Impacts of Creolization on Trust and Knowledge Sharing in IT-enabled Global Services Sourcing

Research-in-Progress

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Abstract

Creolization seems to play a key role in driving success in global IT sourcing, but the impacts of creolization on trust and knowledge sharing between the supplier and the client have not been study. We attempt to theorize why and how creolization affects performance through trust in IT-enabled global services sourcing. In this paper, we theoretically link creolization to trust, knowledge sharing, and performance. In a cross-sectional, questionnaire-instrumented field study undertaken in China, we gathered data in twenty companies engaged in IT provisioning from 369 knowledge workers. Results of the study show that creolization is positively associated with trust, knowledge sharing, and performance. In addition, trust has a significant, positive influence on both knowledge sharing and performance. However, knowledge sharing has no immediate influence on performance. These findings add more theoretical understanding to existing theories on cross-cultural trust and knowledge sharing, and give practical implications to global IT sourcing industry.

Keywords: Creolization, IT, global services sourcing, trust, knowledge sharing

Introduction

The role of culture in IT-enabled global services sourcing has been heavily studied and progress has been made toward conceptualizing, characterizing and measuring cross-cultural processes and relevant constructs (e.g. Abbott et al. 2013; Leidner 2010; Krishna et al. 2004; Rai et al. 2009; Loch et al. 2003; Straub et al. 2002). Moreover, following the initial conceptualization of “creolization” (Abbott et al. 2010), serious efforts have been made to measure and validate the construct of creolization (Du et al. 2012).

IT-enabled global service provision has been developing rapidly in China, the most populous emerging economy with a huge potential of IT intellectual resources and a driving energy attributable to the steadily growing economy (Qu and Brocklehurst 2003; ChinaSourcing 2013). According to the ‘Development Plan for China’s Global Outsourcing Industry (2011-2015): “...the offshore outsourcing business executive amount undertaken by China’s global outsourcing industry would see...around 40% growth, and large comprehensive service providers with several thousands of employees and above 80 global outsourcing companies listed overseas would be developed” (ChinaSourcing 2013).
However, there are great challenges facing both clients and suppliers in IT-enabled global sourcing. The cultural distance between the client and the service provider represents a challenge that could block mutual trust and undermine the realization of potential benefits (Krishna et al. 2004; Du et al. 2011). To meet such a challenge, more integrative cross-cultural processes, such as mixed identity, network expansion and cultural hybridity, have been stressed (Abbott et al. 2010) in addition to more boundary spanning activities (Gopal and Gosain 2009). Despite several studies of cross-cultural strategies emerging in the practice of the Chinese offshore providers (Abbott et al. 2013; Du et al. 2011), there are still gaps in the study of cross-cultural trust. It remains unclear how trust is built, maintained, and repaired across multiple interacting cultural groups (Child et al., 2008). Because of the role that global and cross-cultural dimensions play in the model of trust (Schoorman et al. 2007), great opportunities lie in the study of cross-cultural trust in IT-enabled global services sourcing.

To fill such research gaps, our research objective is to understand the role of cross-cultural processes in influencing trust and knowledge sharing in IT-enabled global services sourcing. We address this question by linking the functional aspects of creolization with trust, knowledge sharing and performance. We attempt to analyze the impacts of creolization on trust and the ways that creolization affects trust and knowledge sharing and performance. Therefore, on the basis of the previous studies of cross-cultural processes and their measurement (Abbott et al. 2010; Du et al. 2012), this paper measures creolization via its four dimensional elements, i.e., (1) boundary spanning, (2) mixed identity, (3) network expansion and (4) cultural hybridity, and relate them to trust. Consequently, we evaluate how creolization influences trust, knowledge sharing, and performance in IT-enabled global services sourcing.

The perspective of the present study is from the viewpoint of cross-cultural supplier teams. Hypotheses will be tested using a sample of 369 participants, knowledge workers in twenty firms in IT-enabled global services sourcing in China’s three service-providing hubs, Beijing, Shanghai, and Xi’an. In the rest of this paper, we will first address the theoretical background and present the research model and the hypotheses of this study, and then we will introduce the methodology, which includes the description of the field study, construct measurement and validation, and the data analysis techniques. Finally, we will report tentative results.

**Theoretical Background and Hypotheses Development**

**Theoretical Background**

In IT-enabled global services sourcing, when a supplier and a client in different countries collaborate, cultures matter a lot. Knowledge workers operating in this context may have multiple cultural identities (Straub et al. 2002; Srite and Karahanna, 2006). Thus, Social Identity Theory-based cultural measurement (Straub et al. 2002) and technological culturation (Loch et al. 2003) are helpful in characterizing the role of cross-cultural processes in IT/IS outsourcing. Along side these streams of research, we attempt to examine the relationships between creolization and other constructs based on one form of measurement of creolization (Du et al. 2012).

A preview of the research model for this study appears below as Figure 1. We next develop the theory bases that lie at the heart of the model.

**Creolization**

The concept “Creolization” originates from the term “Creole”, which refers to “the intermingling and mixing of different ethnic groups” (Abbott et al. 2013, p. 3). It was used in anthropology to study creole cultures. Creolization was conceptualized to reveal “the complexities of cross-cultural collaborations in offshore outsourcing processes” (Abbott et al., 2010, p. 1), i.e., the complicated processes of cross-cultural management of offshore outsourcing. Du et al. (2012) reconceptualize the construct by developing the definition of the creolization construct suitable for positivist study; they also present the measurement and validation of the construct.

In this paper, we use creolization to describe four cross-cultural processes -- boundary spanning, cultural hybridity, mixed identity, and network expansion (Abbott et al. 2010). To theorize how cross-cultural
processes influence performance in global IT sourcing, we need to posit mediating constructs such as trust and knowledge sharing and explore how four dimensional aspects of creolization link to these mediating constructs. Our argument is that by examining and measuring these four cross-cultural aspects of creolization, we can explore their impacts on trust, knowledge sharing and performance. The four cross-cultural processes involved in creolization are discussed below.

**Boundary Spanning** has been used to describe the bridging role that enables intercultural communication (Levina and Vaast, 2005). The role of a boundary spanner is an “emerging, negotiated position influenced by organizational context and other institutional forces” (Abbott et al., 2010, p. 3). Boundary-spanning activities between the vendor and the client in software outsourcing have been shown to enable knowledge sharing across organizational and knowledge domain boundaries (Gopal and Gosain 2009). In their grounded theory-based analysis, Abbott et al. (2010) extended the concept of boundary spanning to include bridging and bridgehead functions, knowledge mediation, and engendered trust. As a result, boundary spanning can encompass a range of characteristics that have been identified as playing a bridging role, such as onsite visits, training and situational learning in IT-enabled global services sourcing.

**Cultural Hybridity** has been used to describe how hybrid cultures are generated (Abbott et al. 2010). In their investigation with practitioners, Abbott et al. (2013) find that cultural hybridity takes the form of encouraging employees to adopt hybrid organizational cultures, i.e., they incorporate cultural elements from various ethnic backgrounds so as to promote more cohesive working cultures. In IT-enabled global services sourcing, therefore, cultural hybridity can be defined as the hybridization of supplier and client cultures.
Mixed Identity describes the phenomenon of an individual operating in the interface between two groups that possess different cultures and being a state of belonging to both (Abbott et al. 2010). These individuals are able to assume multiple identities so that they can effectively bridge potential cultural gaps that may lead to conflict (Levina and Kane 2009). Mixed identity can be seen as a result of acculturation (Shenkar 2012) and technological culturation (Loch et al. 2003). In IT-enabled global services sourcing, therefore, mixed identity is adopting a composite identity that can appreciate both client and supplier perspectives across cultural states.

Network Expansion describes the creation and connection of disparate networks in global sourcing (Abbott et al. 2010), i.e., the phenomenon that an individual on a supplier team may have a lot of connections not only with the people on the supplier team but also with those on the client team, and an individual on a client team may have connections with both the people on the client team but also those on the supplier team. From the perspective of either client or supplier, both a client’s and supplier’s networks are joined together and expanded. In IT-enabled global services sourcing, therefore, network expansion is the extension of local networks and the building of global networks, which depict the practice of generating networks between onsite and offshore.

Trust

Due to the growing role of global and cross-cultural dimensions in the integrative model of organizational trust (Schoorman et al., 2007), trust between client and supplier, who are generally distributed business partners and possess different cultures, is becoming more important for business success in IT-enabled global services sourcing. This trust reflects one party’s belief that its requirements will be fulfilled through future actions undertaken by the other party (Zaheer and Venkatraman 1995).

In the study on the role of service level agreements in relational management of IT outsourcing, trust has been incorporated as a theoretical construct and found to enable effective management of outsourcing engagements (Goo et al. 2009). Trust has also been linked to the formal control and findings show that clients who have high levels of trust in their vendors tend to use formal control mechanism to a lesser extent (Rustagi et al. 2008). However, the question of how to foster trust between client and supplier has been ignored. It is necessary to build initial institutional trust (Zucker 1986; McKnight et al. 1998), while also enhancing cognitive- and affective-based trust (McAllister 1995). In IT global sourcing, therefore, the factors that impact trust between the client team and the supplier team need to be examined so as to develop effective strategies that can improve the level of trust; this, in turn, indirectly contributes to performance in long term (Du et al. 2011).

In the current study, trust captures the supplier’s beliefs about the client’s benevolence, integrity, and honesty, and the supplier’s trustworthiness in the context of their IT-enabled global sourcing relationship. We look at the two aspects of trust from the perspective of supplier team members. Specifically, we focus on: (1) supplier perception of client trust in the supplier, i.e., supplier’s beliefs about the client’s benevolence, integrity, and honesty in their relationship, and (2) supplier trustworthiness, i.e., supplier ability, benevolence, integrity, and honesty.

The cross-cultural processes of creolization should lead to high level of trust between supplier and client because the four aspects of creolization increase social capital (Du et al. 2012), while social capital has the potential to improve trust. In the present study, therefore, we explain how the functions of creolization contribute to trust and how trust links to performance.

Knowledge Sharing

To achieve better performance in sourcing relationships, client and supplier teams need to share knowledge because IT-enabled service provision is intellectually-intensive work characterized by many knowledge transference processes. Knowledge sharing (KS) in sourcing represents one of the major knowledge processes due to its bilateral knowledge transferring activities between client and providers (Kotlarsky and Oshri 2008). Knowledge sharing is thought to be helpful to improve the effectiveness of group work (Storck 2000). To have a psychological contract toward mutual obligations of knowledge sharing is helpful to achieve better performance and such fulfillment of obligations can lead to greater success (Koh et al. 2004). For success, suppliers should transfer their knowledge and know-how of the
product or service to clients, share best industry practices with them, and deliver to clients complete and comprehensive documentation (e.g., manuals, product and design specifications). Suppliers should also be given similar information, knowledge, know-how, best practices and work skills by the client. In the present study, therefore, we examine knowledge sharing from the perspective of suppliers, but we measure both client’s and supplier’s team members’ bilateral knowledge sharing activities.

Cultural understanding has been shown to influence trust relationship and knowledge sharing (Du et al. 2011). Because the four aspects of creolization are embedded in cross-cultural processes, knowledge of them may help to increase cultural understanding and thus to improve bilateral trust and knowledge sharing. But the way in which creolization improves trust and knowledge sharing has not been examined. In the current study, therefore, we attempt to show how creolization impacts trust and knowledge sharing and how trust and knowledge sharing contribute to performance.

Performance in IT-enabled Global Services Sourcing

A variety of dimensions have been considered when examining performance in outsourcing. Traditionally financial dimensions like sales growth (Gopal et al. 2003), cost (Krishnan et al. 2000), and on time product delivery (Harter et al. 2000) have been used. For long-term performance, however, non-financial dimensions, such as people-related outcomes (Lee and Kim 1999), personal satisfaction (Kotlarsky and Oshri 2008), and product success (Hoegl and Gemuenden 2001) have been employed. For instance, service satisfaction has also been used as a key metric for outsourcing performance (Mani et al. 2010). In the present study, therefore, we capture performance in IT-enabled global services sourcing through two non-financial dimensions: (1) supplier capability growth, i.e., capability/skill growth and satisfaction on supplier side, and (2) customer service satisfaction, i.e. customer service satisfaction perceived by supplier team members.

Creolization, trust, and knowledge sharing may help to improve performance because they contribute to the accumulation of structural capital, cognitive capital and relational capital (Nahapiet and Ghoshal 1998). In the current study, therefore, we link creolization, trust, and knowledge sharing to performance in our theoretical model.

Hypotheses Development

As shown in Figure 1, creolization (CRE) has four formative elements: boundary spanning (BS), cultural hybridity (CH), mixed identity (MI), and network expansion (NE). Trust (TR) has two formative aspects: supplier’s perception of client’s trust (CTR) and supplier’s perception of their trustworthiness as seen by the client (STR). Knowledge sharing (KS) is formatively made up of two dimensions: knowledge transfer from supplier to client (SKS) and from client to supplier (CKS). Performance in IT enabled global services sourcing (PGS) consists of two elements: supplier capability growth (SCG) and customer service satisfaction (CSS). We use arrows to depict the links among the constructs. Tenure with the company, role in the project, and project type are control variables.

According to social capital theory, there are three main forms of social capital, i.e., structural, cognitive and relational capital, contribute to organizational knowledge (Nahapiet and Ghoshal 1998). We argue that creolization leads to an increase in social capital in IT-enabled global service sourcing, which, in turn, enhances trust and knowledge sharing. Consequently, enhanced trust and knowledge sharing can be translated into improved performance.

Rooted in social capital theory and based on the just articulated theoretical argument, we posit several hypotheses supported by empirical findings when theorizing how creolization affects trust, knowledge sharing and performance in IT-enabled global services sourcing.

Koh et al. (2004) have shown that knowledge sharing affects IT outsourcing success, which means good performance as measured by non-financial indicators. Hence, knowledge sharing can impact performance in IT-enabled global services sourcing. Therefore, we propose

\[ H1: \text{Knowledge sharing positively influences performance in IT-enabled global services sourcing.} \]
Goo et al. (2009) have found that trust enables effective management of outsourcing engagements, Du et al. (2011) have similarly shown that trust relationship indirectly contributes to performance in long term. Hence, we propose

\[ H2: \text{Trust positively influences performance in IT-enabled global services sourcing.} \]

Abbott et al. (2013) used qualitative empirical data to demonstrate the complexity of creolization practices in offshore collaborations. They found that creolization contributes to performance. Thus, we propose:

\[ H3: \text{Creolization positively influences performance in IT-enabled global services sourcing.} \]

The four aspects of creolization (Abbott et al. 2013) can be related to the three dimensions of social capital (Nahapiet and Ghoshal 1998) and these sub-dimensions contribute to both trust and knowledge sharing. Thus, creolization likely affects both trust and knowledge sharing. Therefore, we propose:

\[ H4: \text{Creolization positively influences knowledge sharing in IT-enabled global services sourcing.} \]
\[ H5: \text{Creolization positively influences trust in IT-enabled global services sourcing.} \]

Trust sourcing relationships appear to be able to improve knowledge processes between suppliers and clients (Du et al. 2011). Hence, we propose

\[ H6: \text{Trust positively influences knowledge sharing in IT-enabled global services sourcing.} \]

**Methodology**

**Field Study and Data Collection**

In our cross-sectional, questionnaire–instrumented field study we visited thirty-five companies based in Beijing Zhongguancun Software Park, Shanghai Pudong Software Park, and Xian Software Park. The three software parks are China’s major outsourcing hubs located in the different regions of the country. The companies we visited provide offshore IT services to clients in various countries, including the United States, Japan, Germany and the United Kingdom. Therefore, the companies in the three parks can represent the Chinese suppliers in IT-enabled global services sourcing. The unit of analysis is the individual participating in the IT-enabled global services sourcing projects, but the subjects are being asked to evaluate some items at the organizational level so that culture can be investigated regarding a group of people.

Data were collected in three phases. The phases and the purposes of the data collected in each phase are shown in Table 1. After the analysis of the data collected in Phase 1, according to the feedback, we modified the survey questionnaire and reformulated our research instrument. We used this revised instrument in Phase 2 and 3. We realized that common method bias is a serious issue in self-reported surveys. We used the technique of self-administration of the questionnaire and the use of proxy subjects to alleviate common method bias.

The research instrument was administered in twenty companies. We collected 369 questionnaires in total; these were answered by the knowledge workers involved in offshore service projects in twenty companies. Among the 369 collected questionnaires, 317 questionnaires were determined to be valid.

**Construct Measurement**

Basically, we adopted the approach proposed by MacKenzie et al. (2011) to instrument development. Furthermore, we used the guidelines given by Petter et al. (2007) and by Cenfetelli and Basselier (2009) to validate the formatively-measured constructs in our instrument. Table 2 shows construct definitions, types, item contents and the sources of measurement in this research.
Table 1. Phases and Purposes of Data Collected

<table>
<thead>
<tr>
<th>Phase</th>
<th>Purpose</th>
<th>Data Collected</th>
</tr>
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| 1     | Generate items and assess content validity   | (1) 9 transcribed recordings from in-depth, semi-structured interviews with experts and practitioners.  
       |                                              | (2) 160 answered questionnaires of 200 distributed in a pilot survey, with response rate of 80.0%. |
| 2     | Instrument validation and data analysis      | 293 answered questionnaires of 350 distributed in a new survey that used our research instrument, with response rate of 83.7%. |
| 3     | Instrument validation and data analysis      | 76 answered questionnaires of 100 distributed in a further survey that used the same research instrument, with response rate of 76.0%. |

**Instrument Validation**

Because of the formatively-measured constructs in the present research, we followed the overall validation guidelines proposed by Straub et al. (2004), and adopted the general recommendations proposed by MacKenzie et al. (2011). Specifically, we used the guidelines by Petter et al. (2007) to initially evaluate content validity, reliability, and construct validity and the guidelines of Cenfetelli and Basselier (2009) to further interpret the formative measures.

First, we established content validity through literature review, in-depth interviews with experts and practitioners, and a preliminary questionnaire survey in the context of IT-enabled services global sourcing. We assessed construct validity through PLS to examine the item weightings for measures. Next we evaluated the conditions for reliability by examining multicollinearity. Following this, we used the guidelines of Cenfetelli and Bassellier (2009). After this procedure of instrument validation, we reached the conclusion that our revised instrument had acceptable psychometric properties.

**Data Analysis and Results**

Tentative analysis of the structural model indicates that most of our hypotheses were supported. As we analyze the data further, we plan to submit the full paper later to the journal review process.

**Conclusion**

In the present study we studied the impacts of cross-cultural processes on trust, knowledge sharing and performance and how they function in the context of IT-enabled global services sourcing. Based on the previous studies, we have developed and validated an instrument for this study. We have made a quantitative analysis of the survey data collected among 369 knowledge workers participating in IT-enabled global services sourcing projects in 20 companies providing IT services in China’s, i.e. Beijing Zhongguancui Software Park, Shanghai Pudong Software Park, and Xian Software Park. We have clarified the mechanism by which creolization impacts trust, knowledge sharing and performance in IT-enabled global services sourcing.

The final findings in this study should determine whether (1) creolization influences trust, knowledge sharing and performance positively; (2) trust influences knowledge sharing and performance positively; and (3) knowledge sharing has an indirect influence on performance. These findings have managerial implications for the practitioners in IT-enabled global services sourcing industry.

The theoretical contribution of this research is a deeper understanding of cross-cultural trust and knowledge sharing by identifying the functions of creolization and the way it works in the context of IT-enabled global services sourcing.
Table 2. Construct Definitions and Measurement

<table>
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<tr>
<th>Construct</th>
<th>Definition</th>
<th>Type</th>
<th>Item Content</th>
<th>Source/Reference</th>
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<tbody>
<tr>
<td>Creolization (CRE): the complex</td>
<td>the complex inter-relationship of practices, perspectives and connections</td>
<td>Formative</td>
<td>Visit to client side (BS1); after-</td>
<td>Abbott et al</td>
</tr>
<tr>
<td>inter-relationship of</td>
<td>from the perspective of the supplier in IT-enabled global services</td>
<td>2nd order</td>
<td>visit behavior (BS2); formal role (BS3) and informal role (BS4)</td>
<td>(2010)</td>
</tr>
<tr>
<td>practices, perspectives and</td>
<td>services sourcing</td>
<td>1st order</td>
<td></td>
<td></td>
</tr>
<tr>
<td>connections from the perspective of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the supplier</td>
<td></td>
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| Boundary Spanning (BS)             | Aspect that reveals the bridging and bridgehead functions, knowledge     | Formative    | Little difference (MI1); similar values (MI2); interactions on an            | Abbott et al     |
|                                   | mediation and engendering trust in cross-cultural processes               | 1st order    | equal basis (MI3); values of home country (MI4)                               | (2010)           |

| Cultural Hybridity (CH)            | Aspect that reveals the hybridization of supplier’s and client’s culture  | Formative    | Knowledge (SKS1); industry practices (SKS2); know-how (SKS3); documentation | Supplier         |
|                                   | in supplier’s organization in cross-cultural processes                    | 1st order    | (SKS4); Supplier obligation (Koh et al 2004)                                | obligation (Koh  |
|                                   |                                                                           |              |                                                                              | et al. 2004)     |

| Mixed Identity (MI)               | Aspect that reveals adopting a composite identity to understand perspectives| Formative    | Project information (CKS1); knowledge (CKS2); know-how (CKS3)               | Client/customer  |
|                                   | from different cultural positions in cross-cultural processes             | 1st order    |                                                                              | obligation (Koh |
|                                   |                                                                           |              |                                                                              | et al. 2004)     |

| Network Expansion (NE)            | Aspect that reveals the network extension and local-global linkages       | Formative    | Multi-cultural backgrounds (NE1); liaison role (NE2); connections on two     | Abbott et al     |
|                                   | building in cross-cultural processes                                      | 1st order    | sides (NE3)                                                                  | (2010)           |

| Knowledge sharing (KS): bilateral | bilateral knowledge transferring activities between client team members    | Formative    | Knowledge (SKS1); industry practices (SKS2); know-how (SKS3); documentation | Koh et al. (2004) |
|                                   | and supplier team members from the perspective of supplier                | 2nd order    | (SKS4); Supplier obligation (Koh et al 2004)                                |                  |

| KS from supplier to client         | Transferring of documentation, knowledge, best industry practices and     | Formative    | Knowledge (SKS1); industry practices (SKS2); know-how (SKS3); documentation | Supplier         |
|                                   | know-how of the product or service from supplier to client                | 1st order    | (SKS4); Supplier obligation (Koh et al 2004)                                | obligation (Koh  |
|                                   |                                                                           |              |                                                                              | et al. 2004)     |

| KS from client to supplier (CKS)  | Transferring of necessary information, knowledge, best practices, know-     | Formative    | Project information (CKS1); knowledge (CKS2); know-how (CKS3)               | Client/customer  |
|                                   | how and work skills from client to supplier                               | 1st order    |                                                                              | obligation (Koh  |
|                                   |                                                                           |              |                                                                              | et al. 2004)     |

| Trust (TR): the supplier’s beliefs | the supplier’s benevolence, integrity, and honesty, and the supplier’s    | Formative    | Benevolence (CTR1); sincerity (CTR2); truthfulness (CTR3)                    | Trust (Goo et al |
|                                   | about the client’s benevolence, integrity, and honesty, and the supplier’s| 2nd order    |                                                                              | 2009)            |
|                                   | trustworthiness in the context of their IT-enabled global sourcing        |              |                                                                              |                  |

| Supplier’s Perception of Client’s | Supplier team members’ perception of client team’s trust in supplier,    | Formative    | Kindness (STR1); integrity (STR2); truthfulness (STR3); benevolence (STR4); | Rustagi et al     |
|                                   | i.e. supplier team members’ beliefs about the client’s benevolence,       | 1st order    | capability (STR5)                                                            | (2008) ; Goo et  |
|                                   | integrity, and honesty.                                                 |              |                                                                              | al. (2009)       |

| Supplier’s Trustworthiness to     | Supplier team members’ trustworthiness, i.e. supplier team members’      | Formative    | Quality (CSS1); responsiveness (CSS2); overall benefits (CSS3)              | Vita et al. (2010) |
| Customer (STR)                    | ability, benevolence, integrity, and honesty.                            | 1st order    |                                                                              | and Lee and Kim  |
|                                   |                                                                           |              |                                                                              | (1999)           |

| Performance in Global Sourcing     | the non-financial outcomes achieved in global sourcing that are assessed   | Formative    | Quality (CSS1); responsiveness (CSS2); overall benefits (CSS3)              | Vita et al. (2010) |
|                                   | by supplier in two aspects                                               | 2nd order    |                                                                              | and Lee and Kim  |
|                                   |                                                                           |              |                                                                              | (1999)           |

| Customer service satisfaction     | Customer service satisfaction perceived by supplier team members          | Formative    | Quality (CSS1); responsiveness (CSS2); overall benefits (CSS3)              | Vita et al. (2010) |
|                                   |                                                                           | 1st order    |                                                                              |                  |

| Supplier capability growing (SCG) | Capability/skill growth and satisfaction on supplier side perceived by    | Formative    | Becoming skilled (SCG1); satisfied (SCG2); enhanced IT                       | Lee and Kim (1999) |
|                                   | supplier team members                                                    | 1st order    | competence (SCG3); access to personnel (SCG4); reduced risk (SCG5); access |                  |
|                                   |                                                                           |              | to IT (SCG6); overall benefits (SCG7)                                       |                  |

Note: *Following the advice of Cenfetelli and Bassellier (2009), MI1, SCG4 and SCG6 were dropped during instrument purification.

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References


