



The impact of individualism on buyer–supplier relationship norms, trust and market performance: An analysis of data from Brazil and the U.S.A.

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ABSTRACT

This study focuses on the impact of the cultural dimension of individualism, face-to-face communication and the effect of relational norms such as supplier involvement and trust on the market performance of buyer firms. We use the culture literature and social exchange theory to test hypotheses using a sample of Brazilian and US manufacturing firms. The data were analyzed using variance-based structural equation modeling, employing nonlinear partial least squares regression. Our findings indicate that individualism is negatively related to the involvement of suppliers in the production process but is not associated with trust in suppliers. In addition face-to-face communication seems to have a positive effect on supplier involvement and trust.

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1. Introduction

“Culture and communication are so intricately intertwined that they are, essentially synonymous” Helen Deresky, 2008, p. 126

Many global manufacturing firms form contractual or equity relationships with suppliers who might be geographically and culturally distant. Cultural issues thus predominate in all aspects of cross-cultural management including buyer–supplier relationships. However, cultural comparisons have not been sufficiently dealt with by past studies in the international business literature in the context of such global, dyadic interactions (Cannon, Doney, Mullen, & Petersen, 2010). What has been even less observed in this research stream is the role of communication, mainly face-to-face communication in strengthening the nature of such exchanges with performance being the eventual goal.

In our comparative analytical model in this study, we include the cultural dimension of individualism, face-to-face communication, supplier involvement and trust and examine their influence on a buyer firm’s performance. The investigation is viewed from a buyer firm’s perspective in that we analyze whether individualistic buyers and those that engage in a higher degree of face-to-face communication are able to involve suppliers, develop trust in them, and how this

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integration of suppliers in the production process might affect the market performance of the buyer firm. Since the relational norms of involvement and trust are determined endogenously, we include all our variables in a single structural equation model and compare the cultural orientations of buyer firms from Brazil and the United States.

Our study makes the following contribution. First, we add to the body of literature by linking these social constructs to economic incidents (Luo, 2007; Uzzi, 1997). The novelty of our paper however lies in its focus on face-to-face communication which has been incorporated into our theoretical model. This variable has been largely ignored as an enhancer of relationships. Face to face communication might add somewhat to the firm's financial expenses but might reduce the costs of knowledge or resource transfer or trust building or eliciting contribution from suppliers that ultimately positively settles on the bottom line. Neither has this construct of communication been adequately examined in this buyer-supplier context nor has its contribution to the trust-building process been verified (Dyer & Chu, 2000). Our goal is also to note this role in dyadic associations. Third, there are several studies cited at various junctures in this paper that focus on the antecedents of trust and its effect on performance. However, few studies which included international dyadic relationships did not explicitly explore how cultural elements might play a role in trust (Dyer & Chu, 2000; Liu, Luo, & Liu, 2009). For example, although Krishnan, Martin, and Noorderhaven (2006) examined the trust-performance relationship in international alliances, they included cultural distance only as a control variable in their model but did not investigate how the cultural orientation of the partners would influence trust or performance. We fill this gap through a cross-culture comparison of buyer firms from Brazil and the United States. Fourth, we weigh in on relative market performance as the dependent variable as compared with relationship performance which has been a common dependent construct in prior research. Furthermore, we explicitly and directly assess the relationship aspect of buyer-supplier links and thus our findings contain managerial implications as pointed out in the discussion section. Clearly, for global managers, understanding how successful management of the relationship with suppliers will impact their market performance as compared to that of rival firms is much more meaningful from a profitability perspective than simply knowing that their relationship with suppliers is superior without having quantifiable measures as in previous studies which are reviewed in the following sections. Finally, on the methodological front, we use a structural equation method that captures the entire relationship along with mediators in a single model of individualism-supplier relations-performance.

The paper is organized as follows. The next section describes our conceptual model and literature. We then develop hypotheses relating individualism to supplier relationship characteristics. This section is followed by research methods, results and then the conclusion.

2. Individualistic traits of culture and social exchange theory

Economic, interorganizational exchange relations between buyers-suppliers are also embedded in social exchanges (Blau, 1964; Granovetter, 1985; Poppo & Zenger, 2002; Uzzi, 1997). Social exchange theories have previously been applied to understand opportunism and survival in international joint ventures (Luo, 2007; Steensma & Lyles, 2000), relational governance supported by trust (Poppo & Zenger, 2002) and other trust mechanisms (Nooteboom, Berger, & Noorderhaven, 1997; Uzzi, 1997) and to a small extent in the execution of purely production-based, cross-cultural economic transactions such as buyer-supplier relationships that might be improved or exacerbated by social exchanges (Liu, Luo, & Liu, 2008). Based on this support, we broadly integrate social exchange theory with the culture literature to develop a model of buyer-supplier relational norms and performance. Below we describe the main constructs in our model and explain the rationale for including them therein.

Culture is a 'social' construct as it pertains to shared values, beliefs, mores and norms by people in society. Probably the most widely used cultural framework is that presented by Hofstede (1980) which identified four dimensions of culture, i.e. uncertainty avoidance, power distance, masculinity-femininity and individualism-collectivism. In spite of its limitations, this model has stood the test of time and has been predicted to continue to provide insights on cross-cultural management in the foreseeable future (Triandis, 1982). As Taras, Kirkman, and Steel (2010, p. 406) state, '(v)irtually all later models of culture include Hofstede's dimensions and have conformed to his approach'. They contend that the findings of those models are also consistent with other studies on culture. Therefore, we believe that the use of Hofstede's cultural dimensions in the present one sufficiently serves its purpose.

Buyer-supplier relationships in global industries are commonly characterized as markets rather than hierarchies. Therefore, the dimensions of masculinity-femininity which describes role definitions of group members or power distance that explains different qualities of equality between any two positions in society or economy do not apply in market interactions based on an economic perspective in this particular context. Uncertainty avoidance or the tolerance for ambiguity might influence the boundaries and accommodation of risk in the arrangement between any two parties. Therefore it might not be directly applicable to the ongoing working relationship. Hofstede also included two additional dimensions of culture some years after his first study was released; long-term orientedness and indulgence versus restraint. Long term orientation is specifically applicable to Asian cultures that rank high on this scoring system. Indulgence reflects societal preference for easy satisfaction and gratification of needs (Hofstede, Hofstede, & Minkov, 2010). Hence, neither of these values is applicable to the issue in our study. Individualism is also the cultural variable that has the closest correlation with economic constructs such as national wealth (Hofstede, Hofstede, & Minkov, 2010). We consider this construct to be to be the most relevant to the relationships between global firms and their suppliers. This stance is similar to that of previous studies which isolated this dimension in their analyses (Oyserman, Coon, & Kemmelmeier, 2002). Hence, we include *individualism* as the main construct in our study.

Culture's effect on firm performance, which is an economic concept, could be explained by way of social or behavioral factors that govern the buyer–supplier relationship. In keeping with the existing literature (Heide & John, 1992; Poppo & Zenger, 2002; Tangpong & Ro, 2009), we refer to these factors present in buyer–supplier relationships as relational norms. These have been recognized as having a bearing on performance especially in the case of specific global industries such as auto manufacturing which are critically dependent on supplier involvement and contribution to the production process (Cannon, Doney, Mullen, & Petersen, 2010; Dyer, 1994; Monczka, Petersen, Handfield, & Ragatz, 1998). The commonly employed relational norms in extant studies and those that have been most significant to the buyer–supplier relationship are cooperation, collaboration, participation, information exchange and solidarity (Artz, 1999; Heide & John, 1992; Liu, Luo, & Liu, 2008; Luo, 2007). These could exemplify and be achieved through greater supplier involvement. A higher level of such cooperation and collaboration results in embeddedness in dyadic associations which has also been shown to enhance the exchange of tacit information and know-how (Dyer, 1994; Helper, 1990; Uzzi, 1997). These features can be collectively referred to as '*supplier involvement*' which we include in our model.

Similarly, trust and through trust, a reduction in opportunism is also known to support alliances between business partners (Krishnan, Martin, & Noorderhaven, 2006). In the framework of inter-organizational exchanges with considerable asset specificity, trust has been known to reduce the hazards of working together and drawing up extensive contracts (Dyer & Chu, 2000). In this manner, 'relational norms and trust govern the buyer–supplier relationship by establishing more congenial, socially constructed environment that in turn promotes and nourishes economic exchanges' (Liu, Luo, & Liu, 2008, p. 296). We incorporate *trust* into our conceptual model.

A missing chip in the extant literature analyzing the effect of social structures on economic exchanges has been the role of face-to-face communication. An exception would be an influential study by Dyer and Chu (2000) that used face-to-face communication as a proxy for the intensity of the buyer–supplier relationship. A study by Kotabe, Martin, and Domoto (2002) in the context of buyer–supplier relationships alluded to the role of communication in technical and knowledge exchanges although they did not directly evaluate this variable. There is a plethora of studies mainly in the agglomeration literature that note that increased interaction between parties due to spatial proximity can be productive and innovative for firms (Dyer, 1994, 1996; Helper, 1990; McCann, 2007; Porter, 1990). The assumption then is that face-to-face interaction increases involvement between buyers and suppliers. Whereas agglomeration facilitates face-to-face contact, face-to-face interaction itself provides unique benefits in an interfirm alliance and can be conceived of as the mechanism that enhances the quality of social exchanges even when the firms are not located in close proximity to one another. We suggest, however, that in global buyer–supplier relationships, the degree of face-to-face communication might also vary based on the cultural origin of the firm. Dyer (1994) alluded to this cultural tendency and indicated that U.S. firms are less likely to rely on face-to-face communication than Japanese firms. He also highlighted the virtues of face-to-face communication such as better quality, specialization and the like. However, these studies did not identify or test what or how specific dimensions of culture would be relevant (Dyer, Cho, & Chu, 1998, p. 65). It has already been recognized in organizational studies that there are cultural differences in communication styles and patterns (Samovar, Porter, & Jain, 1981) although it is not clear how these play a role in dyadic alliances. We aim to bring out this role of *face-to-face communication*.

Culture or face-to-face communication alone might not have sufficient predictive capability as far as firm market performance is concerned. But, relational norms could affect performance more directly and as another route to profitability (Uzzi, 1997). Earlier studies included buyer–supplier relationship performance as the ultimate dependent variable, as influenced by relational norms rather than buyer firm performance (Artz, 1999; Liu, Luo, & Liu, 2008; Poppo & Zenger, 2002; Yaqub, 2010). Others have explored the determinants of supplier performance (Kotabe, Martin, & Domoto, 2002). Research has also indicated that these factors encourage the lowering of transaction costs (Uzzi, 1997). We can therefore expect that these constructs positively influence buyer firm performance. We define buyer firm performance as *market performance relative to competitors*.

3. Theoretical model and research hypotheses

3.1. The role of individualism

Morris, Davis, and Allene (1994, p. 66) suggest that, 'individualism refers to a self-orientation, an emphasis on self-sufficiency and control, the pursuit of individual goals that may or may not be consistent with in-group goals, a willingness to confront members of the in-group to which a person belongs, and a culture where people derive pride from their own accomplishments'. We can conceive of the buyer–supplier dyad as a 'group'. Individualist buyer firms could consider suppliers to be members of the in-group especially when the production process is acutely and regularly dependent on inputs from suppliers. For the sake of simplicity, we focus on individualism only under the assumption that lower individualism would imply a greater tendency toward collectivism. We apply the cultural dimension of individualism at the firm level; specifically we examine the individualism of buyer firms that will have a bearing on relationships with suppliers. Social exchange theorists (Blau, 1964) have argued that primarily economic transactions such as buyer–supplier relationships also include a social dimension. Whereas economic exchanges are viewed as value that is derived independent of interactions between the involved parties, social exchanges take into consideration the 'interaction' aspect. According to Nooteboom (1997, p. 310), '(s)ocial exchange relies more on unspecified implicit obligations, which depend on shared systems of meaning, belief and ethics, than on formal contracts'. Thus, certain cultures might have a greater proclivity to

engage in higher and better quality social exchanges which might reduce opportunism, lower conflict and increase value from the economic exchange. Since it has been widely accepted that individualists seek self-interest and collectivist cultures uphold group values and seek collective interests (Doney, Cannon, & Mullen, 1998), it is intuitive to conclude that individual buyer firms will be less likely to engage in high quality social exchanges. They might also be less likely to view suppliers as in-group to the same extent as those who are a part of collectivist cultures. Schwartz (1990) provided further support for this contention by defining societies that are individualistic as being more contract-driven, more likely to negotiate social relationships and to form groups more restrictively. Uzzi (1997, pp. 36–37) explained the findings of previous research on how relationships in specific Japanese and Italian (both less individualistic) industries are ‘characterized by trust and personal ties, rather than explicit contracts and that these features make expectations more predictable and reduce monitoring costs’. Thus, the cultural ‘context’ is significant in how such exchanges manifest themselves (Dyer, 1994; Liu, Luo, & Liu (2008, p. 295).

Cannon et al. (2010) found that culture, particularly the dimension of individualism–collectivism matters in the development of trust in such dyads. The meaning of trust is fairly broad and in the context of buyer–supplier relationships could include a belief on the part of the buyer that a supplier will not behave opportunistically, will abide by the contractual terms or that suppliers will meet the production and relationship-based expectations of the buyer. Scholars have defined trust as one party’s confidence that the other party in the relationship will not exploit its vulnerabilities (Barney & Hansen, 1994), and will behave in a predictable and mutually acceptable manner (Dodgson, 1993). We accept this wider connotation of trust. Trust is developed by firms through various mechanisms (Krishnan, Martin, & Noorderhaven, 2006). Doney et al. (1998, pp. 610–611) indicated that individualism influences ‘how’ trust is developed, i.e. through a ‘calculative’ process. They argued that individualists make a cost-benefit analysis of working with the other party, i.e. based on a fundamentally economic measure similar to the concept of net present value. They further reasoned that individualists’ trust could also be fostered through the ‘capability’ process, i.e. if a buyer is convinced that the supplier possesses the capability to perform and deliver the required results, the buyer is more likely to trust this capability of the supplier. This conceptual study provided such interesting insights but stopped short of empirically testing its claims. Based on these arguments, there is an innate condition to the relationship between individualism and the development of trust. In order for an individualist to ‘calculate’ or determine whether a supplier or its ‘capability’ is worthy of trust, they have to interact sufficiently to be able to begin that process of trust building. Thus, from the social exchange perspective, the development of trust is an outcome of favorable relations but is contingent upon regularity in transactions which leads to familiarity with the buyer’s requirements and also an understanding between the concerned parties (Nooteboom et al., 1997). Given their need for control and the focus on the achievement of unilateral goals as opposed to group goals (inclusion of supplier in ‘group’), individualists might be less likely to follow this pattern of regular interaction or interaction might be restricted strictly to economic value-driven matters permitting little room for social processes thereby slowing down or impeding the process of trust development. Doney, Cannon, and Mullen (1998) described how collectivists develop trust based on a ‘prediction’ process which supports behavioral conformity among in-group members assuming that suppliers are viewed as being members of the ‘group’. Collectivists are also known to engage more in in-group activities (Gregory & Munch, 1997; Hui & Triandis, 1986). Therefore, as compared with collectivist buyers, individualists are less likely to allow themselves the opportunity to develop the same level of trust as collectivists.

Supplier involvement refers to the coordination of operations at the inter-firm level, and is defined as implementing close coordination between a manufacturer and its upstream and downstream supply links (Parente & Gu, 2005). Reduced supplier involvement stems from the need of individualistic buyers to maintain maximum control over all operational details because of an inherent desire to avoid dependency and also complements the power-dependence view rooted in social exchange theory (Emerson, 1962; Morris et al., 1994). If dependency on suppliers is lower, suppliers will have less control over the buyer decisions thereby allowing buyers to keep control (Provan & Skinner, 1989). Newman and Nollen (1996, p. 760) contend that ‘(I)n organizations, individualism is manifested as autonomy, individual responsibility for results, and individual-level rewards.’ Owing to this behavior, individualist buyer firms are less likely to engage in trust forming, regular interactions and therefore have a lower level of trust in suppliers and are also likely to involve suppliers in the production process to a lower degree as opposed to collectivists who are more inclined to engaging in activity with in-group members such as suppliers (Hui & Triandis, 1986).

Previous studies have indicated that the individualism–collectivism dimension of culture should be considered when discussing communication rooted in culture, an idea that is commonly encountered in the international marketing literature (Gregory & Munch, 1997; Gudykunst & Ting-Toomey, 1988). Individualistic buyers are also more likely to restrict meetings or social interactions with suppliers to the minimum for similar reasons outlined above and hence lower face to face communication exists between buyers and suppliers. Face to face communication could include personal visits between buyers and suppliers, interaction for product development, participation in the production process and learning or collaboration efforts. We hypothesize as below:

Hypothesis 1. Individualism is negatively related with the level of involvement of major suppliers in the production process.

Hypothesis 2. Individualism is negatively related with the level of trust with major suppliers.

Hypothesis 3. Individualism is negatively related with the degree of face-to-face communication with major suppliers.

3.2. *The role of face-to-face interaction*

The importance of social interaction through face to face communication to the process of tacit knowledge transfer has been documented in the international business literature (Dyer, 1994; Dyer, Cho, & Chu, 1998; Gupta & Govindarajan, 1994; Noorderhaven & Harzing, 2009) although these studies did not explore the mechanisms through which face-to-face communication would work at strengthening relationships and obtaining positive performance outcomes. A catalyst that strengthens this process of important information exchange is trust between the parties (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004). These studies imply that trust mediates the relationship between face to face communication and knowledge transfer and also brings about greater transparency in the relationships. It is thus intuitive to suggest that face-to-face communication could create trust between the included actors. Blau (1964, p. 93) described the reciprocal arrangement in social exchanges as ‘favors that create diffuse future obligations, not precisely defined ones, and the nature of the return cannot be bargained about but must be left to the discretion of the one who makes it’. Face to face interaction enables the involved parties to exceed the economic expectations of the relationship and engage in exchanges of favors and other social benefits and perks. This social component that is a part of face to face communication ‘rewards’ both buyers and suppliers by cultivating trust (Dulac, Coyle-Shapiro, Henderson, & Wayne, 2008). In a survey conducted by the Association for Manufacturing Excellence, mutual trust was cited as one of the critical factors for buyer/supplier relations. Face-to-face communication through trust, facilitates knowledge-sharing by creating a sense of security that partners will not exploit the knowledge beyond what is intended (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004) and also allows firms access to their partners’ resources and fosters a willingness to work things out through mutual problem-solving (Uzzi, 1997). Dyer and Chu (2000, p. 268) contrary to our arguments found that face-to-face communication did not have an association with supplier trust but as they pointed out, they measured this construct based on the days spent on this form of interaction. As they acknowledge, ‘this is a measure of interfirm communication, not social communication’. We believe that we have included a more complete and comprehensive measure in our study as indicated in Appendix A and as will be defined in the methods section.

Similarly reasoned, a higher degree of face to face communication between buyers and suppliers also enhances involvement of suppliers in the production process. For example, greater integration is frequently manifested by supplier willingness to station key personnel inside the manufacturing firm near the assembly line to ensure smoothness of operations (Lakshman & Parente, 2008). Over time, this interaction builds increased familiarity with the people and the production process. Noorderhaven and Harzing (2009, p. 726) confirm that ‘operational interdependence and social interaction are strongly linked’. Suppliers may also be a source of innovation and stronger links to these suppliers may allow firms to better tap into these supplier-based innovations (Teece, 2007). This leads to the following hypotheses:

Hypothesis 4. The degree of face-to-face communication with major suppliers is positively related with the level of involvement of major suppliers in the production process.

Hypothesis 5. The degree of face-to-face communication with suppliers is positively related with the level of trust with major suppliers.

3.3. *Trust, supplier involvement as determinants of performance*

Collaborative supplier relations and mutual trust are likely determinants of competitive advantage in manufacturing industries (Dyer, 1994; Mudambi & Helper, 1998). Bowersox, Stank, and Daugherty (1999) described how greater supplier integration can help minimize the risks associated with the launch of new products. Increasingly it is recognized that supplier involvement and integration in the production process can have a substantial positive effect on corporate performance (Narasimhan & Jayaram, 1998; Narasimhan & Kim, 2002) by adding value to the production process that is supplemental to the economic value of the relationship. Supplier involvement through cross-firm teams or supplier presence on buyer premises or through other such mechanisms also increases social exchanges between buyers and suppliers. In some cases, supplier integration might entail that suppliers are able to anticipate certain buyer needs well in advance which creates efficiency, flexibility and coordination in operations. These factors enhance the positive outcomes to the buyer. Kotabe et al. (2002, p. 293) comment that, ‘by involving suppliers extensively in product and process development, assemblers (buyers) could gain faster product development cycles, lower input costs and higher end-product quality’.

Some extant research has noted that when buyer–supplier relationships exhibit a greater degree of relational norms, they experience lowered negotiation costs and more commitment which serve to positively influence performance (Tangpong & Ro, 2009). Trust also plays a role in assuring these outcomes (Heide & John, 1992). It might seem intuitive to conclude that trust is always positively associated with performance although alliance research has shown that it is in fact contingent upon different factors such as the levels of environmental and behavioral uncertainty (Krishnan, Martin, & Noorderhaven, 2006). Nevertheless, inter-firm trust does provide benefits. For example, trust allows members to cooperate based on the expectation that others will respond favorably, and firm learning also depends on high levels of trust between the partners (Dodgson, 1993). Poppo and Zenger (2002) built on existing research and argued that in cooperative market exchanges that are identified by high asset specificity, the relational norm of trust is more effective and reduces the cost of administering contracts. Trust through social exchanges also enables candid exchange of technical and commercial information thus

reducing opportunistic behavior and limiting transaction costs (Rao & Schmidt, 1998). Especially between buyers and suppliers, buyers who trust their suppliers see lower conflict (Zaheer, McEvily, & Perrone, 1998) and reduced uncertainty with respect to supplier behavior (Krishnan, Martin, & Noorderhaven, 2006). Trust lowers the buyers' costs of economic and social exchanges with suppliers due to the understanding that has been cultivated and thus, trust has a positive impact on buyer performance. We propose the following hypotheses:

Hypothesis 6. The level of involvement of major suppliers in the production process is positively related with the relative market performance of the buyer firm.

Hypothesis 7. The level of trust with major suppliers is positively related with the relative market performance of the buyer firm.

4. The empirical model

A set of hypothesized causal relationships can usually be fully represented through a diagram representing a structural equation model (Kline, 1998; Fig. 1). This study employed a variance-based technique for structural equation modeling (SEM) based on the technique of nonlinear partial least squares (PLS) regression; the software used was WarpPLS 1.0 (Kock, 2010a, 2010b, 2011).

4.1. Research method

We started the process of data collection in Brazil in the year 2003. The survey questionnaire was mailed to 493 organizations and resulted in 103 usable responses, which is a response rate of 20.8 percent. Several of the respondents held the title of division or unit head. After the Brazilian data were collected, we embarked on a similar process in the United States (US). The US data were collected via mail surveys sent to senior procurement managers of manufacturing firms in the US. Many respondents held the organizational titles of 'director of purchasing',¹ 'purchasing manager' and 'plant manager'. The survey instrument was initially pre-tested with 25 respondents to clarify the wording of the questions and to remove ambiguities. The questionnaire was mailed to 852 organizations and resulted in 107 usable responses, which is a response rate of 12.6 percent.

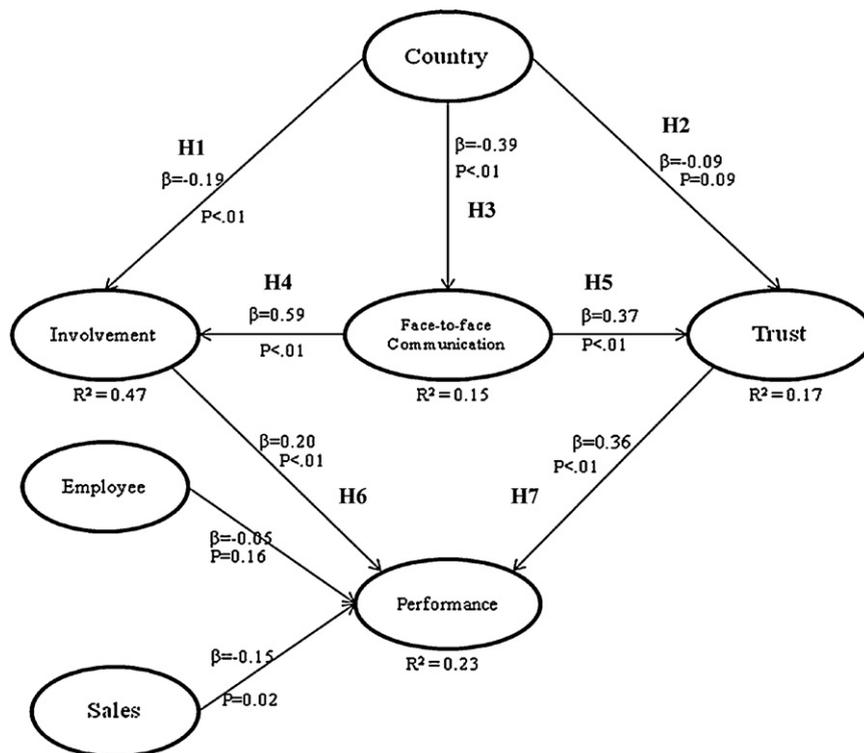
In keeping with the existing research practice, we examined the differences between early and late respondents (Armstrong & Overton, 1977; Lambert & Harrington, 1990). For the US dataset, we treated the 57 late responses as non-responses and compared them with the 50 early responses. We performed a *t*-test to look for differences in the means of early and late response groups using 15 randomly selected survey items. We concluded that there was no evidence to suggest that the respondents were not a representative sample and we proceeded with further analysis. Similarly, the Brazilian survey responses were also divided into 72 early and 31 late returns based on the response time. Once again, we performed a *t*-test to look for differences in the means of the early and late response groups using 12 randomly selected survey items. We found no evidence to suggest any differences and hence we proceeded with further analysis.

Several of the variables used in this study were measured based on perceptions. The use of perception-based variables in inferential studies may lead to measurement errors. One technique often employed to minimize this source of bias is to measure each variable based on multiple indicators. This technique is also referred to as latent variable measurement, and is associated with the statistical analysis method known as SEM (Kline, 1998). Latent variable measurement requires that validity and reliability tests be conducted in connection with the measurement model used (Rencher, 1998). One of the main goals is to ensure that indicators designed to measure one latent variable are not confused by respondents with indicators designed to measure other latent variables.

The measurement model used in this study included four latent variables related to the respondents' perceptions associated with the following constructs: level of supplier involvement, degree of face-to-face communication with major suppliers, level of trust with major suppliers, and firm's own relative market performance. Question-statements associated with each latent variable are listed in Appendix A and were answered on Likert-type scales (Nunnally & Bernstein, 1994).

The independent variable individualism was measured through the individualism index in Hofstede's (1983, 2001) model. Brazil's score in terms of individualism in Hofstede's (2001, p. 500) model is 38; much lower than the United States' score of 91. In the measurement model, we represented these scores as dummy variables such that the U.S. took on a value of 1 whereas Brazil took on a value of 0 since the U.S. ranks higher on this dimension of culture. In many ways, this operationalization is inclusive in that regardless of whether we use Hofstede's original scores for culture, his updated ones or indicators from any other study, as long as the U.S. scores higher than Brazil, the results will remain robust. There is ample evidence that this higher standing for the U.S. is consistent across culture studies. The effects in a singular model do not change either when we use this representation or that Brazil = 38 and U.S. = 91. We also included control variables in the

¹ We need to be aware of the possibility that large firms may have more bargaining power and might be more powerful in a buyer–supplier relationship. Although we control for size in our data analysis, this is a possibility that our cross sectional data do not allow us to further investigate this point. We thank an anonymous reviewer for calling our attention to this issue.



Notes:

Country = Individualism, Involvement = Supplier Involvement, Employee = Number of employees of the customer organization, Sales = Annual sales volume of the customer organization, p = significance values

Fig. 1. Estimated parameters in the structural equation model.

model, namely firm size as operationalized by the number of employees of the customer organization and the customer organization's sales in dollars.

4.2. Validation of the measurement model

We conducted data validation tests such as convergent and discriminant validity before the SEM analysis approach could be effectively utilized. Convergent validity tests are aimed at establishing whether answers from different individuals to question-statements are sufficiently correlated with the respective latent variables. Discriminant validity tests, on the other hand, are aimed at verifying whether answers from different individuals to question-statements are either correlated or not with other latent variables. That is, with latent variables other than the ones they were designed to 'load' on. Similarly, reliability tests are aimed at establishing whether answers from different individuals to question statements associated with each latent variable are sufficiently correlated among themselves (Rosenthal & Rosnow, 1991). Convergent validity is usually assessed based on a comparison of loadings calculated through a non-confirmatory factor analysis with a fixed value. Reliability assessment usually builds on the calculation of reliability coefficients, of which the most widely used are arguably Cronbrach's alpha and composite reliability coefficients (Fornell & Larcker, 1981; Nunnally, 1978).

We obtained factor loadings² through a non-confirmatory factor analysis. The extraction method used was principal components, and the rotation method was varimax (Ehremberg & Goodhart, 1976; Thompson, 2004). Factor loadings associated with indicators for all respective latent variables must be .5 or above for the convergent validity of a measurement model to be considered acceptable (Hair, Anderson, & Tatham, 1987). The sets of factor loadings (not shown here) associated with each of the latent variables in this study all met these requirements. Since those loadings range from .557 to .934, it is reasonable to conclude that the measurement model used in this study has acceptable convergent validity. For each latent variable employed in a structural equation model, the reliability is generally considered to be acceptable if the Cronbach's alpha and composite reliability coefficients associated with the variable are .7 or above (Fornell & Larcker, 1981; Nunnally,

² Available from the authors upon request.

Table 1a
Correlations and square roots of AVEs.

	Supplier involvement	Face to face communication	Trust	Performance
Supplier involvement	(.792)			
Face to face communication	.663**	(.795)		
Trust	.268**	.311**	(.782)	
Performance	.279**	.375**	.377**	(.760)

Notes: Latent variable correlations and square roots of average variances extracted (AVEs).

Square roots of average variances extracted (AVEs) are shown in diagonal within parentheses.

** $p < .01$.

Table 1b
Variance inflation factors.

	Country	Supplier involvement	Face to face communication	Trust	Employment	Sales
Supplier involvement	1.175		1.175			
Face to face communication						
Trust	1.081		1.081			
Performance		1.17		1.07	1.65	1.595

Notes: Variance inflation factors (VIFs) are provided for all predictor latent variables in each block.

1978). As can be inferred from Appendix A, the Cronbach's alpha coefficients ranged from .849 to .889, and the composite reliability coefficients ranged from .876 to .893. These are well above the .7 threshold. Therefore, it can be concluded that the measurement model presents acceptable reliability. Table 1a shows coefficients used to assess the discriminant validity of a measurement model.

A measurement model is believed to have acceptable discriminant validity if the square root of the average variance extracted for each latent variable is higher than any of the correlations between the latent variable in question and any other latent variables in the measurement model (Fornell & Larcker, 1981). As can be seen from Table 1a, all square roots of average variances extracted are higher than the correlations shown below them or to their left. Thus, discriminant validity of the measurement model is acceptable. In addition, all variance inflation factors (VIF values) are less than 5, indicating that multicollinearity, high inter-associations among latent variables, is not present in the data. These are indicated in Table 1b.

4.3. Data analysis and results

The results of the SEM analysis are depicted in Fig. 1. The arrows represent effects, and β coefficients associated with each link are shown near the arrows. The β coefficients refer to the standardized partial regression coefficients associated with effects, and were calculated after corrections for deviations from linearity. The R^2 coefficients display the percentage of explained variance in connection with each of the endogenous latent variables that are part of the model. That is, they refer to the percentage of explained variance of a latent variable that is due to the latent variables pointing at it.

Fig. 1 suggests that a country's level of individualism, as measured by the individualism index in Hofstede's model, has a significant and negative relationship with the level of involvement of major suppliers in the production process ($\beta = -.190$, $p < .01$). We thus find support for Hypothesis 1 that individualist buyers seem to be less likely to involve major suppliers in the production process. On the other hand, Hypothesis 2, that the level of individualism of buyers is significantly related with the customer's level of trust with major suppliers is not supported. We discuss this finding later. All our remaining hypotheses found support as follows: the degree of individualism is significantly and negatively related with the degree of face-to-face communication with major suppliers (Hypothesis 3, $\beta = -.390$, $p < .01$). The degree of face-to-face communication with major suppliers is significantly and positively related with: the level of involvement of major suppliers in the production process (Hypothesis 4, $\beta = .590$, $p < .01$); and the level of trust with major suppliers (Hypothesis 5, $\beta = .370$, $p < .01$). The relative market performance of the buyer is significantly and positively related with: the level of involvement of major suppliers in the production process (Hypothesis 6, $\beta = .200$, $p < .01$); and the level of trust with major suppliers (Hypothesis 7, $\beta = .360$, $p < .01$).

The control variable relating to the sales of the customer organization in dollars was found to be significantly and negatively related with relative market performance at the .05 level ($\beta = -.15$, $p = .02$). On the other hand, the control variable referring to the number of employees of the customer organization had no significant effect in the structural equation model. Meanwhile, the R^2 values for the constructs are: .47 for supplier involvement; .15 for face-to-face communication; .17 for trust; and .23 for performance.

The software calculates three fit indices which are meaningful in the context of variance-based SEM (Kline, 1998; Kock, 2010a, 2010b, 2011): average path coefficient (APC), average R^2 (ARS), and average variance inflation factor (VIF). Their values are the following: APC = .081, $p = .001$; ARS = .263, $p \leq .001$; and AVIF = 1.250. They suggest good model fit with the data (statistically significant APC and ARS), and low overall collinearity (AVIF < 5).

5. Discussion and conclusion

The relationship between buyers and suppliers is directly related with performance and competitive advantage and this is especially true in the case of certain vertically integrated manufacturing industries. These partnerships when cross-cultural are often challenged by cultural differences. Research questions related to these factors have not been sufficiently explored and findings of few existing studies are grounded in economic theories. Instead, using the social exchanges view, we examined the effect of individualism and face-to-face communication on the relational norms of trust, supplier involvement and the influence of relational norms on relative market performance. In the context of the buyer–supplier dyad, we took stock of extant knowledge on these issues and made a contribution by filling the exposed gaps significantly in four ways as below.

By bringing in the role of face-to-face communication as a mechanism to build trust and supplier involvement and the influence of culture on this form of communication. We found that individualistic cultures tend to engage in lower levels of social interaction modes such as face to face communication. This indicates that buyers are not easily willing to make or invite visits and/or discuss the production process and thereby tend to benefit less from face-to-face communication and its indirect effects. We find that when organizations have more face-to-face interaction through site visits by technical staff and engineers, participating in production stages, interacting in different projects, etc., they are more likely to participate in activities such as monitoring assembly line and flow of this line and demand and establishing cross-cultural teams. In addition, face-to-face communication also increases the level of trust in a relationship between buyer and supplier.

The finding about the importance of face-to-face interaction is perhaps the most interesting and novel one of the study because it contradicts the result of a very influential study (Dyer & Chu, 2000) and because it is almost entirely an under-researched construct in this field. We hope that our study will be able to draw attention to its relevance. On the measurement front, we operationalized face-to-face communication differently from the few studies in the field. Instead of using a single numerical measure such as the number of days of contact between the buyers and suppliers, we derived a more complete and comprehensive measure of face-to-face communication which was better able to denote information exchanges. This enabled us to make a *methodological contribution*.

By finding empirical support for the theoretical message of social exchanges in the buyer–supplier relationship which has previously been viewed as a purely economic exchange. Herein lay the *theoretical implications* of the study. We hope that future studies will be able to incorporate other such variables in their projects mainly because as social exchange theorists have consistently argued, even pure economic exchanges such as those between buyers and suppliers have social components that enhance the benefits of the economic interaction. Whereas economic instruments such as legal contracts go a long way in ensuring that both buyers as well as suppliers behave as per contractual expectations, especially in certain cultures, relational governance through trust and supplier involvement can complement and provide strong support for the successful execution of the relationship and ultimately for performance, as our study illustrated in terms of its *managerial implications*.

By highlighting the effect of the cultural orientation of individualism on relational norms such as trust and supplier involvement, which has not been explicitly tested before via a cross-cultural comparison in the manner adopted in this paper. We reasoned that individualist buyers are less likely to engage in high levels and high quality social exchanges due to their cultural tendencies to promote self interest and view themselves as non members in a group with suppliers. Hence, they would be less likely to voluntarily involve suppliers in the production process. Our findings were in keeping with these expectations. We also argued that as compared with collectivist buyers, individualists would demonstrate lower level of trust in suppliers. Although the coefficient for this relationship was negative, it was also insignificant thus disallowing us from drawing any conclusions based on the direction of the relationship. In fact, our results indicate that there is no association between a greater degree of individualism and trust in suppliers. This is surprising given the theoretical assertion of previous studies such as that by Doney, Cannon, and Mullen (1998) which elaborates on the process of trust development in individualist cultures. It might be possible to attribute this finding to measurement errors because we only used two levels of individualism. It could also be due to the over-emphasis that individualists put on contracts and hence, it could be that the trust is in the enforcement of the legal contract which would mediate their trust in suppliers. This is a limitation of the study and requires further investigation especially due to these mixed results.

By examining the direct or indirect impact of individualism, relational norms and face-to-face communication on relative market performance. Our study's additional *managerial implications* are evident in the positive effects that relational norms have on performance, which indicate that supplier relationship management is important for profitability (Tangpong & Ro, 2009). Once again, our study was distinguished from the existing ones on these issues because we chose to focus on a more comprehensive operationalization of buyer performance. We showed that involvement of suppliers and trust are conducive to performance as expected. But, we also found that face-to-face communication has an indirect impact on performance through supplier involvement and trust. However, individualism is negatively and indirectly related to performance through supplier involvement. This finding needs to be interpreted with caution firstly, because supplier involvement captures only one aspect of the indirect relationship between individualism and performance and secondly because our measure of performance was measured holistically and self reported. This is consistent with prior literature (Brouthers, Brouthers, & Werner, 2003; Brouthers, 2002; Kotabe, Martin, & Domoto, 2002; Murray, Kotabe, & Zhou, 2005) that also used subjective measures of performance. If we were to disintegrate it into financial, marketing, customer-based, etc., we might be able to better isolate the differences of individualist as opposed to collectivist tendencies through different mediators. This too is a limitation of our study.

On the side, we explored the effect of buyer firm size (number of employees) and found that it did not affect performance in the supply chain but another measure of firm size (annual sales volume) did negatively influence performance. This may be explained by the structure of the organization. Organizations with higher sales may be international firms which have adopted more western styles of management structure and employed less face-to-face interaction in transactions with suppliers. On the other hand, organizations with fewer sales may be local companies that have structured their organization and supply chain in more traditional ways.

As with many others, our study suffered from some limitations which might also provide interesting areas for further research in addition to the ones pointed out above. Our results demonstrate that Brazilian individuals and/or organizations prefer to have more face-to-face interaction with their suppliers thereby leading to increased trust in suppliers. Thus, by this logic, Brazilian buyer firms will experience higher performance than American firms if they engage in face-to-face interaction with their suppliers. However, there might be other non-cultural or firm/industry/environment related factors that will confound this association between face to face interaction, supplier involvement and performance. We were not able to include these in our study but hope that later studies will do so. We should also keep in mind that our results might not apply where organizations use other type of media to communicate rather than face-to-face interaction. The use of media and other communication facilitators might differently affect buyer–supplier engagement. This limits the applicability of this study. Other studies should also examine other dimensions and operationalizations of culture as they apply to buyer–supplier relationships.

With respect to data collection, many of our respondents were directors of purchasing although we also included responses from plant managers. Nevertheless, we admit that it is likely to create a buyer bias although it might not necessarily always be the case. A flaw in our research design was that our data were not longitudinal which might have enabled us to better address whether our unsupported hypothesis was due to the time context. Finally, [Iammarino and McCann \(2006\)](#) argue that the frequency of face-to-face contact varies significantly between different industrial sectors. In that case, the results of this study might be generalizable to the auto and certain other 'global' industries in which supplier involvement is a crucial part of the production process. By that same token, the application of the findings to other sectors or industries might be an error of stretching it out of context. Therefore, the study needs to be replicated in order to ascertain its value to other manufacturing businesses.

However, we can make some generalizations based on our study to bring out its applications for theory and practice. For one, trust is very important in buyer–supplier relationships in certain specific industries such as auto due to the high asset specificity and additional risk that partners might behave opportunistically as well as due to market uncertainty ([Dyer & Chu, 2000](#)). Therefore, buyers in these industries should prioritize the establishment of trust through social exchange processes with suppliers. Although we did not explicitly include collectivism as a measure in our study, due to the manner in which Hofstede conceptualized the individualism dimension as being a part of the individualism/collectivism continuum, we can possibly apply our results to collectivist buyers also. It is also assumed that Western societies such as the United States are relatively more individualistic than societies in developing countries ([Oyserman, Coon, & Kimmelmeier, 2002](#)). Therefore, our findings might be able to shed some broad light on the nature of relationships between Western firms which are more developed and developing country firms. This is also a possible avenue for future studies.

In sum, our study contributes to the global supply chain literature regarding the effects of culture on the relationship between buyers and suppliers. Since performance is an end goal, practitioners can have a broader view of the antecedents of improved performance in a supply chain. This study also reveals how elements of culture (individualism–collectivism) have an indirect effect on performance. This information can be critical for organizations that have international partners in their supply chain network.

Appendix A

Degree of face-to-face communication with major suppliers (Cronbach alpha = .879; composite reliability = .910)

- Face1: Our major supplier's product development engineers frequently visit us and chat with our people.
- Face2: Our people develop different product expertise from frequently working and interacting in different projects and product areas.
- Face3: The relationship between our product development staff and our major suppliers is characterized by considerable face-to-face contact.
- Face4: We frequently exchange information and knowledge with our suppliers by showing them in person how certain things (e.g., a part or a process) are done.
- Face5: We frequently receive personal visits of engineers and technical staff from our suppliers.
- Face6: We frequently make personal visits to our suppliers' engineers and technical staff.

Level of trust with major suppliers (Cronbach alpha = .893; composite reliability = .917). Modified from [Aulakh, Kotabe, & Sahay \(1996\)](#) and [Sako and Helper \(1998\)](#).

- Trust1: Our business relationship with our major suppliers is characterized by high level of trust.
- Trust2: We generally trust our major suppliers to stay within the terms of the contract.

- Trust3: Our major suppliers never try to alter the facts in order to get concessions from us.
- Trust4: Our major suppliers never promised to do things without actually doing them later.
- Trust5: Our major suppliers often conduct business in a manner, which is in accordance with to the terms of the contract.
- Trust6: Our business unit trusts our suppliers that they will deliver on time most of the time.
- Trust7: Our business unit trusts our suppliers that they will deliver high quality most of the time.

Level of involvement of major suppliers in the production process (Cronbach alpha = .877; composite reliability = .908)

- Involv1: Major suppliers are paid only upon the approval of the final assembled product by us.
- Involv2: Major suppliers are frequently monitoring the demand variations for our final products.
- Involv3: Major suppliers are frequently monitoring the speed and flow of our assembly line.
- Involv4: Major suppliers keep their own personnel inside or at close distance to our final assembly line.
- Involv5: Use cross-functional teams with our people and our suppliers' in the development stage.
- Involv6: Use cross-functional teams with our people and with people from suppliers in the assembly line.

Relative market performance (Cronbach alpha = .876; composite reliability = .905)

In the last 12 months, in comparison to our three major competitors:

- Perf1: Our business unit's performance measured by sales growth rate was ...
- Perf2: Our business unit's performance measured by market share was ...
- Perf3: Our business unit's performance measured by profitability was ...
- Perf4: Our business unit's performance measured by customer loyalty was ...
- Perf5: Our business unit's performance measured by customer satisfaction was ...
- Perf6: Our business unit's performance measured by return on investment was ...
- Perf7: Our business unit's performance measured by return on sales (ROS) was ...

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