard procedure. After the data were collected, any questions the respondent had about the research were answered.

The main thrust of construct validity hinges on whether the variables actually measure what they purport to measure (Kerlinger, 1986). Construct validity is a constant and recurring endeavor in social research (Carmines & Zeller, 1979). When crossing language, cultural, and industrial development barriers, assuaging threats to construct validity assumes a prominent role (Riordan & Vandenburg, 1994). The variables used in this study were rigorously designed and were tested using a variety of procedures generally considered to be standard. These procedures strengthen the content validity, unidimensionality, internal reliability, convergent and discriminant validity, and nomological validity of the variables (Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993; Venkatraman & Grant, 1986). An *a priori* translation procedure was used to strengthen content validity. Finally, an *a posteriori*

procedure involving confirmatory factor analysis to improve unidimensionality and measures of Cronbach's alpha ( $\alpha$ ) for internal reliability was used (Riordan & Vandenburg, 1994).

The results from these procedures provided less than desirable but not unexpected validity problems. The confirmatory factor analysis and test of internal reliability eliminated scale items from the variables. In the case of interorganizational trust and indcol, these problems were not highly problematic. The loss in construct validity occurred more with the JIT/TQM variables. The net effect of low internal consistency reliability and a reduction of content validity was to render these variables as a less reliable, inclusive, and robust measures of the multifaceted JIT/TQM construct.

Common method variance refers to the potentially erroneous relationship 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). A number of factors may contribute to common method variance. These factors include a subject's transitory frame-of-mind, systematic response style, bias for social desirability, and overlap in the content of the variables used. Single source bias, a special form of common method variance, is attributed to the collection of data from the same source (Avolio, Yammarino, & Bass, 1991).

To minimize common method variance, Podsakoff and Organ (1986) suggested post hoc remedies and *a priori* procedural methods. Two procedural methods were not considered expedient for this study due to the data collection constraints. These procedures involve escalating the unit of analysis and separating the method of collection. Escalating the unit analysis consists of grouping the responses and conducting data analysis from a subgroup level rather than as individuals. Escalation was not considered feasible because it reduces the statistical validity of the results and consequently requires a larger response. Separating the method of data collection can be accomplished by splitting the method of data collection, by dividing the timing of the data collection into two or more sessions, and by collecting from several respondents (Podsakoff & Organ, 1986). Splitting the data collection into two or more sessions would have increased data collection time and costs. Using multiple respondents would have been counterproductive because the manager in charge of purchasing is the most indicated individual to study.

The 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. Multi-item scales reduce common method variance by using several questions to address a single construct. When summing the items for each variable, common method variance is reduced (Spector, 1987). All of the scales are made up of several items and do not depend on single item variables. Moreover, each of the scales has undergone vigorous testing. Finally, placing the dependent variable at the end of the instrument guides the respondent to answer more objectively, with less guessing as to the real nature of the study (Podsakoff & Organ, 1986).

*The use of survey methodology is valid for the intent of this study. Romania is a fertile field for research in light of its impending accession to the European Union. Nomothetic research involving large numbers of respondents is clearly lacking. Moreover, self-reports are perhaps the most appropriate method for gathering psychometric, demographic, and organizational practices data (Podsakoff & Organ, 1986).*

External validity refers to the extent by which a study's findings can be generalized across different populations and settings. Generalizing from a study's sample to the target population is specifically referred to as population validity, while generalizing to other environmental factors (settings, tests, etc.) is referred to as ecological validity (Bracht & Glass, 1968).

In reference to population validity, a sample of Romanian managers responsible for purchasing for their respective organizations was used in this study. The sample was randomly chosen from a 2000 listing of the major companies of Romania and satisfies population validity concerns.

In reference to ecological validity, the Hawthorne effect stands out as the principal threat to ecological validity. The Hawthorne effect refers to the perception that a subject should respond in some unknown manner to the research stimuli. Most Romanian managers are not subject to the research intrusion as found in the United States and other industrialized countries. Having participated in little or no prior research may have caused respondents to question the intent of the research. Research-experienced respondents, on the other hand, would be expected to more readily answer survey questions. It is not known to what degree the Hawthorne effect introduced error. Due to the exploratory nature of the present study, this validity threat must be taken into account.

#### *Recommendations for Future Study*

Research on interorganizational cooperation in an industrial context is a relatively new and fertile field of research. Many theoretical and empirical gaps exist in the literature. To fill these gaps, the following recommendations for future study are provided. These recommendations are principal themes that extend from this study and should not be considered as an inclusive list of all directions for future research. The principal recommendations for future research consist of gathering case study data to better develop a model as to why some aspects of JIT/TQM and their CIP are used more than others. Research from other post-communist and developing countries is sorely lacking. This is particularly valid given the exploding use of global sourcing and production

Romania was used as the setting for this research in order to study cultural and industrial differences quite opposite that found in the United States. Romania shares this cultural and developmental stage to varying degrees with other countries of Eastern and Central Europe. The cultural factors of low trust and collectivism are also present in other post-communist and developing countries and may also influence interorganizational cooperation. Extending this study to other parts of the world, particularly Latin America and Asia would increase the knowledge of cultural and industrial environment influences on interorganizational cooperation.

#### **References**

Ansari, A., & Modarress, B. 1986. Just-in-time purchasing: Problems and solutions. *Journal of Purchasing and Materials Management*, 22(2), 12-15.

Carmines, E., & Zeller, R. (1979). *Reliability and validity assessment*. Beverly Hills, CA: Sage.

Bracht, G. H., & Glass, G. V. (1968). The external validity of experiments. *American Educational Research Journal*, 5, 437-474.

Cohen, J., & Cohen, P. 1983. Applied multiple regression/correlation analysis for the behavioral sciences. Hillsdale, NJ: Erlbaum.

Coleman, J. S. 1990. *Foundations of social theory*. Cambridge, MA: Belknap Press.

Cook, T. D., Campbell, D. T., & Peracchio, L. (1990). Quasi experimentation. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (pp. 491-576). Palo Alto, CA: Consulting Psychologists Press.

Cummings, L. L., & Bromiley, P. 1996. The organizational trust inventory (OTI):

Flynn, B. B., Sakakibara, S., & Schroeder, R. G. 1995. Relationship between JIT and TQM: Practices and performance. *Academy of Management Journal*, 38, 1325-1360.

Hart, K. 1988. Kinship, contract, and trust: The economic organization of migrants in an African slum. In D. Gambetta (Ed.), *Trust: Making and breaking cooperative relations* (pp. 176-193). New York: Basil-Blackwell.

Hendrick, T., & Ellram, L. 1993. *Strategic supplier partnering: An international study*. Tempe, AZ: Center for Advanced Purchasing Studies.

Hirschman, A. O. 1958. *The strategy of economic development*. New Haven, CT: Yale University Press.

Kerlinger, F. N. (1986). *Foundations of behavioral research* (3<sup>rd</sup> ed.). New York: Harcourt Brace Jovanovich.

Lewis, J. D. 1995. *The connected corporation*. New York: The Free Press.

Mitchell, T. R. (1985). An evaluation of the validity of correlational research conducted in organizations. *Academy of Management Review*, 10, 192-205.

Nishiguchi, T. 1994. *Strategic industrial sourcing: The Japanese advantage*. New York: Oxford University Press.

North, D. C. 1990. *Institutions, institutional change and economic performance*, Cambridge, UK: Cambridge University Press.

Nunnally, J. 1967. *Psychometric theory*. New York: McGraw-Hill.

Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12, 531-544.

Riordan, C. M., & Vandenburg, R. J. 1994. A central question in cross-cultural research: Roth, P. L. 1994. Missing data: A conceptual review for applied psychologists. *Personnel Psychology*, 47, 537-560.

Schonberger, R. J. 1982. *Japanese manufacturing techniques: Nine hidden lessons in simplicity*. New York: The Free Press.

Schriesheim, C. A., Powers, K. J., Scandura, T. A., Gardiner, C. C., & Lankau, M. J. (1993). Improving construct measurement in management research: Comments and a quantitative approach for assessing the theoretical content adequacy of paper-and-pencil survey-type instruments. *Journal of Management*, 19, 385-417.

Shapin, S. 1994. *A social history of truth: Civility and science in seventeenth-century England*. Chicago: University of Chicago Press.

Sherif, M., Harvey, O. J., White, B. J., Hood, W. R., & Sherif, C. 1961. *Intergroup conflict and cooperation: The robbers cave experiment*. Norman, OK: The University Book Exchange.

Smeltzer, L. 1997. The meaning and origin of trust in buyer-supplier relationships. *International Journal of Purchasing and Materials Management*, 33, 40-48.

Smith, K. G., Carroll, S. J., & Ashford, S. J. 1995. Intra- and interorganizational cooperation: Toward a research agenda. *Academy of Management Journal*, 38, 7-23.

Spector, P. E. (1987). Method variance as an artifact in self-reported affect and perceptions at work: Myth or significant problem? *Journal of Applied Psychology*, 72, 438-443.

Triandis, H. C. 1994. Theoretical and methodological approaches to the study of collectivism and individualism. In U. Kim, H. C. Triandis, Ç. Kagitçibasi, S. C. Choi, & G. Venkatraman, N., & Grant, J. H. (1986). Construct measurement in organizational strategy research: A critique and proposal. *Academy of Management Review*, 11, 71-87.

Wagner, J. A., III. 1995. Studies of individualism-collectivism: Effects of cooperation in groups. *Academy of Management Journal*, 38, 152-172.

Womack, J. P., Jones, D. T., & Roos, D. 1990. *The machine that changed the world*. New York: Macmillan.