

The Impact of Organizational Capabilities on The Internationalization Success: An Empirical Study on IT Offshoring

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Abstract. This study is intended to comprehend the role of organizational capabilities namely internal-related, contextual-related, and relationship capabilities in attaining the offshore IT outsourcing success. The model that described the relationship between capabilities and outsourcing success was developed and tested empirically. A field survey was conducted by distributing questionnaires to Indonesian IT providers that yielded 62 valid responses. The data were used to examine the measurement and structural model by using PLS-SEM technique. Internal-related capabilities that encompass industry mastery and staffing, as well as relationship capabilities that consist of information exchange, coordination, and participation have a direct positive impact on outsourcing success. Meanwhile contextual capabilities i.e., managing the cultural and temporal difference influence outsourcing success through relationship capabilities. The study gives theoretical contribution on the internationalization theory, that is, the role of capabilities in managing the tangible and intangible resources in achieving offshore IT outsourcing success.

Keywords: Internationalization, IT, organizational capabilities, resource-based view.

1 Introduction

Internationalization is the process of increasing involvement of businesses in international level. Enterprises have alternatives of internationalization that encompass exporting, foreign direct investment, licensing, franchising, and joint venture. Among those internationalization alternatives, exporting is the most preferred alternative to enter foreign market due to its low risks and requirements of expenses and knowledge of foreign market [1]. The relatively simplicity of exporting enables small and medium enterprises (SMEs) involve in international level through marketing their products or services to foreign market. In Indonesia, SMEs have little involvement in exporting which their contribution to the national export is around 14% of total export [2]. One of SMEs which have opportunities to export their services is information technology (IT) providers or software houses. These opportunities are increasing since many companies in developing countries outsource their functions of IT such as application development, web design, ecommerce development to IT providers in developed countries which we call this practice as offshore IT outsourcing or IT offshoring. Although the IT offshoring market size is enormous and keep growing, the volume of Indonesian IT providers export is relatively low compared to other countries particularly India and China as the main IT offshoring destinations [3]. International IT clients perceive that Indonesian IT providers have

a lack of capabilities. Hence, they place Indonesian IT providers at the secondary class of IT providers.

Capabilities is a key factor to compete with the competitors. According to resource-based view (RBV) theory, a firm with rare, unique, valuable, and inimitable resources possesses the competitive advantage for facing the competition [4]. An organization can develop two kinds of resources i.e., technology-based resources or assets and system-based resources or capabilities. Assets embrace tangible or intangible things such as hardware or software that are relatively easy to emulate. Therefore, the firm should not rely on assets as sustainable competitive advantages. In contrast to assets, capabilities provide a long-term advantage for organization because these resources are not easy to be imitated by competitors. Due the vital role of capabilities in achieving the superior performance of organization, it is important for the enterprise to develop its capabilities.

The importance of capabilities contribution in achieving the success of IT offshoring has been highlighted in previous studies [5-8]. Although several studies have investigated the contribution of capabilities in achieving IT outsourcing success, there is a few studies which include more comprehensive capabilities in their studies. The study of Wibisono et al. [9] embraced three groups of capabilities i.e., interaction capabilities that consisted of communication and coordination, management capabilities that comprised of management support and talent management, and capabilities in managing the difference that included cultural understanding and managing the temporal distance. The similar study highlighted three broad capabilities namely management capabilities, relational capabilities, and technical capabilities [10]. The study of Wibisono et al. [9] identified the capability of organizational internal from the perspective of capability in organizational management and has not considered needed resources for IT outsourcing. Koo et al. [10] developed the model that considered the capabilities as one-dimension constructs from the bilateral perspective. Both previous models had different theory in which the model of Wibisono et al. [9] assumed that management capabilities and capabilities in managing the difference did not have a direct effect on IT outsourcing success, meanwhile the model of Koo et al. [10] assumed that organizational capabilities were independent. This study intends to develop previous models for IT offshoring success by considering internal-related capabilities from the perspective of resources provision and assuming that organizational capabilities that are considered important for the success of IT offshoring are not independent and have a direct impact on the outsourcing success.

The paper is organized as follows. Literature review covers descriptions of capabilities, outsourcing success, and their relationships. Next section describes the methodology and data analysis. The section of results and discussions explains and interprets the findings. The last section provides the implications and future research suggestions.

2 Literature Review

Outsourcing provides benefits for both vendor and client. The success of outsourcing can be said as the level of benefit achievement from the outsourcing [11]. There is no consensus on the criteria of outsourcing success. This study adopted the criteria of effectiveness for measuring the success of IT outsourcing. Effectiveness represents the conformity of delivered IT product with the client's specifications. To build the client's trust, IT provider must have abilities to deliver the project on-time and meet the specifications [12], fulfill the obligation and service level agreement [13]. IT providers also must make their clients satisfied with the project to build client's trust and commitment [14].

IT vendors need to develop their organizational capabilities for the success in carrying out offshore IT outsourcing from their clients. Those capabilities encompass internal-related, contextual-related, and relationship capabilities. The internal-related capabilities concern with managing needed resources for outsourcing success i.e., knowledge of client's domain business or industry mastery, and people [7, 15]. The contextual-related capabilities pertain to managing the cultural and temporal difference between vendor and client [16]. The relationship capabilities is that of cooperating with the client which includes information exchange, coordination, and participation [17].

Relationship between an IT provider and its client has the important role in achieving the IT project success. The success of IT outsourcing depends on the interaction of vendor and client such as information exchange, collaboration, as well as coordination [18]. The study of Grover et al. [11] displayed that there was a strong positive influence of interaction on the outsourcing success. Based on the study of Goles [19], capabilities in interaction increased the quality of information system design. The study of Han et al. [20] concluded that relationship management determined the IT outsourcing success. The study of Leischnig et al. [21] showed that there was a positive impact of inter-organizational relationship on the success of IT outsourcing. According to these explanations, **we hypothesize that relationship capabilities influence positively outsourcing success (H1).**

In the inter-organizational relationship like in the context of IT outsourcing, both vendor and client provide the needed tangible and intangible resources for the project [22]. These resources will have no impact on the success of a project if they are not used effectively [23]. The use of resources occurs when the IT project is developed, and at that stage both parties will communicate and coordinate each other. Capabilities in inter-organizational relationship have a critical role in transforming the resources such as domain business knowledge and skillful personnel into the IT outsourcing success [24]. Therefore, internal-related capabilities must be developed to ensure that the IT vendor can provide needed resources i.e., domain business knowledge and competent staff. Based on this, **we hypothesize that the internal-related capabilities have a positive impact on the relationship capabilities (H2) and outsourcing success (H3).**

There are challenges in an offshore outsourcing namely cultural and temporal differences between a vendor and a client which will bring into inter-organizational relationship problems such as miscommunication or difficulty in direct interaction. Cultural and temporal distance lead to communication, coordination, as well as control problems [25, 26]. According to Gunasekaran et al. [18] a contextual factor such as the heterogeneity of stakeholder has an impact of the inter-organizational relationship. Hence, the capability in managing cultural and temporal differences is essential to lessen the negative effect of those on the inter-organizational relationship. **We hypothesize that contextual-related capabilities have a positive impact on the relationship capabilities (H4) and outsourcing success (H5).**

Fig. 1 displays the framework which describes the relationship among the capabilities and their impact on outsourcing success.

3. Methodology and Data Analysis

We developed the questionnaires based on the operational definition of each capability. Outsourcing success was measured by three indicators that described the effectiveness of IT project execution [27]. The relationship capabilities involve three dimensions i.e., information exchange with 8 measurement indicators [28], coordination with 3 measurement indicators [21], and participation with 6 measurement indicators [29]. The internal-related capabilities which

consist of industry mastery dimension with 3 measurement indicators [15] and staffing dimension with 4 measurement indicators [30]. The contextual-related capabilities include dimensions of managing the cultural difference with 6 measurement indicators [31] and the temporal difference with 3 measurement indicators [32].

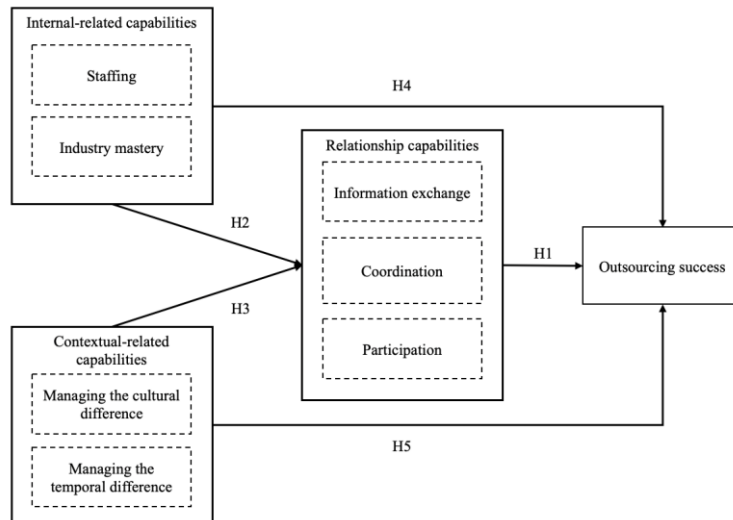


Fig. 1. Proposed model of offshore IT outsourcing success.

Data collection was conducted through online survey by dispersing the questionnaires to Indonesian IT companies. From the survey, we obtained data from 21 Indonesian IT companies which had experiences in dealing with the offshore IT projects. Because the analysis unit of study was a project and each company might have more than one project from foreign clients, then each company could provide more than one response. We received as many as 62 valid responses that were used to evaluate the proposed model. Table 1 displays the profiles of the offshore IT outsourcing projects that were managed by respondents.

Table 1. Offshore IT project profiles.

Profile		Percentage
Project duration	< 6 months	51,61
	6 months - 1 year	22,58
	> 1 year	25,81
Project team size	3 - 5 people	64,52
	> 5 people	35,48
Project value	< Rp. 500 m.	53,22
	Rp. 500 m. - Rp. 1 bn.	22,59
	> Rp. 1 bn.	24,19
Project owner's business	Information technology	67,74
	Non-information technology	32,26

Profile		Percentage
Project owner's country of origin	Asia	43,55
	Australia	20,97
	America	16,13
	Europe	19,35

Considering the availability of small number of data and the introduction of new variables in the model, we applied Partial Least Squares – Structural Equation Modeling (PLS-SEM) for examining the model. According to Hair et al. [33] PLS-SEM is suitable for evaluating a model when there is a small number of data available, and non-normal distribution data. The rule of thumb in determining the sample number says that the minimum sample size should be 10 times the maximum number of arrowheads pointing at a latent variable in the model [33]. Our model has the maximum number of arrowheads pointing at a variable as many as 3 arrowheads that means we need at least 30 samples for examining the model. Because we have 62 valid samples that satisfied the required minimum number of samples, therefore we can proceed to the model examination stage.

Our model has the second order constructs i.e., relationship capabilities, internal-related capabilities, and contextual-related capabilities which each construct consists of first order constructs or dimensions. The first order constructs of relationship capabilities encompass information exchange, coordination, and participation. The internal-related capabilities involve two first order constructs namely staffing and industry mastery. The contextual-related capabilities consist of managing the cultural difference and managing the temporal difference dimensions. Each first order construct was measured by indicators that relevant with its operational definition. Because the model is a reflective-reflective type model, therefore the second order constructs were measured through repeated indicators approach in which all the indicators of their lower order constructs were assigned to the higher order constructs [33]. Hence, relationship capabilities, internal-related capabilities, and contextual-related capabilities were measured by 17 indicators, 7 indicators, and 9 indicators respectively. Fig. 2 displays the structure of first and second order constructs of the model in the Smart PLS-SEM software.

Using the PLS-SEM, we evaluated the model through two main stages i.e., the measurement model examination, and followed by the structural model examination. In the first examination we found that the second order construct of relationship capabilities had average variance extracted (AVE) value under 0.5 which means that the measurement model has not met the convergent validity. Due to the problem of the validity, we revised the measurement model by eliminating the item that the factor loading value was under 0.708 gradually. In the first revision, we eliminated the lowest factor loading valued item i.e., the Par2 indicator. The following examination of the revised model displays that all constructs have composite reliability above 0.6 and AVE above 0.5 as the threshold of internal consistency reliability and convergent validity [33]. Table 2 shows the reliability and validity value of each variable.

After we had the valid and reliable measurement model, we proceeded to the second stage i.e., the structural model examination. Based on the results of examination, we found that almost the structural model relationships are significant with p value < 0.01 , except the relationship of contextual-related capabilities and outsourcing success (H2), and the internal-related capabilities and relationship capabilities (H5). Meanwhile H1, H3, and H4 are supported by data. Table 3 shows the results of structural model examination. The coefficients of determination (R^2 value) of outsourcing success and the relationship are 0.623 and 0.690 respectively. Therefore, we

conclude that the ability of model to predict the endogenous are moderate because the R^2 values were above 0.50 [33].

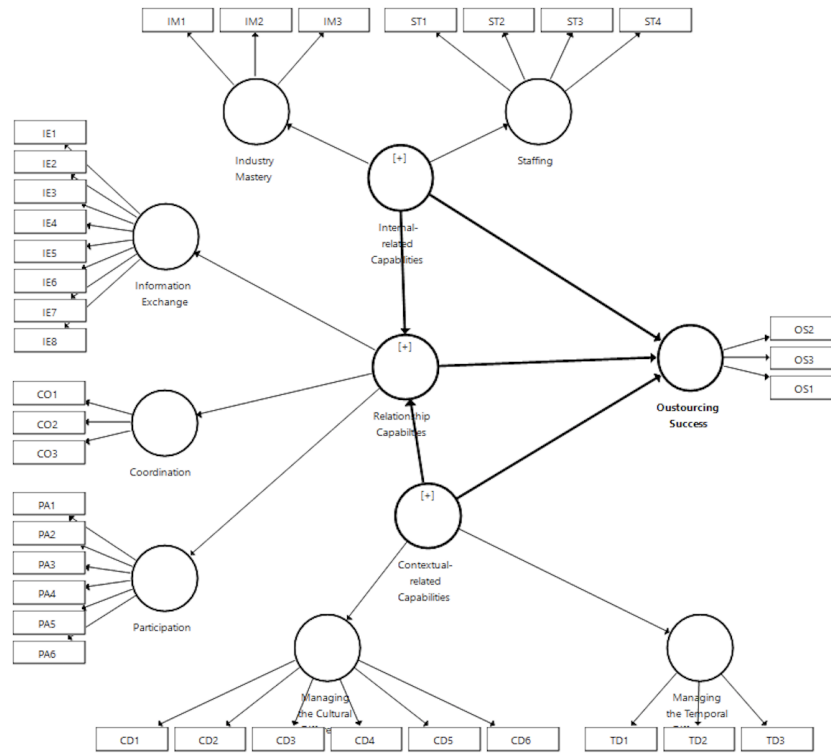


Fig. 2. Structure of the first and second order constructs.

Table 2. Reliability and validity of variables.

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Contextual-related capability	0.91	0.93	0.60
Coordination	0.92	0.95	0.87
Industry Mastery	0.93	0.95	0.87
Information Exchange	0.93	0.94	0.68
Relationship capability	0.93	0.94	0.51
Internal-related capability	0.89	0.91	0.61
Managing the Cultural Difference	0.91	0.93	0.70
Managing the Temporal Difference	0.81	0.89	0.72
Outsourcing Success	0.80	0.88	0.71
Participation	0.85	0.90	0.64
Staffing	0.87	0.91	0.73

Table 3. Hypothesis testing.

Relationships	Path Coefficient	P Values
H1: Relationship capabilities -> Outsourcing Success	0.517	0.000
H2: Internal-related capabilities -> Relationship capabilities	0.192	0.110
H3: Contextual-related capabilities -> Relationship capabilities	0.672	0.000
H4: Internal-related capabilities -> Outsourcing Success	0.515	0.001
H5: Contextual-related capabilities -> Outsourcing Success	-0.201	0.254
Contextual-related capabilities -> Managing the Cultural Difference	0.970	0.000
Contextual-related capabilities -> Managing the Temporal Difference	0.833	0.000
Relationship capabilities -> Coordination	0.876	0.000
Relationship capabilities -> Information Exchange	0.939	0.000
Relationship capabilities -> Participation	0.637	0.000
Internal-related capabilities -> Industry Mastery	0.848	0.000
Internal-related capabilities -> Staffing	0.902	0.000

4. Research Result and Discussion

The purpose of study is to examine the relationship among organizational capabilities as the second order construct, and their impact on offshore IT outsourcing. Our study displays that all first order constructs are significantly part of their second order construct. Contextual-related capabilities have strong relationships with its first order constructs i.e., managing the cultural difference (0.970) and managing the temporal difference (0.833). Relationship capabilities have strong relationships with coordination (0.876) and information exchange (0.939) and a moderate relationship with participation (0.637). Internal-related capabilities have strong relationships with staffing (0.902) and industry mastery (0.848). These findings are consistent with previous studies that internal, contextual, and relationship related capabilities have multi dimensions [9, 16, 17]. The study of Wibisono et al. [9] which focused on the management-capability found that it had two dimensions i.e., talent management and top management support, meanwhile our study which focuses on the resources provision displays that industry mastery or business domain knowledge and personnel are important dimensions of internal-related capabilities. Our study also confirms the findings of Wibisono et al. [17] that information exchange, coordination, and participation are essential dimensions of relationship capabilities.

In this study we examine the impact of internal-related, contextual-related, and relationship capabilities on outsourcing success. The findings indicate that internal-related and relationship capabilities have direct impact on the outsourcing success. These results align with the study of Koo et al. [10] that internal-related capabilities influenced IT outsourcing success, and the study of Wibisono et al. [17] that displayed significant direct effect of interaction capability on IT outsourcing success. The IT provider should have internal-related capabilities by providing competent staffs for the project and mastering client's domain industry knowledge because these capabilities can aid the provider in developing and delivering the IT products such as an application or web design which meet or exceed client's expectations. Capabilities of relationship

that demonstrated by exchanging information accurately and timely, managing the interdependency of tasks with the client effectively, and involving in problem solving and decision making actively can contribute to the good IT project delivery.

From the study, we also find that contextual-related capabilities have no direct impact on the outsourcing success, but these capabilities have significant impact on relationship capabilities. The insignificant direct effect of these capabilities on the outsourcing success is due to the use of outsourcing success indicators that stressed on the technical aspect i.e., meeting the specified requirements. This finding is consistent the study of Wibisono et al. [16] that capabilities in managing the difference between a provider and a client had impact on the interaction of both parties. The interaction between company and its client could be smooth if the cultural and temporal difference are managed well. Therefore, IT provider should understand client's culture such as behavior, language, ethic; as well as overcome the difference of time zone by managing the work time of personnel.

Our study obtains unexpected results of insignificant relationship between internal-related capabilities and relationship capabilities. Most Indonesian IT providers served the foreign client that came from another IT company. Commonly they provided clear and technical descriptions of their requirements so that the need an intense interaction between a provider and a client became decreasing.

5. Implication and Suggestion for Future Research

Our study provides IT providers a comprehension of organizational capabilities role in achieving offshore IT outsourcing success. According to our findings, capabilities of IT provider have influence on the success of outsourcing. The IT provider which has good capabilities in inter-organizational relationship, managing needed resources for IT project, and managing the difference tends to have a high possibility to reach the offshore IT outsourcing success. Therefore, this study suggests the IT provider to develop those capabilities that include client's business domain knowledge, skillful personnel, managing the cultural and temporal difference. When a project is carried out, the IT provider should build good communication and coordination with a client, as well as participate in finding a client's problems.

The study also contributes to the development of internationalization theory particularly on offshore IT outsourcing. Firstly, key capabilities for the success of IT outsourcing are not limited to capabilities in interaction, managing the difference, management, but also capabilities in managing the tangible and intangible resources such as industry mastery and people which have an important role for the success. Secondly, when the client comes from another IT company, capabilities in providing needed resources i.e., industry mastery and skillful personnel have direct impact on the outsourcing success and have no effect on the interaction due to clear and complete requirements of a project.

In this study we examine the relationships between the higher order constructs and outsourcing success that leave unidentified the contribution of first order constructs to the success of outsourcing. The further study can uncover the second order constructs and examine how the first order constructs affect the outsourcing success. We had a few numbers of samples which threatened the precision of the model parameter estimation.

6. Reference

- [1] Golovko E, Valentini G. Exploring the complementarity between innovation and export for SMEs' growth. *Journal of International Business Studies*. 2011;42:362-80.
- [2] KemenKopUKM. *Perkembangan Data Usaha Mikro, Kecil, Menengah (UMKM) Dan Usaha Besar (UB)*. 2018.
- [3] Stettler E, Mirza F, Ali I, Mohal M. *The Rising Stars of IT Outsourcing*. Chicago: ATKearney; 2014.
- [4] Wade M, Hulland J. Review: The resource-based view and information systems research: Review, extension, and suggestions for future research. *MIS Quarterly*. 2004;28(1):107-42.
- [5] Ethiraj SK, Kale P, Krishnan MS, Singh JV. Where do capabilities come from and how do they matter? A study in the software services industry. *Strategic Management Journal*. 2005;26:9-21.
- [6] Guopeng Y, Bo Y, editors. *Key capabilities for Chinese software services vendors in IT offshore outsourcing*. 4th International Conference on Wireless Communications, Networking and Mobile Computing, 2008; 2008; Dalian, China: IEEE.
- [7] Jarvenpaa SL, Mao J. Operational capabilities development in mediated offshore software services models. *Journal of Information Technology*. 2008;23:3-17.
- [8] Swinarski M, Kishore R, Rao HR, editors. *Impact of IT service provider process capabilities on service provider performance: An empirical study*. the 39th Hawaii International Conference on System Sciences; 2006; Hawaii 2006.
- [9] Wibisono YW, Govindaraju R, Irianto D, Sudirman I. Capabilities in managing offshore IT outsourcing challenges and the influence on outsourcing success from the IT vendor perspective. *International Journal of Technology*. 2019;10(4):841-53.
- [10] Koo Y, Park Y, Ham J, Lee J. Congruent patterns of outsourcing capabilities: A bilateral perspective. *Journal of Strategic Information Systems*. 2019;28:1-16.
- [11] Grover V, Cheon MJ, Teng JTC. The effect of service quality and partnership on the outsourcing of information systems functions. *Journal of Management Information Systems*. 1996;12(4):89-116.
- [12] Rajkumar TM, Mani RVS. Offshore software development: The view from Indian suppliers. *Information Systems Management*. 2001;18(2):63-73.
- [13] Gottschalk P, Solli-Saether H. Maturity model for IT outsourcing relationships. *Industrial Management & Data Systems*. 2006;106(2):200-12.
- [14] Powers TL, Reagan WR. Factors influencing successful buyer-seller relationships. *Journal of Business Research*. 2007;60:1234-42.
- [15] Tiwana A. An empirical study of the effect of knowledge integration on software development performance. *Information and Software Technology*. 2004;46:899-906.
- [16] Wibisono YW, Govindaraju R, Irianto D, Sudirman I. Managing differences, interaction, and partnership quality in global inter-firm relationships: An empirical analysis on offshore IT outsourcing. *International Journal of Managing Projects in Business*. 2018;12(3):730-54.
- [17] Wibisono YW, Govindaraju R, Irianto D, Sudirman I, editors. *Interaction quality and the influence on offshore IT outsourcing success*. International Conference on Data and Software Engineering; 2017.
- [18] Gunasekaran A, Irani Z, Choy K, Filippi L. Performance measures and metrics in outsourcing decisions: A review for research and applications. *International Journal of Production Economics*. 2015;161:153-66.
- [19] Goles T. Vendor capabilities and outsourcing success: A resource-based view. *Wirtschaftsinformatik*. 2003;45(2):199-206.
- [20] Han HS, Lee JN, Chun JU, Seo YW. Complementarity between client and vendor IT capabilities: An empirical investigation in IT outsourcing projects. *Decision Support Systems*. 2013;56:777-91.
- [21] Leischnig A, Gigenmueller A, Lohmann S. On the role of alliance management capability, organizational compatibility, and interaction quality in interorganizational technology transfer. *Journal of Business Research*. 2014;67:1049-57.
- [22] Dutta DK. Inter-organizational relationships and firm performance: Impact of complementary knowledge and relative absorptive capacity. *Journal of Management Policy and Practice*. 2012;13(2):46-55.

- [23] Dyba T, Moe NB, Arisholm E, editors. Measuring software methodology usage: Challenges of conceptualization and operationalization. 2005 International Symposium on Empirical Software Engineering; 2005: IEEE.
- [24] Ai S, Du R, Abbott P, Zheng Y. Internal and contextual factors, knowledge processes and performance: From the Chinese provider's perspective. *Expert Systems with Applications*. 2012;39:4464-72.
- [25] Herbsleb JD, Mockus A, Finholt TA, Grinter RE, editors. An empirical study of global software development: Distance and speed. *Proceedings of the 23rd International Conference on Software Engineering*; 2001: IEEE.
- [26] Holmstrom H, Cochuir EO, Agerfalk PJ, Fitzgerald B, editors. Global software development challenges: A case study on temporal, geographical and social-cultural distance. *IEEE International Conference on Global Software Engineering*; 2006; Florianopolis: IEEE.
- [27] Homburg C, Giering A, Menon A. Relationship characteristics as moderators of the satisfaction-loyalty link: Findings in a business-to-business context. *Journal of Business -to-Business Marketing*. 2003;10(3):35-62.
- [28] Swar B, Moon J, Oh J, Rhee C. Determinants of relationship quality for IS/IT outsourcing success in public sector. *Inf Syst Front*. 2012;14:457-75.
- [29] Lee JN, Kim YG. Effect of partnership quality on IS outsourcing success: Conceptual framework and empirical validation. *Journal of Management Information Systems*. 1999;15(4):29-61.
- [30] Kanabiran G, Sankaran K. Determinants of software quality in offshore development - An empirical study of an Indian vendor. *Information and Software Technology*. 2011;53:1199-208.
- [31] Ang S, Inkpen AC. Cultural intelligence and offshore outsourcing success: A framework of firm-level intercultural capability. *Decision Sciences*. 2008;39(3):337-58.
- [32] Sarker S, Sahay S. Implications of space and time for distributed work: an interpretive study of US-Norwegian systems development teams. *European Journal of Information Systems*. 2004;13:3-20.
- [33] Hair JF, Hult GTM, Ringle CM, Sarstedt M. *A Premier on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Singapore: Sage Publications; 2014.