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## **Effects of Network Capabilities on Firm Performance across Cultures**

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International Journal of Management and Economics 49, 79-105

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2016

Artykuł został opracowany do udostępnienia w internecie przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego. Artykuł jest umieszczony w kolekcji cyfrowej [bazhum.muzhp.pl](http://bazhum.muzhp.pl), gromadzącej zawartość polskich czasopism humanistycznych i społecznych.

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## **Effects of Network Capabilities on Firm Performance across Cultures**

### **Abstract**

The purpose of this study is to identify key factors related to network capabilities that enhance the performance of Chinese, Turkish and German firms. Chinese ( $n = 107$ ), Turkish ( $n = 129$ ) and German ( $n = 109$ ) MBA-students completed a questionnaire, based on an earlier version developed by Kenny [2009], which included questions on the respective firm, its performance and network capabilities. The predictors of firm performance varied by country: in China “information sharing” and “trust” were important, in Turkey “network coordination” and in Germany “human capital resources.” In addition, each country had its own specific drivers of firm performance. The findings of this paper should enhance understanding of the cross-cultural differences and assist managers when planning to join foreign corporations.

**Keywords:** culture, firm performance, Hofstede dimensions, networks, network capabilities, organizational culture

**JEL:** M2, F2

## Introduction

For some time now there has been an increased interest in the link between networks and firm performance. Nohria and Eccles [1992] trace this interest to three important reasons: the first is the occurrence of the concept of “New Competition” [Best, 1990 cited in Kenny, 2009, p. 73], i.e. the competitive emergence of small firms in some regions of the USA, Europe and Japan in the 1970s and 80s. These firms no longer displayed a hierarchical structure instead they used a network based one. A second reason is the advance of technology, which has enabled new and flexible ways of production and new organizational forms. Furthermore, technological developments changed the nature of transactions between firms [Kenny, 2009, p. 73]. The third reason is the research progress on network structures.

Recent research has demonstrated that through networks, firms can acquire resources and enhance their performance [Chen, Chen, 1998; Gao, 2011; Madhavan, Iriyama, 2009; Sharma & Majkgard, 1998; Sharma, Blomstermo, 2003]. Stam et al. [2014] suggest that networks ease the identification of opportunities [cited in Chimucheka, 2013, p. 93]. According to this view, firm behavior depends on a network of organizational and personal relationships [Axelsson, Easton, 1992]. On the organizational level, members of a network can be buyers and suppliers and, on a personal level, they can involve family, friends and acquaintances [Peppard, Rylander, 2006, p. 7]. The rationale for these relationships is to optimize processes [Zajac, Olsen, 1993 cited in Kenny, 2009, p. 141], since networks reduce uncertainties, act in a supportive manner [Ge et al., 2009, p. 224], and offer competitive advantages. In addition, firms may form strategic partnerships with market competitors to gain access to additional resources, share risks and costs, and benefit from new skills [Mu et al., 2007, p. 83]. The relationship established between different actors affects strategic decisions and leads to an exchange of resources between members of a network, provided that a company is capable and willing to utilize relationships [Walter et al., 2006, p. 21].

It has been argued that the profitable international use of resources provides competitive advantages. This is based on the assumption that international firms possess a resource base and a resource combination superior to those of local firms [Oesterle, Richta, 2008, p. 5]. Networks are considered a key element in the internationalization of firms [Balboni et al., 2014, p. 23]. Accordingly, Gray [1994] concluded in his study of New Zealand firms that one of the greatest perceived barriers to internationalization is a lack of business networks [Chetty, Blankenburg, Holm, 2000, p. 334].

In the current study, we examine which factors of inter-organizational and inter-personal network capabilities are associated with the performance of firms in China, Turkey and Germany. To do so we consider variables of both formal and informal networks, since inter-organizational network characteristics are important in order to obtain unique capabilities, and interpersonal network factors are also essential for accessing network resources.

While a number of studies [Bengesi, Le Roux, 2014; Kenny, 2009; Mitrega et al., 2011] have investigated the link between network capabilities and firm performance, this link has been under-researched within a comparative international context. In this study, we compare China's business environment following the reforms after 1978, which led to the resurgence of private businesses [Tsai, 2006] with the corporate environments of another collectivist society (Turkey) and an individualist society (Germany).

The culture of each nation displays the values and beliefs of people [Hofstede, 1980] who share a common understanding. It also influences the corporate environment [Bloch, Walter, 2012, p. 3] since cultural values are transported into the corporate frame. Lachman et al. [1994] suggest that the organizational structures of firms are shaped by culture. Similarly, Shane [1993] argues that culture has an effect on the activities of entrepreneurs [cited in Reis et al., 2011, p. 7].

Hofstede [1980, p. 11] has compared several countries in four major cultural value dimensions; namely, *power distance*, *individualism*, *masculinity*, and *uncertainty avoidance*. A high power distance indicates acceptance of inequality in the distribution of power. A high score on individualism shows less interdependence between members of a society. Scoring highly on masculinity indicates increased competition as a driver of society. A high degree of uncertainty avoidance, signals favoring a secure environment [Hofstede, 2011, p. 8].

The findings of the GLOBE study, which collected data from some 17.300 middle managers of 951 organizations in 62 countries, showed that Turkish society is characterized by high levels of in-group collectivism [Kabasakal, Bodur, 2004]. This explains the domination of family members, rather than professionals, in the management of several firms. Turkish people are committed to their networks, which consist of close interdependent relationships. The same holds true for China. Hofstede [2005, p. 75] states the “we” is more important than the “I” in collectivist societies.

In emerging economies social networks can compensate for institutional drawbacks – as is shown by the importance of “guanxi” (personal relationships) in China [Estrin et al., 2006]. Networks of Asian firms are largely based on ethnic and cultural foundations brought by entrepreneurs into the business environment. Redding [1996] describes firms within emerging economies as weak organizations linked by strong networks.

In developed countries the importance of networks is being increasingly recognized, particularly with respect to the internationalization of firms [Johanson, Vahlne, 2006]. However, the focus in developed countries is more on formal business relationships or social connections within a formal structure of business networks [Zhou et al., 2007].

Based on the Hofstede dimensions we expect some differences in factors related to firm performance between the three countries under consideration.

## Network Capability: The Key to Increased Firm Performance

Ritter and Gemünden [2003] define network capabilities as the ability of a firm to initiate relationships with other firms and benefit from them [cited in Balboni et al., 2014, p. 26]. The ability to draw the best out of a network depends on “network characteristics”, “network operation” and “network resources”. Each pillar is in turn made of other dimensions. Table 1 provides the definitions of the constructs.

**TABLE 1. Constructs' definitions**

Network capabilities					
Network characteristics		Network operation		Network resources	
<i>Tie strength</i>	Forms of inter-firm collaboration differentiated in strong (e.g. equity alliances, joint ventures, and non-equity cooperative ventures) and weak ties (e.g. marketing agreements, licensing and patent agreements)	<i>Initiation of business relationships</i>	Collection of information on potential partners for the purpose of a promising selection	<i>Network human capital resources</i>	Use of competencies, knowledge and attributes of personnel in a beneficial way for the company
<i>Relational capability</i>	Interactions between firms for the common benefit (formal and informal)	<i>Coordination</i>	Strategic planning of activities to achieve benefits	<i>Synergy sensitive resources</i>	Complementation of firm's own resources by network partners
<i>Trust</i>	Importance of reputation of organization and individual in formal and informal networks	<i>Learning</i>	Acquisition of knowledge from network partners	<i>Information sharing</i>	Transfer of knowledge between alliances

Source: own elaboration.

## Network Characteristics

According to Kenny [2009] “network characteristics” consist of three dimensions, namely “tie strength,” “relational capability,” and “trust”.

### ***Tie Strength – The Nature of Relationships***

Tie strength focuses on the nature of relationships between firms within the network and determines their relationship [Granovetter, 1973, cited in Kenny, 2009, p. 144]. Strong and weak ties can be differentiated with respect to the frequency of interaction, the resources applied and the nature of the relationship [Mu et al., 2007, p. 83]. “Contractor and Loranges [1988] categorize equity alliances, joint ventures, and non-equity cooperative (R and D) ventures as strong ties and define marketing agreements, licensing and patent agreements as weak ties” [cited in Kenny, 2009, p. 147].

While a firm is likely to have a mix of strong and weak ties, when a subsidiary is engaged in a network of relationships with multiple local players, it is likely to develop strong relationships with some and weaker relationships with others [Kenny, 2009, p. 144]. Research suggests that the ties in inter-organizational networks are not only of a cooperative nature. According to the “structural hole theory” some individuals who can be characterized as “network brokers” reside within a network of disconnected contacts so as to improve their own position through access to diverse and timely information, as well as control over others [Ma et al., 2009, p. 1089]. Nonetheless, strong and weak ties are essential for a variety of reasons.

It has been suggested that strong ties are less helpful in collecting new information and insights because firms connected through strong ties have similarities in goals and intentions and are likely to possess the same information [Burt, 2000; Granovetter, 1973]. Cantner et al. [2009, p. 2] argue that cooperation within strong ties leads, on the one hand, to a strengthened mutual understanding and, on the other hand, to a decreased exchange of new knowledge. Besides, strong ties often require reciprocal acts between alliances, which in turn can delay project completions [Walter, 2005, p. 41]. In contrast, weak ties are more likely to provide new information [Granovetter, 1973; Rowley et al., 2000, cited in Walter, 2005, p. 41] and to make network partners aware of existing, valuable knowledge [Mu et al., 2007, p. 83].

Other studies indicate that strong ties ease the transfer of complex knowledge and facilitate trust among partners [Mu et al., 2007, p. 83]. It is believed that strong ties reduce uncertainty in interactions since the parties trust each other and reveal information about goals and intentions [Bstieler, Hemmert, 2008, p. 76]. Trust among parties fosters knowledge exchange [Bstieler, Hemmert 2008, p. 77] and the willingness to provide needed resources [Batjargal, 2003; cited in Stam et al., 2014, p. 154]. Our first set of hypotheses assumes that:

*H1a: Strong ties predict firm performance*

*H1b: Weak ties predict firm performance*

*H1c: The relationship between strong ties and firm performance is stronger than the relationship between weak ties and firm performance*

### ***Relational Capability – Interactions for Common Benefit***

The second variable of network characteristics refers to interactions between firms that can affect development of relationships [McGrath, O'Toole, 2013, p. 1143] and be beneficial for the network partners [Dyer, Singh, 1998 cited in Mitrega et al., 2011, p. 7].

Cantner et al. [2009, p. 6] argue that developing and maintaining relationships can be counterproductive because of the required investment in time. Nonetheless, there is evidence that positive relational skills are the basis of long lasting relationships between firms, which in turn increases competitive advantages for the related firms and thus leads to enhanced performance [Teece, 2007]. Rodríguez-Díaz and Espino-Rodríguez [2006] found that interactions with business partners can provide firms with competitive advantages. These results are consistent with those of Smirnova et al. [2011] who suggest that the existence of relational capabilities enhances competitive advantages of firms [cited in Kenny, 2009, p. 151]. Similarly, the findings of Dyer and Singh [1998] indicate that relational capabilities and firm performance are significantly and positively related, i.e. a score increase in relational capability leads to increased firm performance [cited in Zohdi et al., 2013, p. 594].

Additionally, findings show that informal interactions can support information gathering and minimize transaction costs [Gulati et al., 2000, p. 209–210]. The information collected can improve decision-making and decrease risk [Bulkley, Van Alstyne, 2004, p. 152], thus enhancing firm performance. Therefore, the development of both inter-organizational and inter-personal relationships has been taken into account.

China and Germany are characterized by masculinity (66 both) and long-term orientation (87 and 83 respectively). “Masculinity” displays competitiveness on the organizational level and a high value of professional identity. Relational capability could be essential in firm performance and growth in masculine societies. In addition, Germany scores high on individualism (67) and therefore it is plausible that loose and formal interactions are more important [Hofstede, 1980] for firm performance in that country:

*H2a: The relational capability of a firm is positively related to firm performance in China and Germany*

Chinese and Turkish societies are collectivist (individualism scores: 20 and 37 respectively). “Guanxi,” which is important for China, is based on mutual trust [Gong, Suzuki, 2013, p. 376]. Asian networks act in a cooperative manner and favor informal interactions. Triandis [2001] supports this notion and states that in collectivist societies, people are more concerned with the development of informal relationships. Therefore we assume that:

*H2b: The informal relational capability of a firm influences firm performance in China and Turkey positively*

### ***Gains through Trust Relationships***

The third dimension of networks characteristics considers the trust on which contractual arrangements are based [Lewis, Weigert, 1985]. The “image / reputation” of an organization and the “image of a person” have been identified as essential sources of trust, while their importance can vary within formal and informal networks.

The findings of Aulakh et al. [1996] and Wincent [2005] suggest no correlation between trust and performance [cited in Kenny, 2009, p. 247–248]. Nevertheless, various studies have shown that trust can be viewed as a prerequisite for the accumulation of knowledge, since the transfer of knowledge can only take place within a trustful relationship [Grabher, 1993]. Mutual trust is associated with increased sales as it leads to intensive innovation activities and higher labor productivity. Furthermore, firms with trustful relationships are characterized by larger investments. These findings can be attributed to the fact that trust between partners facilitates reduced transaction costs, enhances learning, and facilitates improvement [Berulava, 2013, p. 16]. Therefore, trust between network partners should positively affect performance within collectivist societies. In addition, and since high individualism correlates with innovation capability which is fostered through trust [Ghemawat, Reiche, 2011, p. 9] we assume that:

*H3a: Trust between network partners increases firm performance in China, Turkey and Germany*

Trust within informal networks can ease the collection of information. These informal networks seem to be guided by friendships and good relationships with colleagues, customers etc. [Coulthard, Loos, 2007, p. 7] and could be related to the “collectivist” dimension: *H3b: Trust between partners of an informal network leads to increased firm performance in China and Turkey*

## **Network Operation**

### ***Initiation of Business Relationships***

The initiation of business relationships begins with sensing the chances of forming alliances with others [Kenny, 2009, p. 155] and “ends after the first ‘business agreement’ with a customer or supplier” [Mitrega et al., 2012, p. 741]. At this stage, information on potential partners is collected in order to make a promising selection. The selection of the right partners is of great importance because it is anticipated that partners will contribute to the growth of the firm with their own resources and competencies [Mitrega, Pfajfar, 2015].

The initiation of relationships with other parties is particularly important for new firms [Ozcan, Eisenhardt, 2009; Zheng et al., 2009] and draws on the premise that in order to build relationships between firms, investments have to be made [Ritter, Gemünden, 2003]. Such investments include visits to exhibitions, memberships in industrial associations and the use of information for potential cooperation provided by existing partners [Kenny, 2009, p. 154].

Typically, German firms are concerned with results and processes which are based on logic [King, Zhang, 2014, p. 7], which, combined with the high scores on “masculinity” and “long term orientation” in China and Germany leads to our next hypothesis:

*H4a: Network initiation is a predictor of firm performance in China and Germany*

### ***Coordination for Maximum Gain***

The existence of networks makes strategic and coordinative planning a necessity. Barney and Arika [2005] suggest that firm resources must be coordinated to achieve maximum benefits [cited in Bengensi, La Roux, 2014]. Only through sufficient resource coordination can the full potential be developed efficiently. According to Barney [1991] such coordination has to be unique so that other firms cannot imitate it. Bell, McNaughton and Young [2001] argue that to coordinate such actions a network that integrates partners is inevitable. This integration enables the development of strategies and transfer of knowledge between business partners.

It seems reasonable that a firm involved in coordination activities across a network will more likely have access to resources viewed as valuable. Bonner et al. [2005] suggest that a firm possessing valuable resources becomes desirable for its business partners, which in turn enhances firm performance [cited in Kenny, 2009, p. 157]. Mohr and Spekman [1994, p. 138] state that increased coordination ensures timely completion of processes, smoother production and the achievement of mutual advantages [cited in Kenny, 2009, p. 156].

We anticipate that the “masculinity” of the Chinese and German societies is linked to network coordination, which enhances firm performance. In addition, Turkey and Germany score high on “uncertainty avoidance” (85 and 65 respectively) which shows that management in the corporate culture of these countries is task-oriented, does not take risky decisions, and relies on regulations. Therefore, the coordination of a network in these countries could be associated with firm performance:

*H5a: Network coordination is positively related to firm performance in China, Turkey and Germany*

### ***Learning for Success***

Learning has been conceptualized as the ability of companies to acquire knowledge from their network partners. Although some studies [e.g. Bonner et al., 2005] did not find a correlation between learning and firm performance [cited in Kenny, 2009, p. 252], others [e.g. Ellinger et al., 2002] support the notion of a positive relationship. Sinkula, Baker and Noordewier [1997] suggest a direct and indirect influence of organizational learning on firm performance. The indirect effect is based on the generation and dissemination of market information [Sinkula et al., 1997, p. 307, cited in Kocoglu, 2011, p. 78].

Knowledge facilitated through networks can be important in reducing perceived uncertainties [Huggins, 2010, p. 336] as firms which use the opportunity to effectively learn

from their network partners are able to efficiently select and manage network activities. This efficiency leads to desired performance outcomes [Baxter, Woodside, 2011, p. 252].

In Turkey and Germany, which score high on “uncertainty avoidance”, “learning” presents a secure strategy:

*H6a: Network learning has a positive effect on firm performance in Turkey and Germany*

### **Network Resources**

#### ***Network Human Capital Resources – Investing for Gaining Added Value***

According to Sullivan and Sheffrin [2003] human capital is the entirety of competencies, knowledge and attributes of individuals used, to produce economic value [cited in Marimuthu et al., 2009, p. 266]. Firms invest in human capital because they expect increased financial benefits, which result from increased productivity relative to wages [Texeira, 2002, p. 17]. This implies that employees are educated and trained [Marimuthu et al., 2009, p. 266]. Firms which invest in human capital can be expected to improve their performance.

Countries that display high scores on “power distance” tend to select their employees depending on social class and train them on the basis of conformity and compliance with corporate rules and practices [Ghemawat, Reiche, 2011, p. 9]. By contrast, in countries scoring low on the “power distance” dimension like Germany (35) the corporate environment displays more equality between managers and employees and the education of employees is based on autonomy. These factors could foster the willingness of management to educate and train its employees in order to achieve improved firm performance:

*H7a: A firm's network of human capital resources correlates with increased firm performance in Germany*

#### ***Synergy Sensitive Resources – Benefit of Partner's Resources***

Entrepreneurs form alliances with firms that can complement their own resources. Complementarity is achieved if the resources of business partners are not similar [Kenny, 2009, p. 162]. Being a member of a business network allows a firm to concentrate on competencies for which a specialization is given and to outsource other activities to business partners. A firm with a network orientation can benefit from the complementary resources of its partners and at the same time keep its internal unique resources, which will enable the firm to achieve its internal strategic goals [Overby, Min, 2001 cited in Kenny, 2009, p. 162].

Because of the long-term orientation of China and Germany, these countries may often seek complementary resources as a strategy that will provide future benefits:

*H8a: Synergy sensitive resources within a network predict firm performance in China and Germany*

### ***Information Sharing – Overcoming Boundaries***

While some studies suggest that technological and financial resources are essential for information sharing, others consider the nature of relationships, trust etc. as more important. The transfer of knowledge between alliances is not always unhindered [cited in Li and Lin, 2006]. One reason for this was identified by Abrahamson and Rosenkopf [1993] who claim that firms are often unwilling to share information.

Krause et al. [2007] found no evidence for a relationship between information sharing and firm performance [cited in Li, Sheu, 2015, p. 1454]. Similarly, the study of Rashed et al., [2010, p. 74] found that information has no effect on firm performance. This could be attributed to the fact that some firms cannot transform the exchange of information into a competitive advantage.

By contrast, the results of Sheu and Li [2015] indicate that information sharing has an impact on firm performance in China. Zhou and Benton [2007] also found further empirical support for the positive relationship between information sharing and firm performance [cited in Li, Sheu, 2015, p. 1454].

The findings of Li and Lin [2006] show that trust influences information sharing [cited in Li, Sheu, 2015, p. 1441]. These finding are also confirmed by Li and Sheu [2015]. Since it has been previously hypothesized that trust is an important predictor of firm performance in all three cultures, it is also assumed that information sharing will be equally important. Besides, the collectivism of China and Turkey will enhance cooperation and, in this case, information sharing. On the other hand, according to Thompson, [2012, p. 275] in individualistic countries like Germany direct and explicit information exchange, i.e. information sharing, is considered a reliable communication strategy. Therefore, we assume that: *H9a: Information sharing within a network has a positive effect on firm performance in China, Germany and Turkey*

## **Methods**

### **Sample**

The data collection took place in China, Turkey and Germany. Chinese ( $n = 107$ ), Turkish ( $n = 129$ ) and German ( $n = 109$ ) MBA-students working in the middle management of corporations of their respective countries participated in the survey. The MBA-students were primarily responsible for reaching the goals set by top management. They were involved in the daily business of the companies and possessed the relevant insights needed to provide information on the performance of their organizations.

The participants were working in the following sectors: production, electricity, the construction industry, logistics, telecommunications, the retail trade, commercial services,

financial services, entertainment, social services, pharmaceuticals, the chemical industry, and others. The Chinese respondents were mainly working in financial services (21.36%), “other sectors” (20.39%) and production (16.50%); 25% of the Turkish participants were working in “other sectors”, 14.06% in the production industry, 11.72% in telecommunications and 11.72% in pharmaceuticals. In Germany 36.06% of the participants were working in the entertainment industry and 14.29% in retail trade. The firms displayed a differing degree of internationalization.

We selected the participants through convenience sampling based on availability. The SD for gender was .502 in China, .531 in Turkey and .484 in Germany. The mean age of the Chinese sample was  $M_{age} = 28.29$  ( $SD = 3.95$ ), of the Turkish sample  $M_{age} = 30.94$  ( $SD = 5.61$ ) and of the German sample  $M_{age} = 31.00$  ( $SD = 7.64$ ).

## Measures

Our questionnaire relied on an earlier version developed by Kenny [2009] and included questions about the respective firm, its performance and the network capabilities (see Appendix). Based on the literature, Kenny [2009] selected relevant issues that fit the conceptual model and chose a seven point interval measurement scale to reflect the multidimensionality of the constructs.

We reduced the number of considered dimensions. Items that reflect single measurements without additive indices, and those which concern possible usages of networking cooperation like conferences, online social media etc. have been excluded. However, items that measure the importance of informal and formal aspects of networks have been added.

Indices were formed and variables of formal and informal networks differentiated. Independent variables of formal networks considered were: [1] weak ties, [2] strong ties, [3] relational capability, [4] trust, [5] initiation, [6] coordination, [7] learning, [8] network human capital resources, [9] resources synergy and [10] information sharing. In the case of informal networks the variables were: [11] informal relational capability and [12] informal trust (see Appendix).

The dependent variable was reported business performance. Firm performance has been operationalized as performance in the markets (sales), financial performance (return of investment), and customer satisfaction.

The information on internationalization of firms was based on self-reports. The question was: “How international is your firm?” (International sales in % of the total sales – Please rate: 0%, 1–10%, 11–20%, 21–30%, 31–40%, 41–50%, 51–60%, 61–70%, 70+%).

The questionnaire was translated in Chinese, German and Turkish. The data collection was conducted in group-sessions of 5 to 10 students at different universities of the respective countries. Participants filled out the questionnaires without being disturbed.

## Statistical Analysis

For the data analysis, SPSS, version 19 was used. We conducted a hierarchical multiple regression analysis to find out which network capability factors impacted firm performance. In addition, we carried out a principal component analysis to determine whether the structure of relevant factors can be found in all three cultural settings, to assure there is no bias.

## Results

The data were tested with respect to collinearity and no multicollinearity was evident in the three countries. In addition, the data met the assumption of independent errors in all three cases (*Durbin-Watson value China* = 2.04; *Durbin-Watson value Turkey* = 1.67; *Durbin-Watson value Germany* = 2.27). The histogram indicated that all data contained normally distributed errors. The same was shown by the P-P plot of standardised residuals.

The hierarchical multiple regression for the Chinese data shows that “information sharing” significantly predicts “firm performance” [ $\beta = .48$ ,  $t(70) = 4.55$ ,  $p < .001$ ].

**TABLE 2. Summary of hierarchical regression analysis for variables predicting firm performance in China**

	Variable	B	SE B	$\beta$	t
Step 1	Information	4.17	.92	.48	4.55
Step 2	Information	3.29	.96	.37	3.42
	Trust	3.18	1.33	.26	2.38

Step 1:  $R^2 = .23$ , adjusted  $R^2 = .22$ ; Step 2;  $R^2 = .29$ , adjusted  $R^2 = .26$

Source: own elaboration.

Our results suggest that “information sharing,” together with “trust,” explain a significant amount of the variance in the value of firm performance ( $F(2, 68) = 13.89$ ,  $p < .001$ ,  $R^2 = .29$ ,  $R^2_{\text{Adjusted}} = .27$ ). The addition of the “trust” variable improves the proportion of explained variance ( $R^2 \text{ change} = .06$ ). Thus, the hypotheses H3a and H9a could be confirmed in the case of China.

**TABLE 3. Analysis of Variance for China**

Source	df	F	p
Information	1	20.70	$p < .001$
Information and trust	2	13.89	$p < .001$

Source: own elaboration.

For the Turkish data our analysis shows that only the variable “coordination” significantly predicts “firm performance” ( $\beta = .49$ ,  $t(102) = 5.67$ ,  $p < .001$ ).

**TABLE 4. Summary of hierarchical regression analysis for variables predicting firm performance in Turkey**

	Variable	B	SE B	$\beta$	t
Step 1	Coordination	4.58	.80	.42	5.67

Step 1:  $R^2 = .24$ , adjusted  $R^2 = .23$

Source: own elaboration.

Our findings show that “coordination” explains a significant proportion of the variance in the value of firm performance ( $F(1, 101) = 32.22$ ,  $p < .001$ ,  $R^2 = .24$ ,  $R^2_{\text{Adjusted}} = .23$ ). Thus, the hypothesis H5a could be confirmed in the case of Turkey.

**TABLE 5. Analysis of Variance for Turkey**

Source	df	F	p
Coordination	1	32.22	$p < .001$

Source: own elaboration.

For the German data the results show that “network human capital resources” significantly predicts “firm performance” ( $\beta = .72$ ,  $t(59) = 7.91$ ,  $p < .001$ ).

**TABLE 6. Summary of hierarchical regression analysis for variables predicting firm performance in Germany**

	Variable	B	SE B	$\beta$	t
Step 1	Human Capital Resources	4.36	.55	.72	7.91

Step 1:  $R^2 = .51$ , adjusted  $R^2 = .51$

Source: own elaboration.

The variable “network human capital resources” explains a significant amount of the variance in the value of firm performance ( $F(1, 58) = 62.58$ ,  $p < .001$ ,  $R^2 = .52$ ,  $R^2_{\text{Adjusted}} = .51$ ). Thus, the hypothesis H7a could be confirmed.

The principal component analysis reveals that in China the variables “trust” and “informal trust” match each other well and can form a factor (network characteristics). A second factor can be formed by “coordination” and “learning” (network operation).

**TABLE 7. Analysis of Variance for Germany**

Source	df	F	p
Human Capital Resources	1	62.58	p < .001

Source: own elaboration.

“Weak ties” and “strong ties” (network characteristics) match each other well in Turkey. A second factor consists of “trust” and “trust informal” (network characteristics) and a third one of “coordination”, “learning” and „synergy resources“ (network operation and network resources).

“Weak ties” and “strong ties” (network characteristics) form the first factor, “relational capability” and “informal relational capability” (network characteristics) the second and “trust” and “coordination” (network characteristics and network operation) the third factor in Germany.

Regarding internationalization, 12.1% of the Chinese, 20.9% of the Turkish, and 27.5% of the German participants rated their firm as being international, with 61–70+ % of sales derived from foreign markets.

## Discussion

Four of the total twelve factors were found to be related to firm performance. “Information sharing”, “trust”, “network coordination” and “network human capital resources” were found to be predictors of firm performance, although not in all hypothesized cultural contexts.

The size of relevant firms for this study and their developmental stage could be reasons for the non-significant relationship between *strong and weak ties* and performance. The same could be the case for the variable *relational capability*. It is possible that the examined firms lack relational capability compared to other firms. The same could be true for *initiation*. *Initiation* may be not as relevant for the firms studied here because they could be in a development stage in which new business relationships are not essential. The finding that *learning* does not affect performance could be attributed to the fact that firms use other forms of internal learning not listed in the questionnaire, or that implicit forms of learning are not being noticed by the management boards of partnering firms. With respect to the non-significant role of *synergy resources* it is possible that the complementarity of resources does not generate increased added value.

The Chinese business alliances characterized by collectivism share information, trust each other, and are able to increase firm performance in this way. Currently, China’s corporate culture is changing as managers become more individualistic and independent in their decision-making. Chinese entrepreneurs hold onto their traditional values, while

trying to simultaneously incorporate Western values in their organizational cultures [Allik & Realo, 2004].

What is surprising is that in Turkey, which also scores high on collectivism, the only relevant variable was “coordination”. In Germany, performance is related to the investment of German firms in vocational education and trainings for employees and through “network human capital resources” German firms gain added value.

In each country, another variable impacted firm performance and, in total, only a few variables were significant. Furthermore, the principal component analysis revealed that in China the variables for formal and informal networks could not be clearly separated. This finding is important, as it has been previously suggested by Zhang and Zhang [2006, p. 376] that “guanxi” has effects on both inter-organizational and interpersonal networks and sometimes the lines between the two types of networks become blurred as inter-organizational networks often behave as interpersonal ones [Zhang & Zhang, 2006, p. 385].

In Turkey’s case variables for formal and informal networks and for “network operation” and “network resources” could not be clearly differentiated. Informal networks are of equal importance with formal networks in the corporate world because of the involvement of family members in most businesses. Similarly, the variables for formal and informal networks and the variables for “network characteristics” and “network operations” could not be clearly separated in the German case, perhaps because the majority of survey participants work for firms in the early stage of development. In this stage of entrepreneurship, relationships often consist of social bonds, i.e. informal contacts, and as a firm reaches the next stage of development entrepreneurs have to transform loose informal contacts into business relationships [Mitrega et al., 2011, p. 11].

Regarding the inability to differentiate some variables of network capabilities, the line between the theoretical constructs is blurred since the operationalization of numerous variables of network capabilities overlap. This conceptual problem is common to the majority of studies examining network capabilities. Nevertheless, network capability factors, which predict firm performance in each country, do display a logical consistency. Future cross cultural studies should examine the link between the Hofstede dimensions and network capabilities that have an effect on firm performance.

One limitation of this study is its reliance on self-reported performance, rather than official firm performance data. It is possible that self-reported performance data was biased by overoptimistic factors or the effects of social desirability. Future studies based on official firm performance data should be conducted. In addition, the internationalization of the firms was also based on self-reports. Our findings indicate that the internationalization of German firms is stronger and could be related to “network human capital resources” and thus, to investing in developing employees which, in Germany, is a predictor of firm performance. However, looking at the real business world, whether internationalization does, indeed, impact firm performance should be discussed. For example, the German car manufacturer *Porsche* reported a very high profit for the year 2006/2007 and had extensive

international activities. However, that extraordinary profit was primarily due to financial market transactions connected to the acquisition of Volkswagen shares [Porsche Auto-moblie Holding SE, 2007, p. 18].

Furthermore, this study did not investigate the link between inter-organizational and personal networks, nor competitive relationships within networks.

Despite these limitations, this study has shown that different network capabilities are relevant for firm performance in each of the examined countries by breaking the networking concept into differentiated factors. A different factor structure was found to be relevant in each cultural setting. The results suggest that network capabilities are multifactorial constructs that are being uniquely defined within cultures.

It is essential that managers base their decisions on the understanding of cultural differences that affect organizational culture and firm capabilities. Managers who wish to join corporations in China, Turkey and Germany should consider that firm performance in these countries is related to specific factors. Nevertheless, managers could try to enhance those network capabilities which are missing in the firms of the respective countries and measure their performance.

Furthermore, the finding that in all three countries variables for formal and informal networks could not be clearly separated shows that both inter-organizational and inter-personal networks are associated with the (competitive) capabilities of companies. Thus, it becomes apparent that managers should consider the role of interpersonal networks in all cultural contexts and try to strengthen these relationships and use them in a beneficial way for the companies.

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## Notes

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## Appendix

## Questionnaire

*Please rate your firm's business performance relative to your main competitors:*

*To what extent do you use the following means in order to establish and maintain personal / informal networks?*

## Nature of networks / Ties

*To what extent does your firm use the following forms of inter-firm collaboration?*

## Relational capability

*In our firm's network and in my personal network we have the relational capability to:*

8. Have difficulty communicating our needs to others.	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
9. Confidently handle negotiations with others.	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
10. Put ourselves in another person's position.	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
11. Easily understand other people.	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
12. Have a level of proficiency of the language of the foreign partners.	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

*How important are the following aspects for the creation and maintenance of networks (professional and personal)?*

Trust

*How important are the following aspects for building a trusted network?*

*How would you rate your firm's trust in their network partners?*

*How would you rate your trust you can have in the members of your personal / informal network?*

## Initiation

*Before we begin working with external partners we:*

### Coordination

*To what extent are the following statements true with respect to the relations of your organization with partners?*

Learning

*To what extent are the following statements true with respect to the ability of your organization to learn from its partners?*

## **Network human capital resources**

*To what extent are the following statements true for your organization?*

## Synergy sensitive resources

*To what extent are the following statements true for your organization?*

## Information sharing

To what extent are the following statements true for your organization?