



Article

How Risk Managers' Psychological and Social Capital Promotes the Development of Risk-Management Capabilities

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Abstract: The purpose of this study is to investigate the roles of risk managers' psychological and social capital in risk-management capabilities (technical, business processes, and external resources) and the relationship between risk-management capabilities and management performance. This study treated organizational culture as a moderating variable. The research subjects (n = 1000) included top managers, general managers, and managers in various industries. This study found that risk managers' positive psychological and social capital play important roles in corporate risk-management capabilities. The investigation of the moderating effect of organizational culture also provides important guidelines for future studies. This study found that components of psychological capital (e.g., hope, resilience, optimism, and self-efficacy) had a positive effect on substitute-risk-management capabilities (e.g., technology, business, and external management). Moreover, components of social capital (e.g., managerial tie utilization, trust, and solidarity) had a positive effect on substitute-risk-management capabilities (e.g., technology, business, and external management). The social and psychological capital of a company's top management and managers are essential elements for strengthening the company's capabilities for business and risk management. This study also found that the strength of the moderating effects on the relationship between psychological and social capital and risk-management capabilities differs according to the organizational culture. The implications of the study and limitations are discussed.

Keywords: business performance; risk management capability; positive psychological capital; social capital

1. Introduction

In an uncertain global market economy with fierce competition, responding to and managing diverse types of risk have become more critical than ever. Internal and external uncertainty hinders companies from achieving their business performance goals and creates uncertainty in the timing of goal achievement. Risk management in the business field has been considered the process of identifying, prioritizing, and mitigating the impact of unforeseen events [1]. Many companies have systematized risk management as a means of understanding and analyzing such variables in advance to avoid negative consequences. In a business environment where uncertainty always exists, the relationship between a company's systematic risk-management capabilities, and business performance merits attention. Thus, risk managers (e.g., CEOs, general managers, etc.) responsible for managing risk in their enterprises play an important role in the business environment [1,2].

Studies focusing on the recognition of and investment in psychological and social capital seem vital to the success and competitive advantage of organizations both currently and in the future.

“Psychological and social capital must be considered an important variable and a predisposing factor driving the management performance of start-up entrepreneurs” [3–5], management, general marketing, and service marketing capabilities [6,7]. In this context, the role of positive psychological and social capital, which is an external element of corporate executives, may be closely associated with their risk management, managerial strategies, and performance. As positive psychological and social capital is regarded as an important means for business management, theories regarding this topic have attracted attention and become very important in the field of management [5,8]. Exploring the role of risk managers’ psychological and social capital in risk-management capabilities in the current business environment is needed. The results of the study could provide companies with appropriate directions for implementing their risk management strategies or creating business mindsets in their employees.

The purpose of this study is to examine the correlations between corporate risk managers’ social and psychological capital and their capabilities for risk management. Moreover, this study aimed to identify the effects of companies’ risk management capabilities on their business performance and the moderating effects of the organizational culture, which was implemented as a moderator variable, thereby contributing to the development of corporate risk management and increasing the effects of corporate managerial strategies. This study provides valuable information on aspects of sustainable planning and risk management in corporate and government.

2. Literature and Theoretical Background

2.1. Risk-Management Capability

Risk can assume the form of gradually increasing competitive intensity, unwelcome interest or attention in mass media, government intervention, interference with a company’s normal management processes, or a threat to a company’s public image, which often focuses on one or more executives [1, 9–11]. Currently, the business environment demands active and comprehensive risk management, and this change in perception presents an opportunity. Risk management activities are currently often comprehensively controlled through management systems in which the risk-management strategy, related processes, and even risk-management committees operate professionally to manage risk-related affairs [1,12,13]. Nevertheless, regarding managers’ risk-management capabilities, the need for executives and directors to understand or prepare for risk management has been emphasized. Thus, boards of directors provide the overall framework for risk management while executives play a practical role within the framework by applying the risk standards established by the boards of directors. This process can help companies maximize profits in the long term. Risk management capability used in the study divided into technology, business, and external management capabilities by considering the characteristics of the subject companies.

2.2. Positive Psychological and Social Capital

While the major variables of psychological capital have been studied as independent concepts, a study conducted by Luthans, Youssef, and Avolio [5] integrated these variables into the superordinate concept of psychological capital and investigated its correlations with organizational performance based on the results of existing studies that found that the four variables of psychological capital were commonly associated with the cognitive condition and motivation required to achieve tasks or goals and had positive effects on their outcome variables. Psychological capital comprises the following four variables: Self-efficacy and self-confidence [14], which refer to positive thinking without pessimism even when things do not work as planned; hope, which refers to perceiving even difficult situations as opportunities for growth [15]; optimism, which refers to exerting effort to identify positive aspects without frustration, even in failing situations [16]; and finally, resilience, which refers to not focusing on failures of self-confidence, but rather thinking about how to respond to future events [17].

The concept of social capital has developed in social studies in terms of trust, rules governing social behaviors, social interactions, and network resources and characteristics [6,7,18–23]. Trust is

considered a psychological condition that is formed with the intention to endure vulnerabilities based on positive expectations regarding the intentions and behaviors of others [19,20,24]. Solidarity is a longer-term orientation in relationships, and mutual solidarity eventually leads the members of independent channels to better support customer needs and work together to further increase their mutual benefits [6,7,23].

Some scholar argued that “well-being contributes to employees’ proactively developing their work roles and job crafting activities” [25]. That is to say, focusing on employees’ well-being can help staff to maintain the managerial performance or efficiently handle the risk or crisis event [25]. Perspective from the previous studies, the social and psychological capital of a company’s top management and managers are essential elements for strengthening the company’s capabilities for business and risk management. The development of corporate risk management capabilities is considered closely related to risk managers’ intrinsic qualities and characteristics. The business mindsets of middle managers, namely, their psychological and social capital, may form a foundation for the ongoing survival and existence of companies [16,17].

Risk managers with a high level of psychological and social capital could have the capability to develop or control technical needs according to the time needed to make a change, the skills needed to respond to changing technology, and the collaboration and integration capability across the departments that manage evolving technology. Risk managers with a high level of psychological and social capital could have the capability to develop or improve when a company is well-equipped with the skills required to resolve and respond to labor-management relationship issues and disputes, prepare for economic downturns, and institute a system to ensure compliance with the law [4,5]. These managers have the development skills to form smooth labor–management relationships and resolve diverse internal disputes or conflicts with the local community and other companies, all of which are important for preparing for an uncertain market economy. Risk managers with a high level of psychological and social capital could have the capability to develop or improve business-related risk-management capabilities, including business expense management, product development organization, the terms and conditions of contracts with trading companies, ethics management, and credit management.

2.3. Organizational Culture

Research works concerning corporate culture began to be actively conducted, which also gave rise to organizational studies using cultural approaches. A company’s organizational culture can differentiate and strengthen its corporate image. The proper formation of corporate culture within a company can enable its employees to communicate easily, make better decisions based on the same standards, and experience increased mental satisfaction [26–31]. Some researchers have suggested that employment practices represent a major process through which social capital is facilitated or suppressed within an organization and conceptually explained that the formation of organizational social capital (e.g., cooperation and trust) through employment practices (stable relationships, strict norms, and specified roles) affects organizational performance [32]. The concept of organizational culture may consist of various elements, such as beliefs, norms, customs, and values [26–31]. Nevertheless, organizational culture is considered an important element that helps companies effectively achieve their business performance [29,33].

3. Hypotheses and Research Model

The relationship between psychological capital and various outcome variables has been previously studied [4,5,34,35]. Individuals who have high levels of psychological capital were found to experience corresponding positive effects on their job performance, innovative behaviors and job satisfaction and show strong enthusiasm for their tasks and low levels of intention to change their jobs [16,34]. Individuals who have high levels of hope were found to have strong desires for self-realization and the ability to obtain strong social support, even in stressful situations, and respond to stressors via various channels. These findings suggest that hope in organization members is related to their job performance

and satisfaction [34]. A study reported that hope has statistically significant effects on certain variables, including organizational effectiveness, that encompass job performance and attitudes [35,36].

Another study defined resilience as the ability to positively respond and successfully adjust to hardships and risky situations [17]. Luthans and Youssef asserted that individuals with high levels of resilience seek value and beauty and obtain personal growth in the process of overcoming adversities or suffering [35]. Given these findings, individuals capable of perceiving reality and accepting changes are predicted to find value in their jobs and remain enthusiastic [36]. An empirical study noted that individuals who are resilient are satisfied with their jobs and happy [35].

Optimism refers to a mindset that does not yield to failing situations and continuous attempts to resolve these situations by identifying their causes. Some empirical studies have reported that optimistic individuals find genuine enjoyment in their work, feel rewarded by their work, and achieve higher performance than those who are not optimistic [34,35]. In addition, optimistic employees were revealed to have higher levels of job performance [34]. Finally, individuals who have high levels of self-efficacy show enthusiasm for and pay close attention to their tasks, which eventually improves their performance [4,34,35]. Based on the literature review and discussion regarding psychological capital, the present study confirmed that the psychological capital of risk managers in companies affects various dependent variables. Therefore, this study established the hypothesis that risk managers' psychological capital is closely correlated with performance variables.

Hypothesis 1 (H1). *Risk managers' positive psychological capital has a positive impact on risk-management capabilities (H1-1: technical, H1-2: business, and H1-3: external risk).*

Social capital can influence each group member's career success and rewards within an organization, facilitate resource exchanges and product innovation within a department, lower the members' intention to change jobs, and promote the creation of entrepreneurship and new companies [6,7,37]. Since individuals have their own varied, but limited, abilities, they can achieve outstanding performance by combining their abilities with those of others. "Social capital enables individuals to carry out new activities that they could not perform without it, and social capital has the characteristics of capital because it makes individuals strive to meet new goals" [38]. "Organizations are open systems, and their success or failure depends on their abilities to mobilize valuable external resources" [39]. Corporate managers and chief executive officers (CEOs) can gain access to financial or strategic resources through their social networks [21], obtain high-quality information regarding products, markets, and technologies [22], and build a foundation for knowledge acquisition [23].

Employees' trust in managers is important as such trust can increase organizational members' willingness and support [40], and determines the degree to which organization members intend to behave according to the managers' directions and instructions despite uncertainties and potential risks. Thus, employees' trust in their managers is important for determining organizational members' physical and psychological conditions [41]. Acquah stated that the relationships between a company's top management and the managers of other companies, government officials, and community leaders have direct or indirect positive effects on the company's business performance [21]. A summary of the existing studies suggests that the experiences of managers and their networks eventually have positive effects on the growth and performance of their companies [42]. Based on this discussion, the following hypothesis can be established: The social capital of corporate risk managers is closely correlated with performance variables. Risk managers' social capital may be directly linked to their companies' capabilities for risk management. Accordingly, the following hypothesis was established:

Hypothesis 2 (H2). *Risk managers' social capital has a positive impact on risk-management capabilities (H2-1: technical, H2-2: business, and H-3: external risk).*

An executive's risk-related behavior affects the correlation between risk management and business performance. Some scholars argue that environmental factors have a minor impact on a company's

risks and that most of a company's risks are derived from executive behavior. Their study results imply that an executive's capability has a greater influence on business performance than external factors [43–45].

Previous studies concerning risks report that a close relationship exists between corporate risk-management capabilities and management performance. It has been shown that financially healthier companies exhibit stronger positive risk-management and business performance. However, a small company may experience a negative impact [43–45]. In addition to the traditional risk-management factors, including risks due to management activity, operational strategy, financials, and social issues, newly emerging factors, such as the organizational structure, policy, organizational culture, and system factors influence a company's management performance. The necessity of forming an organization focused on risk-related tasks has been perceived, and it has been shown that regular education related to risk management is required [43,45]. Based on the above discussion, a company's risk-management capability could eventually affect its overall management performance. Hence, we propose the following hypothesis:

Hypothesis 3 (H3). *Mangers' risk-management capability (H3-1: technical, H3-2: business, and H3-3: external risk) has a positive impact on the company's management performance.*

Previous studies emphasized that the organizational culture is a critical factor determining how to distribute resources to achieve an organization's long-term plans and goals and the organization's long-term direction and basic nature [27–30]. Organizational culture is necessary for explaining the process of finding, inventing, and developing solutions to problems with internal integration and environmental adjustment [27–30]. A well-defined organizational culture is vital for organizational success regarding the relationship between culture, job satisfaction, innovation, business performance, and employee commitment. Moreover, organizations with a strong culture enable them to compete globally [46,47]. The present study predicted that risk managers' social and psychological capital could have different effects on their capabilities for risk management, depending on the organizational culture [27–29]. Based on the above discussion, the following hypotheses reflect the prediction that the organizational culture of a company, which represents perceived possibilities, is related to risk management capabilities and management performance.

Hypothesis 4 (H4). *The organizational culture has a moderating effect on the relationship between psychological (H4-1) and social (H4-2) capital and technical risk-management capability.*

Hypothesis 5 (H5). *The organizational culture has a moderating effect on the relationship between psychological (H5-1) and social (H5-2) capital and business risk-management capability.*

Hypothesis 6 (H6). *The organizational culture has a moderating effect on the relationship between psychological (H6-1) and social (H6-2) capital and external risk-management capability.*

Hypothesis 7 (H7). *The organizational culture has a moderating effect on the relationship between risk-management capabilities (H7-1: technical, H7-2: business, and H7-3: external) and management performance.*

4. Research Method

The research model is shown in Figure 1. The following section summarizes the research hypotheses and research model built based on the above discussion.

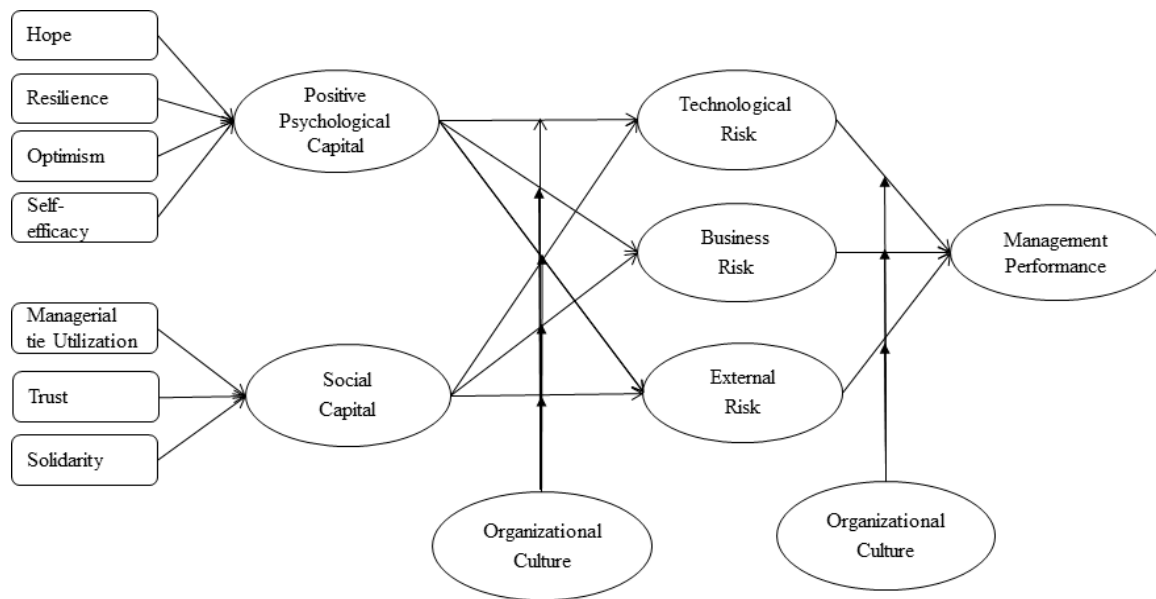


Figure 1. Proposed research model.

5. Research Methodology

5.1. Survey Procedures and Data Collection

The survey was conducted between March 1 and September 30 of 2019 in Korea. This study's sample comprised companies (small and medium enterprises and one large enterprise) from Korea. Among the companies registered with these country business associations, the sample companies were randomly selected by the investigators. The researchers contacted the top manager or managers of the companies using e-mail and phone and provided an explanation of the project and survey.

For the empirical analysis, we conducted a survey of each company's practical workers. This study involved the following two types of surveys: online and in-person. Then, willing participant companies were directed to the online survey website. In addition, the researchers visited the companies on an agreed date and asked the participants to complete the questionnaires as self-administered surveys. The respondents were given gift cards as compensation by the researchers. In total, 1250 participants were invited to participate (e.g., top management, general managers and managers). Over 1125 responses were received, and 1000 responses were selected for the statistical analysis after excluding insincere responses, such as missing mark and cross marking. The response rate of this survey is over 80 percent. The questions regarding gender, age, education and etc. were placed on the first page. The second part of the survey included questions regarding social and psychological capital, risk management capability, management performance, and organizational culture.

5.2. Operational Definitions of the Main Variables

As seen Appendix A, the components of psychological capital are hope, resilience, optimism, self-efficacy, which suggested by previous studies [4,35,37]. The elements of social capital are managerial tie utilization, trust, and solidarity. Some scholar mentioned that "managerial tie utilization is defined as executives' interpersonal contacts with external entities" [6,7]. The categorizing methods and all items were adapted to suit this study [6,7].

A company's risk-management capability includes the risk level, level of a work division, system integration, and decision-making effectiveness. This study divided the factors constituting a company's risk-management capability into technology, business, and external management capabilities [43–47]. Technological risk-management capability included the following four items. The items are technological requirement conditions, technological change, system integration, and pilot

test management. Business risk-management capability included the following four items. The items are business expense, open mass production organization, terms and conditions of contracts, credit risk, and ethical management. External risk management capability included the following four items. The items are labor management relationship, dispute resolution, inflation, and legal compliance.

The organization culture as a moderating variable was adapted from previous research [27–29,48]. The authors classified organizational culture combined with risk management in the organization into the following six items. The items are the degree of perception of risk management activity, communication regarding risks, overall risk management, risk prediction, degree of trust with members, and degree of perception of continuous investigation regarding risk.

Management performance was measured by four items after correcting and modifying questionnaire items in previous studies to better fit this study [4,6,7]. The four items used to measure performance now distinguish between financial performance and non-financial performance [7]. The study used a five-point Likert scale, ranging from 1 (“not at all”) to 5 (“very much”), with 3 indicating a normal score. Thus, the higher the score, the more affirmative the answer. The study also tests the survey data for reliability and validity, as “factor analysis [was] applied to reduce a large number of observed variables into fewer numbers of factors” [49,50].

5.3. Descriptive Analysis

The study’s sample held positions, such as top managers, general managers, and managers in companies. As shown in Table 1, the eventual sample consisted of 623 men, 377 women and 1000 questionnaires. The detailed demographics are described in Table 1.

Table 1. Demographic profiles.

n = 1000		Frequency	%
Sex	Male	623	62
	Female	377	38
Industry	Electrical and Electronics	132	13
	Machinery	120	12
	Petroleum	103	10
	Construction	107	11
	Heavy Industry	108	11
	Telecommunications	103	10
	Shipbuilding	102	10
	Service	132	13
	Biology and Medicine	93	9
Position	Top management	246	25
	General Manager	325	33
	Manager	429	43
Working Years	Under 5 years	298	30
	6–15	262	26
	16–20	210	21
	Over 20 years	230	23
Size	Under 5 employees	193	19
	6–30 employees	365	37
	31–50 employees	255	26
	More than 50 employees	187	19

5.4. Assessment of the Measurement Model

The study tests the measurement tools for reliability and validity, as well as used exploratory factor analysis (EFA). Bartlett’s test of sphericity were significant ($X^2 = 52,566.5$, $df = 1540$, $p < 0.001$). The Kaiser–Meyer–Olkin measure of sampling adequacy was 0.932 for all variables. Therefore, the sample used in the study was likely not contaminated by common method bias [49]. As seen Table 2,

seven factors were extracted for positive psychological capital, social capital, and risk management, which accounted for 75% of the total variance. Four factors were extracted for risk management capability and management performance, which accounted for 72% of the total variance. Thus, “the study found no dominant factor emerging from the factor analysis, implying that common method variance was not a serious problem” [49,50].

Table 2. Results of exploratory factor analysis (EFA).

Independent Variables									
Construct	M	Std.	Items	FL	Construct	m	Std.	Items	FL
Hope	3.87	0.654	Hop1	0.831	Managerial tie Utilization	3.46	0.725	Man1	0.837
			Hop2	0.837				Man2	0.809
			Hop3	0.867				Man3	0.763
			Hop4	0.845				Man4	0.684
			Hop5	0.863				Man5	0.743
			Hop6	0.779				Man6	0.785
Resilience	3.54	0.659	Res1	0.793	Trust	3.05	0.867	Tru1	0.759
			Res2	0.884				Tru2	0.823
			Res3	0.812				Tru3	0.798
			Res4	0.901				Tru4	0.763
Optimism	3.34	0.756	Opt1	0.773	Solidarity	3.29	0.795	Sol1	0.765
			Opt2	0.835				Sol2	0.883
			Opt3	0.718				Sol3	0.803
			Opt4	0.725					
			Opt5	0.841					
Self-efficacy	3.84	0.590	Eff1	0.725					
			Eff2	0.862					
			Eff3	0.784					
			Eff4	0.812					
			Eff5	0.842					
Dependent Variables									
Technical Risk	3.61	0.709	Tec1	0.656	Management Performance	3.23	0.767	Per1	0.718
			Tec2	0.730				Per2	0.745
			Tec3	0.688				Per3	0.679
			Tec4	0.662				Per4	0.657
Business Risk	3.79	0.697	Bus1	0.697	Moderating Variable				
			Bus2	0.686	Organizational Culture	3.39	0.787	Org1	0.833
			Bus3	0.769				Org2	0.759
			Bus4	0.656				Org3	0.753
Ext1	0.735	Org4	0.805						
External Risk	3.63	0.719	Ext2	0.729	Org5	0.821			
			Ext3	0.699	Org6	0.764			
			Ext4	0.676					
Factor		Eigenvalues		% of Variance					
Factor 1		4.27		71.16					
71.16% of the total variance extracted									
Independent Variables			Dependent Variables						
Factor	Eigenvalues	% of Variance	Factor	Eigenvalues	% of Variance				
Factor 1	14.4	43.75	Factor 1	7.38	43.4				
Factor 2	4.75	14.39	Factor 2	2.11	12.4				
Factor 3	1.63	4.95	Factor 3	1.64	9.65				
Factor 4	1.12	3.16	Factor 4	1.13	6.63				
Factor 5	1.09	3.12	72.11% of the total variance extracted						
Factor 6	1.06	2.82							
Factor 7	1.02	2.39							
74.59% of the total variance extracted									

Note: FL, Factor loadings.

As shown in Table 3, Cronbach’s alpha exceeded the standard acceptance norm of 0.70, the study’s AVE (average variance extracted) satisfies the standard of 0.5. As seen in Table 3, the AVE value among

the variables is greater than the squared correlation coefficient (ρ). AVE in this study ranges 0.623 from 0.753. The Cronbach’s alpha is 0.853 for psychological capital, 0.846 for social capital, 0.870 for technical risk, 0.834 for business risk, 0.850 for external risk, and 0.903 for management performance. Thus, the data collected for verification have sufficient discriminant and convergent validity.

Table 3. AVE, Cronbach’s alpha and Correlation Matrix.

	α	AVE	1	2	3	4	5	6	7
PC	0.863	0.753	1						
SC	0.846	0.623	0.321 *	1					
TR	0.870	0.733	0.111 *	0.131 *	1				
BR	0.834	0.721	0.232 *	0.176 *	0.088 *	1			
ER	0.850	0.742	0.053 *	0.008 *	0.017 *	0.192 *	1		
MP	0.903	0.794	0.203 *	0.127 *	0.042 *	0.313 *	0.098 *	1	
OC	0.883	0.734	0.218 *	0.342 *	0.087 *	0.092 *	0.045 *	0.072 *	1

Notes: AVE, average variance extracted; * squared correlation coefficients, $p < 0.05$; PC, psychological capital, SC, social capital; TR, technical risk; BR, business risk; ER, external risk; MP, management performance; OC, organizational culture.

6. Results

6.1. Hypotheses Tests

As seen Figure 2, the research model remained within the acceptable boundaries. Hypothesis 1-1 assumes that psychological capital has a positive influence on technical risk management capability. The results indicate that psychological capital has a positive effect on technical risk management capability (path coefficients: $\gamma = 0.377(0.507)$, $z = 15.7$, $p < 0.001$). Hypothesis 1-2 assumes that psychological capital has a significant influence on business risk management capability. The results indicate that psychological capital has a positive effect on technical risk management capability (path coefficients: $\gamma = 0.433(0.573)$, $z = 13.5$, $p < 0.001$). Hypothesis 1-3 assumes that psychological capital has a significant influence on external risk management capability. The results indicate that psychological capital has a positive effect on technical risk management capability (path coefficients: $\gamma = 0.391(0.534)$, $z = 12.1$, $p < 0.001$). Thus, H1-1, 2, and 3 were supported.

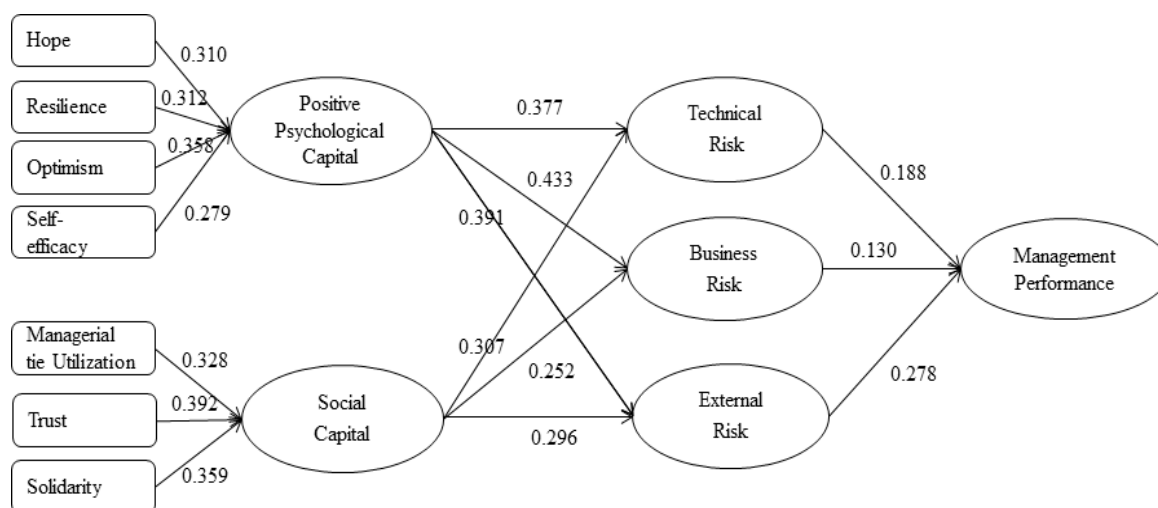


Figure 2. Results of the Path Analysis.

Hypothesis 2-1 assumes that social capital has a positive influence on technical risk management capability. The results indicate that social capital has a positive effect on technical risk management capability (path coefficients: $\gamma = 0.307(0.295)$, $z = 9.45$, $p < 0.001$). Hypothesis 2-2 assumes that social

capital has a positive influence on business risk management capability. Social capital has a positive effect on technical risk management capability (path coefficients: $\gamma = 0.252(0.239)$, $z = 7.83$, $p < 0.001$). Hypothesis 2-3 assumes that social capital has a significant influence on external risk management capability. The results indicate that social capital has a positive effect on technical risk management capability (path coefficients: $\gamma = 0.296(0.289)$, $z = 9.16$, $p < 0.001$). Thus, H2-1, 2, and 3 were supported.

Hypotheses 3-1, 2, and 3 assume that risk management capabilities (e.g., technical, business and external risk management capability) have positive effects on management performance (path coefficients: $\beta = 0.188 = (0.203)$, $z = 5.07$, $p < 0.001$ for technical risk, path coefficients: $\beta = 0.130$, $p < 0.05$ for business risk, path coefficients: $\beta = 0.278(0.296)$, $z = 8.05$, $p < 0.001$ for external risk). Thus, H3-1, 2, and 3 were supported.

As shown in Table 4, the result of testing of hypotheses 4, 5 and 6 indicate that the statistical significance of the regression coefficient of the interactions between organization culture and psychological and social capital was verified. The regression coefficient of the interactions between psychological and social capital and technical risk management capability on technical risk was statistically significant ($\beta = 0.421$, $t = 5.81$, $p < 0.001$ for psychological capital and $\beta = 0.189$, $t = 2.62$, $p < 0.05$ for social capital). The regression coefficient of the interactions between psychological capital and business risk management capability was statistically significant ($\beta = 0.721$, $t = 10.7$, $p < 0.001$ for psychological capital). However, the regression coefficient of the interactions between social capital and business risk management capability on business risk was not statistically significant ($\beta = 0.035$, $t = 0.529$, $p = 0.597$ for social capital). The regression coefficient of the interactions between psychological capital and external risk management capability was statistically significant ($\beta = 0.664$, $t = 9.72$, $p < 0.001$ for psychological capital). However, the regression coefficient of the interactions between social capital and external risk management capability on external risk was not statistically significant ($\beta = 0.006$, $t = 0.090$, $p = 0.928$ for social capital). The regression coefficient of the interactions between technical and external risk management capabilities on management performance was statistically significant ($\beta = 0.259$, $t = 3.93$, $p < 0.001$, and $\beta = 0.360$, $t = 5.82$, $p < 0.001$). However, the regression coefficient of the interactions between business risk management capability on management performance was not statistically significant ($\beta = 0.028$, $t = 0.345$, $p = 0.730$). Thus, these results support H4-1,2, H5-1, H6-1, H7-1, and H7-3, but not H5-2, H6-2 and H7-2. Additionally, four control variables, including gender, industrial type, position, working year and firm size, had a positive effect on the dependent variables.

Managers with high positive psychological qualities and social capital tend to have a mutually collaborative attitude and excellent problem-solving skills and interpersonal relationships. These managers tend to perceive external risk factors as more important when they affect risk-management capability and tend to perceive the organizational culture as more important when it affects management performance. It has been proven that a company's risk-management capability has a positive impact on the company's management performance. When risk-management capability becomes visible, organization members work more efficiently, the organization's image improves, competitive advantages can be attained, and the work system improves. Thus, risk-management capability likely improves when a company has a risk-prediction manual, maintains internal proficiency in its management work, has an integrated system, and has a well-formed organizational culture.

This study found that psychological and social capital are both directly related to a company's risk-management capability. These results indicate that psychological and social capital have positive effects on technical, business, and external risk-management capabilities. Positive psychological capital has a positive effect on technical risk-management capabilities. Generally, hope and optimism require the belief that goals can be accomplished. Hope requires a goal-oriented will and a goal achievement path and emphasizes assessing the process of devising specific paths and alternative plans for achieving goals and overcoming obstacles using internalized control, which creates the motivation, will, and resolution to accomplish one's goals. Self-efficacy and other factors encourage managers to perform difficult tasks and strive for success. The utilization of managerial ties, trust, and solidarity are considered to be sub-factors of social capital. Managerial tie utilization encompasses ties with

clients, competitors, private experts, relevant organizations, governmental departments, and financial institutions as aspects of social networks. In addition, trust is an essential element in the sharing and exchange of information among company members.

Table 4. Moderating Effects of Organizational Culture.

		β	t	p-Value
Control Variable	Gender	0.149	1.697 *	0.090
	Industrial Type	0.059	2.458 **	0.014
	Position	0.273	7.791 ***	0.000
	Working Years	0.127	6.672 ***	0.000
	Size	0.066	1.661 *	0.097
Dependent Variables	Interaction Effect	β	T	p-value
TR	PC * OC	0.421	5.81 ***	0.000
	SC * OC	0.189	2.62 **	0.009
Adjusted R ²			0.361	
F-value			283.5 ***	
BR	PC * OC	0.712	10.7 ***	0.000
	SC * OC	0.035	0.529	0.597
Adjusted R ²			0.459	
F-value			425.5 ***	
ER	PC * OC	0.664	9.72 ***	0.000
	SC * OC	0.006	0.090	0.928
Adjusted R ²			0.432	
F-value			381.0 ***	
MP	TR * OC	0.259	3.93 ***	0.000
	BR * OC	0.028	0.345	0.730
	ER * OC	0.360	5.82 ***	0.000
Adjusted R ²			0.389	
F-value			213.2 ***	

Note: *** $p < 0.001$; ** $p < 0.05$, * $p < 0.10$ (marginal significant); PC, psychological capital; SC, social capital; TR, technical risk; BR, business risk; ER, external risk; MP, management performance; OC, organizational culture.

6.2. Additional Analysis

The study conducted to verify the first hypothesis predicts that the factors constituting psychological capital have positive effects on technical, business and external risk management capabilities. Hope, resilience, optimism, and self-efficacy positively affected technical risk management capability ($\beta = 0.169$, $t = 4.19$, $p < 0.001$, $\beta = 0.115$, $t = 3.50$, $p < 0.001$, $\beta = 0.308$, $t = 10.0$, $p < 0.001$, and $\beta = 0.136$, $t = 3.37$, $p < 0.05$, adjusted $R^2 = 0.335$, $F = 127.0$, $p < 0.001$). Hope, optimism, and self-efficacy positively affected business risk management capability ($\beta = 0.186$, $t = 7.74$, $p < 0.001$, $\beta = 0.338$, $t = 11.3$, $p < 0.001$, and $\beta = 0.192$, $t = 4.48$, $p < 0.001$, adjusted $R^2 = 0.371$, $F = 148.2$, $p < 0.001$). However, resilience as a sub-factor of psychological capital did not affect business risk management capability ($\beta = 0.038$, $t = 1.20$, $p = 0.231$). Hope, optimism, and self-efficacy positively affected external risk management capability ($\beta = 0.404$, $t = 10.3$, $p < 0.001$, $\beta = 0.384$, $t = 12.2$, $p < 0.001$, and $\beta = 0.078$, $t = 2.00$, $p < 0.05$, adjusted $R^2 = 0.379$, $F = 153.1$, $p < 0.001$). However, resilience positively affected business risk management capability ($\beta = 0.051$, $t = 1.59$, $p = 0.112$).

The study conducted to verify the second hypothesis predicts that the factors constituting social capital have positive effects on technical, business and external risk management capabilities. Managerial tie utilization and solidarity positively affected technical risk management capability

($\beta = 0.237$, $t = 4.71$, $p < 0.001$, and $\beta = 0.364$, $t = 7.43$, $p < 0.001$, adjusted $R^2 = 0.319$, $F = 157.1$, $p < 0.001$). However, trust did not affect technical risk management capability ($\beta = 0.010$, $t = 2.28$, $p = 0.820$). Managerial tie utilization, trust, and solidarity positively affected business risk management capability ($\beta = 0.532$, $t = 10.8$, $p < 0.001$, $\beta = 0.191$, $t = 4.39$, $p < 0.001$, and $\beta = 0.230$, $t = 4.78$, $p < 0.001$, adjusted $R^2 = 0.346$, $F = 176.8$, $p < 0.001$). Managerial tie utilization, trust, and solidarity positively affected external risk management capability ($\beta = 0.428$, $t = 8.60$, $p < 0.001$, $\beta = 0.081$, $t = 1.85$, $p < 0.07$ (marginally significant) and $\beta = 0.242$, $t = 4.99$, $p < 0.001$, adjusted $R^2 = 0.332$, $F = 166.7$, $p < 0.001$).

The present study conducted an empirical investigation of the relationships between managers' psychological capital and variables related to companies' risk management capabilities and business performance; thus, this study may be significant in terms of its focus on risk managers' psychological capital and risk-management capabilities.

7. Discussion and Conclusions

Some scholars argue for the employee capital system to be adopted by organizations in order to achieve the goal of recovery in a developed market as soon as possible [51]. The results indicated that technological innovation, ceaseless efforts to actively respond to changing technology and capture market trends, and cutting-edge technological power will all eventually impact risk management, as well as management performance. The global economic market is rapidly changing, resulting in greater uncertainty regarding the future. In addition to the visible types of capital, new types of capital that connect companies to their members in a cooperative relationship should be enriched. Thus, the abundance of social and psychological capital may be a driving force for the continuous growth and stability of companies and their wise reactions to risks.

The findings imply that an organization or company that systematically conducts pre and post hoc tests and evaluations of a product with cutting-edge technology shows remarkably improved risk-management capability. It is believed that companies and organization members who control risk do not regard these business-related risk-management capability factors as risks, but instead, perceive them as independent of risk factors. However, business factors required for product development are expected to affect a company's image formation or public activity. Credit with competitors and subcontractors and ethics management are classified as intangible assets. Such factors become important in an atmosphere of risk competition under a market economy situation, where the management of such intangible assets of companies becomes more complex and uncertainty increases.

7.1. Academic Implications

The implications of this study can largely be divided into two domains. First, as an academic implication, this study employed an evaluation of social and psychological capital. Thus far, psychological capital research has been limited to specific areas. Factors that are intrinsic to individuals, such as social and psychological capital, form a core business mindset that cannot be neglected by top management or managers in the current business environment in which the establishment and operations of companies are widespread. However, relevant theoretical and empirical studies have not been actively conducted. The present study has paved the way for promoting theoretical discussions regarding these factors by proposing and identifying new intrinsic management factors that establish businesses or managers as being in charge of risk management in terms of business mindsets, personnel and organization management, business strategies, and the development of marketing capabilities. Theoretically, the personal characteristics of risk managers, such as trust, networking, and sharing core values, are known to be closely linked to corporate risk management capabilities, such as self-confidence, resilience, optimism, and self-efficacy. In this context, the present study may provide the opportunity to advance theoretical discussions regarding this topic by proposing and identifying risk managers' risk management capabilities, their willingness to manage the risk management system, and their attitudes towards risk management or new factors that are intrinsic to their positions in terms of business mindsets, personnel management, and business strategies.

The study might pave the way for a new theoretical debate by suggesting and verifying risk managers' risk-management capability with respect to the business mindset, personnel management, and business strategy and the responsive attitude or new internal factors of the person in charge of risk management. This study has the following significance with respect to risk management. Modern companies can survive competition only if they can sensitively respond to information and change, understand trends, and satisfy needs in a timely way. Companies' responses to risk and risk management have evolved with the changing business environment. Currently, risk-management activities require a new perspective on risk management. While risk management was once localized in each department, currently, companies comprehensively perceive and respond to risk holistically.

7.2. Managerial Implications

Risk-management capability also differs depending on the risk managers' individual characteristics, such as their psychological and social capital. Risk management improves when risk managers exhibit a mutually collaborative attitude and excellent problem-solving skills and interpersonal relationships. An individual's propensity to respond to uncertainty also affects a company's risk-management capability. Managers who bravely respond to uncertainty and actively collect information and find ways to break through the risks tend to develop risk management capability and achieve better risk-management performance. Some scholars argued that well-being contributes to employees' proactive development of their work roles and job-crafting activities. That is, focusing on employees' well-being can help staff to maintain managerial performance or efficiently handle risk or crisis events [48]. This study's findings suggest that the social and psychological capital of a company's top management and managers are essential elements for strengthening the company's business and risk management capabilities. The development of corporate risk management capabilities is considered to be closely related to risk managers' intrinsic qualities and characteristics. The business mindsets of middle managers, namely, their psychological and social capital, may form a foundation for the ongoing survival and existence of companies.

In the current business environment, the creation of social and psychological capital, in such forms as trust, networking, and the sharing of core values among organizational members, and personal characteristics, in such forms as self-confidence, resilience, optimism, and self-efficacy, are likely to emerge as even more important factors for the sustainable growth of companies. This study suggests that risk management that accounts for sustainability should be discussed to decrease negative environmental impacts, as well as to sustain a business while preserving the environment and society. In this sense risk management is a critical element of sustainable development.

7.3. Limitations

One limitation of this study involves the sub-factors of a company's risk-management capability. We chose to divide risk-management into technical, business, and external risk-management capabilities. However, we believe that future studies should specify additional sub-components of risk-management capability as each company or industry sector faces a unique situation. The sampling methodology presented another limitation. Although this study produced results that offer valuable insights that can be used to increase the reliability of such results in future studies, the surveys should include risk managers in diverse industrial sectors. Moreover, there is a belief that the perception of risk, performance, and dynamic relationships differ according to the company size. This study did not cover sampling issues, such as organizational size, sector, multiple locations versus a single location, previous disaster experience, tenure of risk managers, or risk managers' gender, educational level, age, etc. Future studies should also consider these issues. Furthermore, future studies that explore the relationship between risk management and demographic characteristics, as well as studies conducted in other countries, are needed.

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Appendix A

Table A1. Statistics of the Construct Items.

Positive Psychological Capital	Items (The Items Used This Study Adopted from Previous Studies [4–7])
Hope (6)	At the present time, I am energetically pursuing my work goals. I have several ways to accomplish my work goal. When my performance appraisal falls short of the expected goal, I try to find ways to improve, and then start to do better. Now, I feel that I am energetic enough to accomplish the work goal. When I set goals and plan to work, I will concentrate on achieving the goal. I work on goals based on the belief that “Where there is a will, there is a way.”
Resilience (4)	I usually manage difficulties one way or another at work. I usually take stressful things at work in stride. When I fail at work, I try again to succeed. Although too much responsibility at work makes me feel awkward, I can work successfully.
Optimism (5)	I am always stuck on a problem and find that the problem cannot be solved. I believe that success in my work will occur in the future. If I have to face a bad situation, I believe that everything will change for the better. I believe that all problems occurring at work have a bright side. I’m optimistic about what will happen to me in the future as it pertains to work.
Self-Efficacy (5)	I feel confident in analyzing a long-term problem to find a solution. I feel confident contacting people outside my company (e.g., suppliers, customers) to discuss problems. I am confident enough with my performance that I know I can work under pressure and overcome challenging circumstances. I feel confident that I can accomplish my work goals. If my organization adopts a new system of operations which is difficult to understand, I am still confident that I can learn new things about this system.
Social Capital	Items (The items used this study adopted from previous studies [4–7])
Managerial Tie Utilization	During the past three years, you and other top managers at your company have heavily utilized personal ties, networks, and connections with top managers at buyer firms. During the past three years, you and other top managers at your company have heavily utilized personal ties, networks, and connections with top managers at supplier firms. During the past three years, you and other top managers at your company have heavily utilized personal ties, networks, and connections with top managers at competitor firms. During the past three years, you and other top managers at your company have heavily utilized personal ties, networks, and connections with political leaders at various levels of government. During the past three years, you and other top managers at your company have heavily utilized personal ties, networks, and connections with officials in industrial bureaus. During the past three years, you and other top managers at your company have heavily utilized personal ties, networks, and connections with officials in regulatory and supporting organizations such as tax bureaus, state banks, commercial administration bureaus, and the like.
Trust	I assumed that he or she would always look out for my interests. I assumed that he or she would go out of his or her way to make sure I was not adversely affected. I felt like he or she cared about what happened to me. I believed that this person approached his or her job with professionalism and dedication.
Solidarity	Members of my business network believe that the needs of the whole network should take priority over personal needs. Members of this business network accept decisions taken within the network even when they have other opinions. Problem solving by many members of a business network give better results than those by individuals.

Table A1. Cont.

Positive Psychological Capital	Items (The Items Used This Study Adopted from Previous Studies [4–7])
Risk Management Capability	Items
Technical risk management capability	Our company has a high level of technological requirement condition management. Our company has a high level of technological change management. Our company has a high level of system integration management. Our company has a high level of pilot test management management.
Business risk management capability	Our company has a high level of business expense management. Our company has a high level of development of technology and open mass production organization management on. Our company has a high level of terms, conditions of contract, and credit risk management. Our company has a high level of ethical management management.
External risk management capability	Our company has a high level of labor-management relationship management. Our company has a high level of dispute resolution management. Our company has a high level of inflation management. Our company has a high level of law observance management.
Organizational Culture	Items
Rationality culture	Our company emphasizes service productivity and efficiency. Our company emphasizes planning and target setting. Our company focuses on performance evaluation. Our company focuses on actions to accomplish its goals.
Development culture	Our company emphasizes creativity and innovation. Our company prioritizes the personal development of employees. Our company stresses intuition and the insight of members when facing new challenges. Our company is always open to new challenges.
Agreement culture	Our company emphasizes fellowship and participation. Our company prioritizes prior to consultation when making decisions. Our company prioritizes group morale and cohesion. Our company shows strong mutual cooperation and trust.
Hierarchical culture	Our company focuses on stability and consistency. Our company stresses that individuals should follow organizational instructions. Our company emphasizes rules and regulations at work. Our company prioritizes department-wide control based on a strict approval process.
Management Performance	The profitability of our company is increasing. The productivity of our company is increasing. Our company is consistently increasing its customer base. Our company is expected to show an increase in brand awareness.

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