Effects of risks on the performance of business process outsourcing projects: The moderating roles of knowledge management capabilities

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Abstract

Although business process outsourcing (BPO) can reduce cost and enhance the competitiveness of firms, the implementation of BPO projects is unsatisfactory. By integrating knowledge management capability theory and risk-based view, we develop a model of how different types of BPO risks affect project satisfaction and how knowledge management capability changes the influences of BPO risks. A survey of 121 BPO projects was conducted among BPO client department manager and project manager through a pairwise design. Empirical evidence reveals that social system, technical system, and project management risks negatively affect BPO project satisfaction. However, cultural, technological, and structural levels of knowledge management capabilities weaken the negative risk effects of social system, technical system, and project management, respectively. Different types of risks and knowledge management capabilities should be matched to achieve effective risk management.
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1. Introduction

Business process outsourcing (BPO) project refers to projects where service providers accept, manage, and control business processes that a client entrusts and selects (Heffes, 2005; Liu et al., 2017). BPO projects can reduce cost and enhance the competitiveness of firms (Beverakis et al., 2009), but the implementation of these projects is unsatisfactory. According to a recent survey, approximately 50% of outsourcers believe that their outsourced business processes do not generate additional value, provide special knowledge, or reduce the expected cost for business operations management (Fersht, 2014). The process of BPO project implementation is subjected to numerous risks.

Although previous studies investigated the relationship between risk and outsourcing project success, some research gaps remain unaddressed. Empirical evidence is lacking in the investigation of this relationship. For example, Alipour et al. (2011) argued that performance, financial, psychological, and strategic risks have negative effects on BPO projects, but no solid evidence was provided. Perçin (2008) divided BPO risks into six categories, namely, information security and privacy, hidden cost, loss of management control, employee morale, business environment, and service provider. They further proposed a fuzzy multi-index evaluation method to evaluate the risk effect, but the results lack practical data support. Therefore, the mechanism of how risks influence the success of BPO projects remains unclear.

Previous studies also lack a comprehensive examination into different BPO risk types. Shi (2007) indicated that market

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performance and organizational risks of a customer will significantly affect long- and short-term performance of BPO; however, the risks of BPO proposed in the study are not comprehensive and only include three types. Based on a survey of 218 BPO projects in 126 banks, Gewald and Dibbern (2009) empirically showed that BPO project risk significantly affected success, but the effect of each type of risk (financial, psychological, and strategy risks) on performance was not analyzed. Herath and Kishore (2009) found that differences exist in the effect of risk on BPO project satisfaction in different contexts. They examined the risk of offshore BPO and contended that its impact differs from that of onshore BPO project risk. These studies have initially identified that BPO project risk has a negative effect on outsourcing project results (e.g., satisfaction). However, these studies did not conduct comprehensive risk identification. Many other risks exist in the BPO process (e.g., implementation and customer risk), but evidence for the effects of these additional risks are lacking. Further clarification on the mechanism of how different risks influence BPO project success or satisfaction is beneficial for developing differentiated and effective risk management strategies. Therefore, the first objective of this research is to address the effect of different types of risks on BPO project satisfaction.

Previous studies attempted to employ knowledge management capabilities to deal with risks because they may minimize the uncertainties around BPO projects. However, the findings of prior studies were seldom tested. Knowledge management capability is the capability to create, transfer, integrate, and apply knowledge in various aspects, such as cultural, structural, and technological (Alavi and Leidner, 2001; Gold et al., 2001). Luo et al. (2010) proposed that two types of knowledge management capability (e.g., knowledge sharing and integration) of outsourcer and service providers can effectively mitigate three risks of BPO projects, namely, process control, data security, and transaction cost risks. However, they failed to investigate the mechanism of how knowledge management capabilities interact with risks in influencing the effectiveness of projects. Currie (2003) developed a framework that combines knowledge management capability and risks for outsourced projects. This framework divides knowledge management capability into capabilities for techniques and people, and can be used to evaluate the benefits and risks of outsourcing projects. Mahmoodzadeh et al. (2009) established a framework for knowledge management capability in BPO projects; they found that this framework can effectively reduce risk impact throughout the lifecycle of outsourcing; they confirmed their findings through a case study of corporate outsourcing practices. However, Mahmoodzadeh et al. did not conduct extensive investigations, and their study lacked data support and empirical evidence. Willcocks et al. (2004) first identified 19 risks of outsourcing and found that one type of knowledge management capability (i.e., knowledge utilization) can reduce the effect of such risks based on a case of a company. The abovementioned studies mainly established the knowledge management capability framework to avoid risks. However, solid evidence of the effectiveness of knowledge management capability on risk is lacking. In addition, a comprehensive examination on the joint effects of various types of knowledge

management capability and risks on project outcomes remains unclear. Thus, the second objective of this study is to determine the influence of different types of knowledge management capabilities to the effects of risks on BPO project satisfaction.

These issues should be examined to enable BPO project managers to avoid neglecting risks that significantly affect BPO success and master the appropriate approach to utilize different types of knowledge management capabilities. In summary, the present study attempts to answer two questions.

(1) How do different types of risks affect BPO project satisfaction?
(2) How do various types of knowledge management capabilities change the effects of risks on BPO project satisfaction?

In the following sections, we will develop the research model and hypotheses, analyze the results, and discuss the mechanisms among knowledge management capability, risks, and satisfaction.

2. Literature review and research hypothesis

2.1. BPO project risk

This study defines risk as a factor that threatens the successful implementation of BPO projects (Liu, 2016). Hillson and Simon (2012) proposed a methodology, namely, active threat and opportunity management, for managing project risks, achieving objectives, maximizing opportunities, and minimizing threats. In the area of project management, Schmidt et al. (2001) presented a large risk profile of software projects. Wallace et al. (2004a, 2004b) first proposed three dimensions (project management, technical subsystem, and social subsystem) and six sub-dimensions of risks based on socio-technical theory; they also presented a relatively comprehensive risk factor. The risk framework of Wallace et al. was widely applied in the area of outsourcing project management (Liu et al., 2010; Liu and Wang, 2014). Abdullah and Verner (2012) provided a relatively comprehensive outsourcing risk structure based on socio-technical theory, which can be applied in various outsourcing forms (e.g., information technology outsourcing). However, this risk structure failed to consider the features of BPO projects. Shi (2007) and Herath and Kishore (2009) developed a set of risks solely for BPO projects, which also appropriately fits with the framework of Abdullah and Verner (2012). Therefore, the present study combines the risk framework of Abdullah and Verner (2012) and risk categories developed by Shi (2007) and Herath and Kishore (2009) to provide a comprehensive picture of BPO risks.

Based on previous studies (Abdullah and Verner, 2012; Shi, 2007; Herath and Kishore, 2009), the present study divided the risks of BPO projects into social and technical systems and project management risks. These three types of risks further include six categories, namely, organizational environment, client, complexity, contract, execution, and vendor risks. Organizational environment risk is the uncertainty of organizational environment and internal organization. Client risk is the uncertainty of the client's ability and cooperation of outsourcing, such as lack of

cooperation between the client members. Complexity risk is the difficulty and uncertainty of outsourcing technology, tasks, or processes. Contract risk is the uncertainty in the transaction process and contract management. Execution risk is poor planning and control in the process of BPO implementation and management. Vendor risk is the uncertainty around vendor employees, such as lack of ability and turnover of vendor team. We compare the risk categories included in the present study and those developed by other studies related to BPO projects. The risks developed in other BPO studies can be fairly covered by the risk categories developed in this study. For example, risks such as loss of management control, employee morale, service provider, business environment, and hidden cost proposed by Perçin (2008) can be captured by execution, vendor, organizational environment, and contract risks in our study. Thus, the BPO project risks used in the present study are relatively comprehensive.

According to the definition of socio-technical systems theory and risks, organizational environment and client risks are classified as social system risk, which represents the uncertainty of social environment. Complexity and contract risks are classified as technical system risk, which relates to the complexity of technology, processes, and tasks. Contract risk is a technical management derived from contract management. Finally, execution and vendor risks are classified as project management risk. Execution risk is related to the uncertainty of planning and control, whereas vendor risk belongs to project team risk. The two types of risks represent process and human dimension of project management. In the later discussion, we focus on social system, technical system, and project management risks.

2.2. Knowledge management capability

Knowledge management capability is the capability to create, transfer, integrate, and apply knowledge (Alavi and Leidner, 2001). Current researchers contend that the adoption and implementation of knowledge management is critical in outsourcing services, especially in BPO (Christopher and Tanwar, 2012). Bustinza et al. (2010) found that knowledge activities affected the success of outsourcing; they also argued that the use of knowledge and transfer capability affects outsourcing benefits. Kirkman and Phillips (2011) proposed a strategic approach to determine how outsourcing firms address knowledge creation, transfer, and integration. Liu and Deng (2015) divided knowledge management capability into four types, namely, knowledge creation, transfer, application, and protection; they demonstrated that all kinds of knowledge management capability can improve BPO performance.

Previous studies defined and classified knowledge management capabilities from different views (Mao et al., 2015). Gold et al. (2001) contended that knowledge management capability can be divided into knowledge infrastructure and process capabilities. Knowledge infrastructure capability includes technology, structure, and culture, whereas knowledge acquisition, transformation, application, and protection comprise knowledge process capability. Tanriverdi (2005) divided knowledge management capability into product, client, and operational knowledge management capabilities based on firm knowledge unit. Among these studies, the

categorization of knowledge management capabilities by Gold et al. (2001) was widely adopted because it reflects the process and structure of knowledge management. Thus, based on Gold et al., the present study divides knowledge management capability from the infrastructure perspective into technological, structural, and cultural level knowledge management capabilities. Structural level knowledge management capability is a structural element of shifting social contact capital by organizations to generate new knowledge. Technological level knowledge management capability works effectively in the utilization of technological architecture, thereby enabling organizations to share knowledge through the internal boundaries for cooperation. Cultural level knowledge management capability is the capability of organizations to effectively manage knowledge, which provides an individual within the organization with a common vision to achieve interaction, thereby promoting the innovation process.

2.3. BPO project satisfaction

This study uses project satisfaction to measure the performance of BPO projects. Previous studies viewed outsourcing project success in three aspects: outsourced processes/operations performance, objective (e.g., cost reduction) realizations, and satisfaction (Dibbern et al., 2004). Compared with the other two aspects, BPO project satisfaction is a well-defined, simple, and significant measure of success (Leiblein et al., 2002; Rai et al., 2012). Satisfaction often reflects expectations of realized performance (Dibbern et al., 2004), represents the perceived working effectiveness between clients and vendors, and denotes an important determinant of long-term actions (Mani et al., 2010).

This study adopts the BPO satisfaction measurement proposed by Rai et al. (2012), which includes the overall satisfaction of outsourcing, realized situation of outsourcing goals (including service content and cost), and willingness to continue outsourcing to grasp satisfaction. The three aspects differ from the performance division of the traditional process, cost, and quality, and emphasize the subjectivity of BPO project success.

2.4. Research model and hypotheses

The research model is presented in Fig. 1. Project management, technical system, and social system risks have significant and negative effects on BPO project satisfaction. Cultural, technological, and structural level knowledge management capabilities weaken the negative effects of the three types of risk on BPO project satisfaction.

Social system risk reflects the root causes of various risks (Wallace et al., 2004b; Liu and Wang, 2014), which leads to an increase in the probability of other risks. Social system risk denotes the uncertainty of the organizational environment in BPO and lack of the client's ability and cooperation. The support of the organization for the BPO project will be reduced when the organization and the environment of the client are uncertain (Liu and Wang, 2016). In such situations, invested resources are also uncertain, which makes it difficult for service providers to provide superior services. Unsuitable inter-organizational risk further aggravates the communication costs of clients and
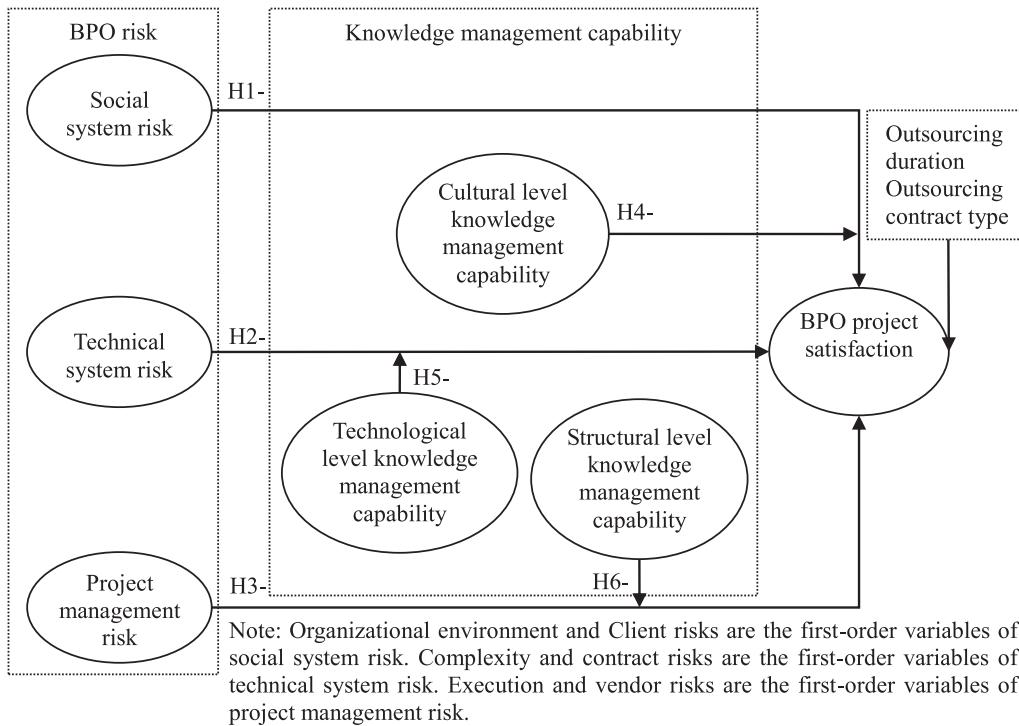
Fig. 1. Research model.

vendors and increases the occurrence of conflict, which reduces BPO project satisfaction. Furthermore, the lack of necessary skills and cooperation or loss of key personnel directly leads to the unrealizable goal by the service provider, thereby diminishing the overall satisfaction of the BPO project. In summary, the following hypothesis is proposed:

H1. Social system risk has a negative effect on BPO project satisfaction.

Compared with the humanistic factors of social system risk, technical system risk represents technical uncertainty, which is mainly reflected in the complexity of BPO and contract risks. Complexity risk leads to an increase in the overall difficulty of outsourcing projects (Liu, 2015). Therefore, the project with high complexity risk encounters additional resistance in the process of service provision, which further increases the probability of risks. Moreover, the content of the client's requirements may not be reflected in the contract or implemented in practice due to contract risk. The requirement of the client is less likely to be satisfied because of unexpected project results. Thus, the following hypothesis is proposed:

H2. Technical system risk has a negative effect on BPO project satisfaction.

Project management risk is directly related to project success in many risk management studies (Jiang and Klein, 2000). In the implementation process of outsourcing projects, lack of project management skills and inappropriate methods affect service quality and speed. Inadequate plan and design of service providers and lack of change management increases the difficulty of following changes in client's requirements.

Furthermore, the lack of business knowledge and skills by the service provider makes the needs and objectives of the client inaccessible, and the loss or lack of key personnel results in insufficient human resources to complete the project. Thus:

H3. Project management risk has a negative effect on BPO project satisfaction.

The cultural level knowledge management capability can benefit the project by narrowing the social differences between the client and service provider (Christopher and Tanwar, 2012); thus, the culture between the two parts is integrated and the risk of cultural mismatch between them is reduced. By encouraging employees to participate in the acquisition and transformation of knowledge, clients can quickly access the information on the external environment industry, vendors, and competitors of the organization. Thus, employees have adequate knowledge to deal with the risk. Meanwhile, the client can quickly improve their experience and skills through knowledge acquisition and transformation to better take on obligations. By sharing knowledge with service providers, knowledge management capability reduces the difference between geography and legal environment and increases the cooperation with service providers. These measures can effectively improve the satisfaction of BPO projects. Thus:

H4. The cultural level knowledge management capability weakens the negative effect of social system risk on BPO project satisfaction, which decreases the negative effect of social system risk when the cultural level of knowledge management capability increases.

The technical level knowledge management capability means that the client has clear rules and techniques for acquiring, transforming, and using knowledge within and outside the

organization. The use of clear rules to classify and manage processes and product knowledge prevents fuzzy and incomplete contract (Nakatsu and Iacovou, 2009), helps provide clear outsourcing tasks, and reduces task complexity. Clients and service providers can solve complex technical and integration issues by using relevant technologies to cooperate within and outside the organization. This knowledge management capability can also reduce the project difficulty of adapting to business and technical changes by using relevant technology to obtain and use the knowledge of service providers (Mao et al., 2016). Consequently, the hidden costs of the contract are reduced, thereby mitigating the negative effects of complexity and contract management risks. Thus:

H5. The technological level knowledge management capability weakens the negative effect of technical system risk on BPO project satisfaction, which decreases that the negative effect of social system risk when the technological level of knowledge management capability increases.

Structural level knowledge management capability enables clients to adopt structured management methods to manage BPO projects. The client establishes a knowledge check mechanism, which facilitates careful planning and management by service providers (Alhawari et al., 2012). In this way, the client can follow specific project management practices while effectively preventing service provider personnel to evade work or deliver results below the level. The client encourages knowledge creation and exchange of functions within different functions of the two sides, thereby strengthening communication between the two parts in terms of business and technical knowledge. These initiatives can reduce the negative effect of project management risk. Thus:

H6. The structural level knowledge management capability weakens the negative effect of project management risk on BPO project satisfaction, which decreases the negative effect of social system risk when the structural level of knowledge management capability increases.

We use outsourcing duration and contract type as control variables. Outsourcing duration is an important reflection of the overall size of a BPO project. A few studies have shown that a large outsourcing scale leads to the high probability of risk, which diminishes project satisfaction. Outsourcing contract type may also have an impact on outsourcing satisfaction. Mani et al. (2012) found significant differences in the effect of joint action, relationship coordination, and technical capability on the success of BPO projects in fixed price and time and material contracts. Therefore, differences may exist in the satisfaction of BPO projects of different contract types.

3. Methodology

3.1. Data collection

The necessary quantitative data for the present study are obtained via questionnaires to test the hypotheses. With the assistance of China Outsourcing Association, we obtained a list of 250 BPO client organizations located in different areas of China. The sample can appropriately reflect the comprehensive situations of BPO in the country. This manipulation enables us to obtain BPO projects with both high and low levels of risks and knowledge management capability. China Outsourcing Association provided the contact information of the senior executive in each company that undertook BPO, which is helpful for conducting a pair-designed survey because more than one respondent can be identified with the assistance of senior managers. We then contacted the senior executives of these organizations to select the appropriate BPO projects and corresponding respondents. BPO projects should be completed recently (training, human resources, procurement, financial accounting, IT operations, and other BPO). The respondents were divided into two categories, namely, the client project manager responsible for the BPO project and the department manager who experiences the BPO project initiated in his/her department. The senior manager for the BPO project was asked to identify and contact the project and department managers of the project. Therefore, the survey is a pair-wise survey. The BPO project manager was responsible for answering personal and project basic information, risk, and knowledge management capability. The department manager was required to answer the personal information and evaluation of project satisfaction. The respondents were asked to review the progress of the project and then answer the questionnaire.

All paper-based questionnaires were sent to the senior executives of these outsourcing companies in 2016. Each senior manager was asked to select one BPO project and two respondents. Thus, 250 projects were identified and 250 questionnaires for both project and department managers were distributed. We then contacted the project and department managers who answered the questionnaire to confirm if they have received the questionnaire and answered the questions. After a five-month period, 121 valid paired questionnaires were returned, which was equivalent to a 48.4% response rate. The other 129 questionnaires were either not returned or returned with only one respondent and finished incompletely. The response rate is fair because it is higher than that of other studies related to BPO project management (e.g., 36.8% of Gewald and Dibbern, 2009 and 24% of Mani et al., 2012). This response rate is also better than other studies with multiple informants (e.g., Tiwana and Keil, 2010). Project and department managers have more than two years to participate in and manage BPO experience. The characteristics of the BPO projects are shown in Table 1. These projects are well distributed in terms of outsourcing domain and duration and contract type.

3.2. Measurement development

The measures of knowledge management capability, risk, and BPO project satisfaction were adapted from previous measurements and changed according to the BPO context. Client risk was adopted from Shi (2007), and vendor risk was adopted from Herath and Kishore (2009). Shi (2007) and Herath and Kishore (2009) developed measures for client

Table 1
Descriptive characteristics of the project.

Project characteristic	No.	Range	Number	Percentage (%)
BPO domain	1	Customer service	18	14.9
	2	Financial and accounting	11	9.1
	3	Human resource	24	19.8
	4	Training outsourcing	11	9.1
	5	Procurement	11	9.1
	6	Back office	9	7.4
	7	Others	37	30.5
Outsourcing duration	1	1 month to 6 months	33	27.3
	2	7 to 12 months	22	18.2
	3	13 to 18 months	6	5.0
	4	19 to 24 months	13	10.7
	5	25 to 30 months	7	5.8
	6	31 to 36 months	9	7.4
	7	>36 months	31	25.6
	1	Fixed price contract	68	56.2
	2		53	43.8

and vendor risks of BPO projects, respectively, whereas other studies measured the two risks in other types of outsourcing projects. Thus, the measurements of the authors can be appropriately applied in this study. Organizational environment, complexity, contract, and execution risks were adapted from Abdullah and Verner (2012). Abdullah and Verner (2012) provided relatively comprehensive risk factors, which were adopted by other studies (Marcelino-Sádaba et al., 2014; Liu et al., 2017). Some measures were slightly changed. For example, "high level of technical complexity" of complexity risk and "unstable business and organizational environment that affected the project" of organizational environment risk in Abdullah and Verner's (2012) instrument were modified as "there was high level of technical complexity" and "business and organizational environment was unstable, which affected the project" in the present study. The cultural, technological, and structural level knowledge management capabilities were adopted from Gold et al. (2001) because they provided comprehensive scales to measure the three knowledge management capabilities. BPO project satisfaction was adopted from Rai et al. (2012). Unlike previous studies, which were based on a single object, the present study uses a paired approach. Thus, the words "In this BPO project, I believe that…" were added before all the measures. All variables were measured in more than four items and scored using the seven-point Likert scale, where 1 represents "strongly disagree" and 7 represents "strongly agree." For example, respondents can select and evaluate from 1 to 7 points for the item "The vendor had poor project planning" (7: strongly agree; 6: agree; 5: partially agree; 4: neutral; 3: partially disagree; 2: disagree; and 1: strongly disagree). A seven-point Likert scale was used because seven response categories can optimize the reliability and respondents can distinguish seven distinct categories with a span of absolute judgment (Colman et al., 1997). Table 2 provides the description of each variable and measure.

3.3. Data validation

After data collection, we examined the external validity and checked whether non-response bias exists. Data without such a bias can allow the sample to be generalized to the population and ensure that the informants respond to the questionnaire in a similar way (Armstrong and Overton, 1977). We compared the responses obtained from the late ($n=61$) and early ($n=60$) stages because respondents who returned the response late and failed to respond are regarded as similar (Keil et al., 2013). The t-test results of organizational environment risk ($p=0.69$), client risk ($p=0.76$), complexity risk ($p=0.19$), contract risk ($p=0.66$), execution risk ($p=0.91$), vendor risk ($p=0.84$), as well as knowledge management capability of cultural level ($p=0.58$), technological level ($p=0.68$), and structural level ($p=0.76$), and BPO project satisfaction ($p=0.91$) show that the responses have no differences ($p>0.05$). Thus, non-response bias is insignificant in this study.

The survey of this study was conducted pair-wise, which can largely avoid common method bias (CMB). However, we also performed the Harmon one factor test by conducting exploratory factor analysis on all variables to ensure the non-existence of CMB. A single factor can explain <20% of the variance, thereby suggesting that CMB is insignificant.

4. Results

4.1. Measurement model and testing

Partial least squares (PLS) techniques and Smart PLS 2.0 software were utilized to measure and test the model. PLS is appropriate for theory development and exploratory predication (Hair et al., 2011; Wetzels et al., 2009; Hair et al., 2014). This technique can maximize explained variance with a small sample size while minimizing the residual variances of endogenous constructs (Hair et al., 2011; Hair et al., 2014). PLS is also suitable for complex structural model with many constructs (Hair et al., 2011). Given the limited sample size and relatively many constructs in our model, PLS was selected to develop, measure, and test the structural model of this study.

All constructs were considered reflective according to the variable partitioning criteria proposed by Petter et al. (2007). We first examined the convergent validity and internal consistency of the variables. As shown in Appendix A, the minimal item was found in the construct loadings for all the variables (including the first- and second- order) is 0.71, and all loadings are higher than 0.707, which means that the error variance of each item and the relevant variable is less than its common variance (Chin, 1998). Tables 3 and 4 show the means (Mean), standard deviations (SD), Pearson correlation coefficients, Cronbach's α, composite reliability (CR), and average variance extracted (AVE). The Pearson's product coefficients of R1, R2, R3, R4, R5, R6, SR, TR, and PR with BPO project satisfaction are −0.57, −0.59, −0.28, −0.60, −0.64, −0.56, −0.65, −0.53, and −0.67, respectively, with significance levels of 0.01. This result reflects the significant and negative relationships between risks and BPO project satisfaction. The values of Cronbach's α and CR exceed

Table 2
Constructs and measures.

Construct		Item#	Measures	References
Social system risk (SR)	Organizational environment risk (R1)	R11	Business and organizational environment was unstable, which affected the project	Abdullah and Verner (2012)
		R12	There were different geographical locations between vendor and client	
		R13	The client financially restructured or injected cash on a short-term basis rather than leverage BPO for business advantage	
		R14	The legal environment was uncertain	
		R15	There was poor cultural fit between the vendor and client	
	Client risk (R2)	R21	Client employees were lack of experience with outsourcing	Shi (2007); Nakatsu and Iacovou (2009)
		R22	Client employees were lack of required skills	
		R23	The client lost key employees	
		R24	Client employees were lack of cooperation	
		R25	Client employees imperfectly committed to the project	
		R26	There were unrealistic expectations of the client about what can be achieved by outsourcing	
Technical system risk (TR)	Complexity risk (R3)	R31	Business process required complex integration and customization	Abdullah and Verner (2012)
		R32	There was high level of technical complexity	
		R33	The task was highly complex	
		R34	The project was technologically indivisible	
		R35	There were difficulties in reconstructing/adapting deals for business and technical change	
	Contract risk (R4)	R41	The vendor tended to initially oversell to win client's business	Abdullah and Verner (2012)
		R42	The contract was lack of precise and detailed specifications	
		R43	The vendor failed to deliver on their promises	
		R44	The client was lack of experience with contract management	
		R45	The contract was incomplete	
		R46	The client failed to consider hidden costs of outsourcing in contract	
Project management risk (PR)	Execution risk (R5)	R51	The vendor and client were lack of effective communications	Abdullah and Verner (2012)
		R52	Vendor employees did not manage change well	
		R53	The vendor had unrealistic estimation of required resources	
		R54	Vendor employees had poor project management skills	
		R55	The vendor was not compliant with specified methodologies	
		R56	The vendor was lack of readiness to implement	
		R57	The vendor had poor project planning	
	Vendor risk (R6)	R61	The vendor was lack of adequate staffing	Herath and Kishore (2009), Nakatsu and Iacovou (2009)
		R62	Vendor employees were lack of business know-how	
		R63	Vendor employees were lack of technical know-how	
		R64	Vendor employees shirked or deliberately behaved underperformance	
		R65	The vendor lost key employees	
Cultural level knowledge management capability (CC)		CC1	Our employees understand the importance of knowledge to BPO success	Gold et al. (2001)
		CC2	High levels of participation were expected in capturing and transferring knowledge	
		CC3	Employees were encouraged to ask others for assistance when needed	
		CC4	We shared our knowledge with other organizations (e.g. partners)	
		CC5	The benefits of sharing knowledge outweighed the costs	
		CC6	We clearly supported the role of knowledge in BPO's success	
Technological level knowledge management capability (TC)		TC1	We had clear rules for formatting or categorizing process and product knowledge	
		TC2	We used technology that allowed employees to collaborate with other persons inside and outside the organization	
		TC3	We used technology that allowed people in multiple locations to learn as a group	
		TC4	We used technology that allowed us to search for new knowledge	
		TC5	We used technology that allowed us to retrieve and use knowledge about products and processes	
		TC6	We used technology that allowed us to retrieve and use knowledge about markets and competition	
Structural level knowledge management capability (SC)		SC1	We facilitated knowledge exchange across functional boundaries.	
		SC2	Our organizational structure facilitated the discovery and creation of new knowledge	
		SC3	Our performance was based on knowledge creation	
		SC4	We had a standardized reward system for sharing knowledge	
		SC5	Our managers frequently examined knowledge for errors/mistakes	
BPO project satisfaction (PS)		PS1	We were satisfied with this outsourcing project	Rai et al. (2012)
		PS2	The service-level agreements have been fulfilled	
		PS3	The benefits of sharing knowledge outweighed the costs	
		PS4	We will renew and continue the outsourcing contract	

Table 3
Descriptive statistics, correlations and reliability of first order variables.

Variable	Mean (standard deviation)	Cronbach α's	CR	AVE	R1	R2	R3	R4	R5	R6	CC	TC	SC	PS
R1	4.01 (1.18)	0.83	0.88	0.59	0.77									
R2	3.61 (1.43)	0.91	0.93	0.70	0.57**	0.84								
R3	4.43 (1.24)	0.88	0.91	0.68	0.24**	0.22*	0.82							
R4	4.26 (1.23)	0.91	0.93	0.70	0.50**	0.47**	0.45**	0.84						
R5	4.04 (1.16)	0.90	0.92	0.63	0.64**	0.55**	0.14	0.51**	0.79					
R6	3.79 (1.34)	0.88	0.91	0.67	0.40**	0.49**	0.20	0.51**	0.63**	0.82				
CC	4.65 (1.10)	0.93	0.94	0.72	0.19	0.12	0.28**	0.26**	0.08	0.12	0.85			
TC	4.50 (1.13)	0.95	0.96	0.80	0.16	0.28**	0.31**	0.37**	0.17	0.20	−0.37**	0.89		
SC	4.95 (1.13)	0.95	0.96	0.84	0.17	0.33**	0.41**	0.39**	0.14	0.15	0.31**	0.57**	0.92	
PS	4.01 (1.72)	0.96	0.97	0.88	−0.57**	−0.59**	−0.28**	−0.60**	−0.64**	−0.56**	−0.07	−0.17	−0.18	0.94

Note: Pearson's product coefficients were presented in the correlations. Two-tail test was performed. The diagonal number of the correlation is the square root of AVE.
* Significant at $p < 0.05$.
** Significant at $p < 0.01$.

0.70 (Deng and Liu, 2017), and the minimum values of AVE exceed 0.50 (Zhang et al., 2017a). Therefore, the model has satisfactory properties. The coefficients of each variable and other variables in the correlation are lower than the square root of its AVE value (Tables 3 and 4) (Fornell and Larcker, 1981). Thus, the variables attained the requirements of discriminant validity. We also verify the fitting degree of first- and second- order variables except for normal testing. The loadings of organizational environment and client risks in social system risk are 0.84 and 0.93, respectively. The loadings of complexity and contract risks in technical system risk are 0.78 and 0.91, respectively, and the loadings of execution and vendor risks in project management risk are 0.93 and 0.87, respectively. All loadings are higher than 0.70 ($p < 0.01$). The value of variance inflation factor (VIF) is 1.63, which is lower than the limit of 10. Therefore, collinearity does not exist between the first- and second- order variables. The abovementioned results comprehensively reflect satisfactory model measurement results.

4.2. Hypotheses testing results

Hierarchical regression analysis method was applied to test the research model. The following hierarchical regression analysis model was developed using Smart PLS 2.0 software, as shown in Table 5. First, we examined the effect of control variables on the dependent variable (Model 1). Second, we introduced the independent variables and moderators to determine the effect of independent variables on the dependent variable (Models 2a and 2b). Model 2b was mainly used to examine if moderators have a direct effect on the dependent

variable. Finally, we introduced the interactive item between the independent variables and moderators to examine the interactive effects between the two variables (Models 3a, 3b, and 3c). The two-stage approach proposed by Hair et al. (2014) was applied to create single-item measures for interaction terms based on the latent variable scores from Model 2b. Interactive items were separately added to verify the interactive effects and avoid the collinearity problem. H1, H2, and H3 can be verified from Model 2a, whereas H4, H5, and H6 can be tested through Models 3a, 3b, and 3c, respectively. Table 5 also shows the interpreted variance (R^2), standardized path coefficient, and values of F between each model (the increment is a further check on the significance level), predictive relevance (Q^2), effect size (q^2) and goodness of fit (GoF).

As shown in Table 5 (Model 1), outsourcing duration and contract type have an insignificant effect on BPO project satisfaction, which indicates that project satisfaction will not fundamentally change no matter how long the outsourcing project lasts. Regardless of whether the contracts are time-and-material or fixed price, significant differences will not exist in BPO project satisfaction. This result shows that the effect of outsourcing duration and contract type on the outcome of BPO does not need to be considered.

As shown in Table 5 (Model 2a), social system, technical system, and project management risks significantly and negatively affect BPO project satisfaction (path coefficients = −0.29 ($p < 0.01$), −0.24 ($p < 0.05$), and −0.38 ($p < 0.01$), respectively). All values of Q^2 are higher than 0 and effect size (q^2) exceeds 0.35. VIF value of the regression model is lower than 3. Thus, social system, technical system, and project

Table 4
Descriptive statistics, correlations and reliability of the second-order variables.

	Mean (standard deviation)	Cronbach α's	SR	TR	PR	CC	TC	SC	PS
SR	3.79 (1.18)	0.90	AVE = 0.79			0.17	0.24**	0.28**	−0.65**
TR	4.33 (1.06)	0.90	0.49**	AVE = 0.72		0.32**	0.40**	0.47**	−0.53**
PR	3.94 (1.11)	0.92	0.65**	0.46**	AVE = 0.81	0.11	0.20	0.16	−0.67**

Note: Two-tail test was performed.
** Significant at $p < 0.01$.

Table 5
Hierarchical regression results.

Construct	Model 1	Model 2a	Model 2b	Model 3a	Model 3b	Model 3c
Block 1: Control variables						
Outsourcing duration	0.04	−0.01	−0.02	−0.01	0.01	−0.02
Outsourcing contract type	−0.10	0.04	0.05	0.05	0.03	0.05
Block 2: Main effects						
Social system risk		−0.29**	−0.31**	−0.30**	−0.32**	−0.31**
Technical system risk		−0.24*	−0.31**	−0.30**	−0.31**	−0.30*
Project management risk		−0.38**	−0.36**	−0.33**	−0.35**	−0.34**
Cultural level knowledge infrastructure capability			0.09	0.12		
Technological level knowledge infrastructure capability			0.04		0.07	
Structural level knowledge infrastructure capability			0.06			0.10
Block 3: Moderation effects						
Social system risk × Cultural level knowledge infrastructure capability				−0.18*		
Technical system risk × Technological level knowledge infrastructure capability					−0.16*	
Project management risk × Structural level knowledge infrastructure capability						−0.12*
ΔR^2 (BPO project satisfaction)		0.558	0.016	0.035	0.025	0.020
f^2 (Effect size)		1.295	0.039	0.088	0.062	0.049
R^2 (BPO project satisfaction)	0.011	0.569	0.585	0.604	0.594	0.589
F Hierarchical		148.886**	4.318	9.987*	6.958*	5.499*
Q^2 (BPO project satisfaction)	0.005	0.474	0.482	0.532	0.545	0.540
q^2 (Effect size)		0.892	0.015	0.124	0.156	0.143
GoF		0.675	0.680	0.688	0.689	0.690

Note:
* Significant at $p < 0.05$.
** Significant at $p < 0.01$.

management risks have large predictive relevance for BPO project satisfaction. The incremental variance of the three variables for the BPO project satisfaction is 55.8%, which indicates that these risks have significant explanatory effects on BPO project satisfaction. We further calculated the incremental value of F and found that the value is 148.886. The GoF index is 0.675 and higher than 0.35, which indicates a fair model fit for the measurement model (Wetzels et al., 2009). These results verify the significant relationship of risk and project performance. Therefore, H1, H2, and H3 are supported.

As shown in Table 5 (Models 3a, 3b, and 3c), the cultural level knowledge management capability has a negative moderation on the relationship of social system risk and BPO project satisfaction (path coefficient is −0.18; $p<0.05$), which suggests that it can significantly weaken the negative effect of social system risk. Thus, H4 is supported. Similarly, the technological level knowledge management capability has a negative moderation on the relationship of technical system risk and BPO project satisfaction (path coefficient is −0.16; $p<0.05$), which suggests that it significantly weakens the negative effect of technical system risk. Thus, H5 is supported. The structural level knowledge management capability has a negative moderation on the relationship of project management risk and BPO project satisfaction (path coefficient is −0.12 and $p<0.05$), which indicates that it significantly weakens the negative effect of project management risk. Thus, H6 is supported. In these three models, all GoF values are greater than the threshold value of 0.35, and q^2 are 0.124, 0.156, and 0.143, which are between 0.02 and 0.15. VIF values of the three models are lower than 3. These results indicate an acceptable model fit and medium predictive relevance. The incremental values of F are 9.987, 6.958, and 5.499, which are significant in the corresponding

degrees of freedom, thus further confirming the significance of the moderating relationship. The results of structural model and hypothesis testing are synthesized in Fig. 2. All hypotheses are supported.

5. Discussions and implications

By analyzing the relationships among knowledge management capability, risk, and success in BPO projects, this study reveals the influencing mechanism of BPO project risks in the presence of knowledge management capability. Through a pair-wise survey on 121 project and department managers, the results indicate that three levels of knowledge management capability affect the relationships between the three types of BPO risk and project satisfaction. In particular, social system, technical system, and project management risks directly and negatively affect the BPO project satisfaction. However, cultural, technological, and structural level knowledge management capabilities weaken the negative effects of social system, technical system, and project management risks on BPO project satisfaction. This study provides new knowledge to the risk management and knowledge management literature by integrating knowledge management capabilities into the relationship of risk and BPO project satisfaction. Several implications for theory and practical outsourcing management can be concluded.

5.1. Theoretical implications

First, this research contributes to the BPO project management literature by investigating the mechanism of how different types of risks affect BPO project satisfaction. The results reveal
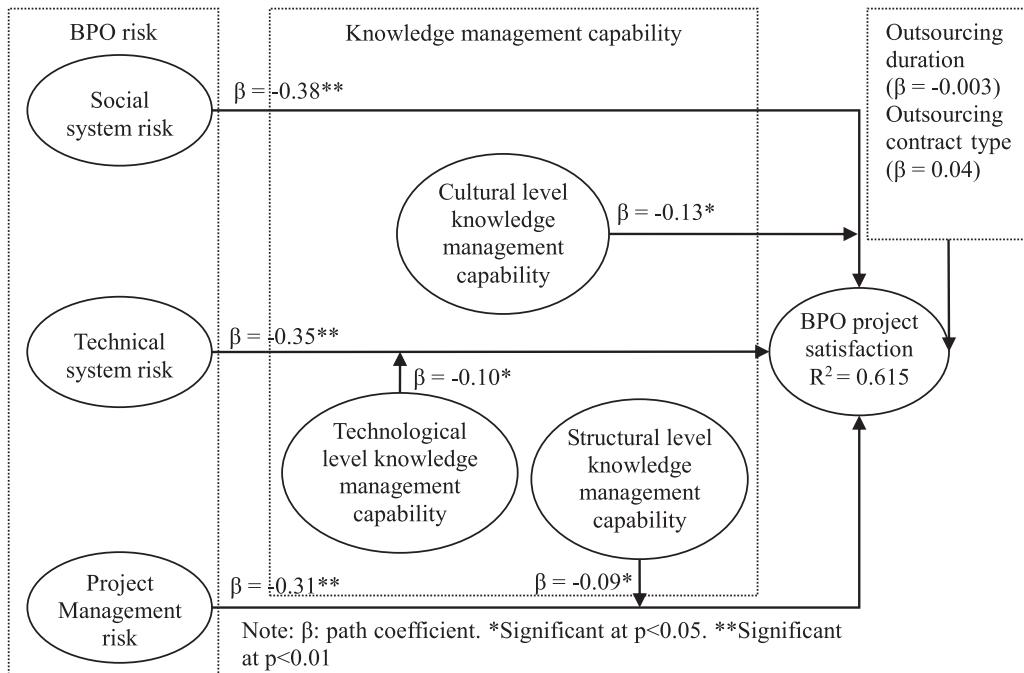
Fig. 2. Results of model and hypothesis testing.

that various types of risks, including social system, technical system, and project management risks, negatively affect BPO project satisfaction. This finding supports previous observations that risks negatively influence BPO performance (Alipour et al., 2011; Perçin, 2008). Compared with prior studies that only focus on certain types of BPO risks (Shi, 2007; Gewald and Dibbern, 2009; Liu et al., 2017), our results further extend prior literature by showing that BPO project satisfaction is influenced by many different risks in terms of organizational environment, client, vendor, execution, complexity, and contract. Although all types of risks exhibit negative effects, they may affect BPO project satisfaction differently. For instance, the effect of social system risk ($p<0.01$ in our result) may be stronger than that of technical system risk ($p<0.05$). Thus, future research can design appropriate priorities and develop different risk mitigation strategies.

Second, this study adds knowledge to the risk management literature by integrating knowledge management capability into the effects of risks. Previous research only proposed that knowledge management capability can be employed to deal with risks (Mahmoodzadeh et al., 2009; Luo et al., 2010). By contrast, this research advances prior studies by elaborating on the mechanism of how knowledge management capability interacts with risks in affecting BPO project satisfaction. Our results show that the effects of risks decrease when the level of knowledge management capability increases. This evidence may bridge the existing gap, wherein certain risks were found to significantly influence project success in some studies but not in other research (Liu and Wang, 2014; Wallace et al., 2004b). This contradiction may result from different levels of knowledge management capability in BPO projects. The effect of risk is low in the presence of high knowledge management

capability, but high when knowledge management capability is low. Therefore, future research of risk management should consider knowledge management capability.

Third, this research provides new perspectives for knowledge management researchers by combining knowledge management capability with risk. Previous literature on knowledge management often contends that knowledge management capabilities directly and positively affect success and may improve project performance (Tanriverdi, 2005; Yang et al., 2014). However, the findings of this study suggest that knowledge management capability can indirectly influence BPO project success or satisfaction by minimizing the negative effects of risks. This capability may moderate the effects of other factors (e.g., governance and resistance) on BPO project satisfaction. Thus, researchers can develop the indirect function of knowledge management capability instead of a simplistic model that only links such a capability with project success.

Fourth, this research contributes to the knowledge management literature by specifying three levels of knowledge management capability and exploring their effects. The majority of studies focused on the process aspect, but failed to examine the infrastructure aspect of knowledge management capability. Our results indicate that all three levels of knowledge management capability (i.e., cultural, technological, and structural) can help improve BPO project satisfaction by minimizing the negative effects of risks. This evidence supports the positive effects of knowledge management capability (Yang et al., 2014; Liu and Deng, 2015; Zhang et al., 2017b). In addition, different types of BPO project risks should be addressed using different levels of knowledge management capabilities. An important contribution of this study is clarifying the inherent mechanism of knowledge management

capability to influence the risk effect, that is, a risk can only be addressed by relying on a particular suitable knowledge management capability. Risk and knowledge management capability should be matched at a certain level to achieve effective risk management.

5.2. Managerial implications

Several implications can be concluded for managers. First, given that BPO risks (including project management, technical system, and social system risks) have negative effects on project satisfaction, the control and mitigation strategies for all types of risks are essential. Risk management must adopt a comprehensive prevention and control system. Managers can take a direct intervention mechanism to cut off the transmission path of risk on performance for the control and avoidance of BPO risk. Managers can also decrease the effect of risk by reducing the outsourcing risk probability and relieving risk loss. Managers should use formal control strategy and combine such strategy with informal control mechanism to effectively reduce project management risk. For example, client mangers can ask vendor teams to design clear rules and procedures for the project and require them to follow the specified steps to complete it. Managers can also enhance relationship and contract management to address social and technical related risks. Client managers can develop a good relationship with vendors and communicate with them frequently.

Second, given that various aspects of knowledge management capabilities can weaken the effects of various risks in BPO projects, managers should understand that the best way to mitigate risks is by utilizing knowledge management capabilities. In terms of social risks, such as organizational environmental and vendor risks, managers can focus on building and using the organizational level knowledge management capability and governing from a cultural aspect (e.g., relational governance) to realize effective control. For technical system risks, such as complexity and contract risks, managers can focus on developing and using the technical level knowledge management capability and governing from a technical aspect. For project management risks, such as vendor and execution risks, managers should strengthen infrastructure capability of the structural aspect and eliminate the effect of such risks from operational structure, organizational system, and contingency.

Third, managers should recognize the effective approach of managing various forms of risks in the presence of high knowledge management capability in BPO projects, given that the negative effects of risks are diminished when high levels of knowledge management capability are present. Managers can avoid excessive resource to mitigate risks in such a situation. This point is especially significant in governing large BPO projects because the resource is often limited and should be appropriately allocated.

Fourth, managers should recognize the importance of improving knowledge management capabilities. The development of a knowledge management system helps coordinate the structure, technology, and process of knowledge management, thereby changing the culture of knowledge organization and management.

However, in the process of building knowledge management, the organization should focus on the standardization and formation of knowledge management process and realize the technicalization and structuration of knowledge management. For example, managers can develop a platform for knowledge creation and exchange and a reward mechanism for knowledge sharing.

5.3. Limitations and future directions

This research has few limitations. First, the number of BPO projects investigated in the study is small, which may limit the explanatory effect. However, our research is based on a paired design, which can considerably reduce the influence of small sample size. Second, our sample is obtained from one country only. Individuals from various countries may have different perceptions of risk (Gao et al., 2018). Therefore, future research can apply our model to other cultural contexts to validate if the model can be supported. Third, this study only focuses on a significant project outcome, that is, satisfaction. Further investigations on the effects of risks and knowledge management capability on other aspects of project outcomes may be interesting. For example, future research can explore the influence of different types of risks on the effectiveness of client and vendor teams. Whether such risks influence the intention to continue the next BPO project could also be examined. Fourth, data collection is not based on a convenient sample, but an un-anonymous procedure. This manipulation may limit the diversity of the sample. However, future research can compare the results of this study with those based on anonymous samples to validate if our findings can be generalized. Finally, the process of a BPO project is generally lengthy. Future research can investigate the variation of different risks during various phases of BPO project implementation.

6. Conclusions

This research is an early attempt to integrate risks and knowledge management capability in BPO projects by investigating their collective effects on project satisfaction. Our study indicates that project management, technical system, and social system risks negatively affect BPO project satisfaction. This result implies that the success of BPO project relies on the effective management of various BPO risks. Another contribution of the study is the moderating effects of three levels of knowledge management capability on the negative relationships of risks and satisfaction, which indicates that knowledge management capabilities can be applied in managing risks. Different types of risks and knowledge management capabilities should be matched to achieve effective risk management.

Conflict of interest

There is no conflict of interest.

Acknowledgements

Appendix A. Cross loadings

Table A1
Cross loadings for the second-order variables.

	SR	TR	PR	CC	TC	SC	PS
R1	**0.89**	0.44	0.58	0.19	0.15	0.17	−0.57
R2	**0.89**	0.43	0.58	0.12	0.28	0.33	−0.59
R3	0.26	**0.83**	0.19	0.28	0.31	0.41	−0.28
R4	0.55	**0.87**	0.57	0.27	0.37	0.40	−0.60
R5	0.68	0.40	**0.90**	0.08	0.17	0.14	−0.64
R6	0.50	0.43	**0.90**	0.13	0.20	0.15	−0.56

Note: Bold values are the loadings of the indicators on their principle constructs.

Table A2
Cross loadings for the first-order variables.

	R1	R2	R3	R4	R5	R6	CC	TC	SC	PS
R11	**0.76**	0.48	0.34	0.40	0.51	0.42	0.11	0.21	0.27	−0.41
R12	**0.80**	0.46	0.22	0.39	0.46	0.28	0.25	0.13	0.23	−0.37
R13	**0.76**	0.42	0.06	0.37	0.48	0.21	0.16	0.11	0.04	−0.45
R14	**0.79**	0.41	0.16	0.42	0.51	0.33	0.12	0.11	0.04	−0.48
R15	**0.74**	0.42	0.12	0.34	0.53	0.29	0.09	0.05	0.09	−0.50
R21	0.55	**0.84**	0.18	0.42	0.50	0.43	0.08	0.29	0.26	−0.59
R22	0.42	**0.85**	0.16	0.31	0.41	0.32	0.11	0.21	0.26	−0.44
R23	0.45	**0.85**	0.15	0.34	0.43	0.46	0.03	0.17	0.11	−0.46
R24	0.52	**0.90**	0.12	0.38	0.54	0.45	0.09	0.23	0.31	−0.51
R25	0.45	**0.85**	0.15	0.45	0.48	0.43	0.09	0.24	0.35	−0.52
R26	0.48	**0.71**	0.34	0.44	0.40	0.33	0.18	0.25	0.36	−0.41
R31	0.19	0.17	**0.78**	0.30	0.03	0.07	0.22	0.28	0.40	−0.16
R32	0.21	0.14	**0.88**	0.45	0.12	0.12	0.26	0.29	0.43	−0.25
R33	0.17	0.17	**0.87**	0.36	0.08	0.13	0.25	0.23	0.35	−0.15
R34	0.20	0.19	**0.82**	0.36	0.12	0.20	0.26	0.27	0.33	−0.27
R35	0.20	0.22	**0.77**	0.36	0.23	0.29	0.16	0.20	0.19	−0.34
R41	0.39	0.46	0.33	**0.70**	0.45	0.40	0.38	0.33	0.40	−0.40
R42	0.38	0.34	0.44	**0.90**	0.38	0.41	0.20	0.36	0.36	−0.48
R43	0.36	0.34	0.34	**0.83**	0.39	0.35	0.19	0.38	0.44	−0.48
R44	0.41	0.42	0.41	**0.89**	0.43	0.46	0.17	0.30	0.30	−0.51
R45	0.43	0.38	0.38	**0.88**	0.43	0.47	0.25	0.26	0.27	−0.55
R46	0.55	0.43	0.33	**0.82**	0.50	0.48	0.13	0.24	0.21	−0.60
R51	0.50	0.46	0.04	0.37	**0.76**	0.43	0.05	0.09	0.07	−0.56
R52	0.61	0.54	0.20	0.47	**0.81**	0.46	0.11	0.10	0.17	−0.55
R53	0.45	0.40	0.16	0.34	**0.75**	0.41	0.17	0.14	0.18	−0.42
R54	0.57	0.50	0.21	0.44	**0.85**	0.55	0.10	0.13	0.08	−0.56
R55	0.48	0.34	0.05	0.36	**0.81**	0.58	0.07	0.10	0.07	−0.45
R56	0.43	0.41	0.02	0.42	**0.77**	0.48	−0.06	0.13	0.13	−0.48
R57	0.52	0.43	0.10	0.42	**0.80**	0.58	0.01	0.24	0.08	−0.54
R61	0.24	0.32	0.27	0.36	0.45	**0.77**	0.18	0.29	0.15	−0.42
R62	0.33	0.33	0.20	0.45	0.58	**0.89**	0.08	0.15	0.14	−0.50
R63	0.33	0.35	0.14	0.42	0.57	**0.87**	0.14	0.13	0.11	−0.47
R64	0.35	0.49	0.11	0.44	0.47	**0.78**	0.13	0.11	0.12	−0.47
R65	0.38	0.52	0.10	0.42	0.51	**0.78**	−0.01	0.15	0.10	−0.44
CC1	0.14	0.16	0.27	0.29	0.12	0.17	**0.85**	0.35	0.36	−0.06
CC2	0.19	0.08	0.25	0.23	0.03	0.10	**0.91**	0.31	0.26	−0.07
CC3	0.23	0.07	0.22	0.21	0.09	0.06	**0.86**	0.27	0.18	−0.07
CC4	0.08	0.09	0.23	0.14	0.04	0.12	**0.79**	0.34	0.23	−0.04
CC5	0.11	0.09	0.27	0.22	0.04	0.09	**0.84**	0.40	0.33	−0.02
CC6	0.12	0.10	0.20	0.20	0.02	0.10	**0.85**	0.32	0.30	−0.02

	R1	R2	R3	R4	R5	R6	CC	TC	SC	PS
TC1	0.18	0.23	0.28	0.39	0.24	0.20	0.27	**0.89**	0.45	−0.20
TC2	0.16	0.26	0.36	0.28	0.11	0.14	0.30	**0.90**	0.52	−0.13
TC3	0.16	0.31	0.31	0.31	0.12	0.22	0.36	**0.90**	0.52	−0.17
TC4	0.13	0.31	0.25	0.31	0.17	0.21	0.36	**0.91**	0.53	−0.14
TC5	0.09	0.19	0.21	0.34	0.12	0.15	0.38	**0.90**	0.52	−0.15
TC6	0.11	0.15	0.24	0.34	0.10	0.13	0.35	**0.87**	0.56	−0.10
SC1	0.15	0.28	0.40	0.34	0.14	0.11	0.32	0.48	**0.90**	−0.16
SC2	0.15	0.28	0.42	0.40	0.12	0.14	0.35	0.51	**0.91**	−0.17
SC3	0.16	0.31	0.31	0.31	0.09	0.09	0.23	0.47	**0.91**	−0.14
SC4	0.18	0.31	0.40	0.37	0.14	0.15	0.21	0.57	**0.92**	−0.20
SC5	0.15	0.32	0.33	0.36	0.16	0.20	0.33	0.56	**0.93**	−0.14
PS1	−0.52	−0.59	−0.25	−0.56	−0.57	−0.57	−0.07	−0.17	−0.22	**0.94**
PS2	−0.55	−0.56	−0.23	−0.54	−0.65	−0.51	−0.01	−0.11	−0.14	**0.95**
PS3	−0.54	−0.55	−0.26	−0.56	−0.63	−0.56	−0.12	−0.17	−0.16	**0.95**
PS4	−0.53	−0.52	−0.33	−0.60	−0.56	−0.47	−0.05	−0.20	−0.16	**0.92**

Note: Bold values are the loadings of the indicators on their principle constructs.

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