

The 'Relatedness' Perspective in Compliance Management of Multi-business Firms

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ABSTRACT

This paper tries to closely look at compliance knowledge relatedness and IT relatedness based on Tanriverdi's 'relatedness' concept. Also, this paper's main focus lies on how knowledge relatedness and IT relatedness influence compliance performance through compliance knowledge exploitation. The present study conducted a full-scale survey and finalized questionnaire was sent to compliance managers of 187 Korean multi-business firms. This study found (1) the impact of compliance knowledge relatedness on compliance performance, (2) the mediating role of knowledge exploitation on the relationship between compliance knowledge relatedness and compliance performance, and (3) the interaction effect of IT relatedness and compliance knowledge relatedness on knowledge exploitation. This paper contributes to both academic and business world by widening applicability of theories and providing guidelines conducive to improved compliance performance of corporations.

Keywords: Compliance Knowledge, Knowledge Relatedness, IT Relatedness, Knowledge Exploitation, Compliance Management

1. Introduction

As the relevance of resource impacting corporate competitiveness has become increasingly important in the global business environment, more researchers and practitioners have been interested in sharing and transferring knowledge occurring in and out of a company (Kumar and Ganesh, 2009; Ribière and Walter, 2013; Van Wijk et al., 2008). In particular, research on multinational corporations was con-

ducted to extensively examine knowledge transfer within the companies (Gooderham, 2007). Especially, this internal knowledge transfer is important for diversified firms because exploiting knowledge relatedness is the cornerstone of their diversification strategies (Breschi et al., 2003; Kor and Leblebici, 2005).

'Relatedness' is defined as the level of utilizing common resources (e.g., knowledge or IT) across different business units at the multi-business firms (Nocker et al., 2016). This concept can be also applied

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to compliance aspects of multi-business firms. There are substantial number of domestic or international laws and regulations that firms must follow. When a firm runs multiple businesses in a variety of unrelated industries with its operations in many different nations, the types and scope of laws applicable to the firm get much broader. Moreover, business environment is ever-changing, which is also impacted by changing legal environment due to newly enacted or amended laws and regulations. Against this backdrop, firms are required to monitor and adapt to changes in regulations (Karagiannis, 2007). To avoid violation of the new or changed laws, firms need to not only understand the law itself but closely look at the current situation including: 1) work or tasks that have a potential risk of violation, 2) an impact violation of a law will have on the firm or relevant departments, 3) how to reduce potential violation, and 4) what to do when an employee or the firm violates a law. In such circumstances, firms must pay more attention to how to manage compliance efficiently while better complying with laws and regulations which increasingly become changing, complicated, and equivocal.

Previous studies reported two different concepts of relatedness - knowledge relatedness and (Tanriverdi, 2005; Tanriverdi and Venkatraman, 2005) and IT relatedness (Tanriverdi, 2005). Although Tanriverdi's work demonstrated that knowledge relatedness influences corporate performance, it explored a broad range of knowledge and restricted its analysis to firms' financial achievement. To evaluate firms' compliance performance, compliance-related activities need to be measured to determine better or worse performance. Also, a compliance-specific definition needs to be made to examine knowledge relatedness from a compliance perspective, instead of employing Tanriverdi's definition of knowledge relatedness. Academic ap-

proaches to compliance management have usually focused on monitoring violations (surveillance) and responses to law enforcement, but this research tries to investigate the role of compliance knowledge relatedness as a preceding factor affecting compliance performance. In addition, this study not only highlights importance of knowledge relatedness but also underlines active exploitation of knowledge in doing related tasks, thereby proving the role of IT relatedness in raising work efficiency. Therefore, using IT systems itself is not a main focus in the context of compliance, rather, this study argues that: 1) what brings effectiveness is how well accumulated compliance knowledge is exploited; 2) IT relatedness keeps the exploitation of compliance knowledge more efficient.

This paper aims to throw light on the role of compliance knowledge exploitation and empirically investigate the relationship between compliance knowledge relatedness and corporate compliance performance. Specifically, this study seeks to explain how the compliance knowledge relatedness influences compliance performance through exploitation of compliance knowledge, and what role IT plays in such a process. A theoretical contribution of this paper is applicability of the theory can be widened by reviewing compliance management through the lenses of Tanriverdi's relatedness concept. Also, this study provides practical insights for corporations so that they can further enhance efficiency of compliance management.

II. Literature Review and Theoretical Development

2.1. Knowledge Resource and Compliance Knowledge Relatedness

According to resource-based view (RBV), busi-

nesses exist to create new values by going through the learning process where the resources inside the organization interact with each other (Penrose, 1995). Since the accumulated knowledge within the firm is the basis for gaining a market edge, firms are considered a collection of knowledge resources. Therefore, a firm is defined as the place where individuals share and transfer knowledge, and the primary reason why firms exist is to create new values through such knowledge sharing and transfer (Kim, 2019b; Kogut and Zander, 1992). Knowledge management is defined as the process to combine and disseminate knowledge resources of the organization so as to utilize such knowledge for decision making. To promote knowledge management, it is needed to provide the platform in which individuals share their knowledge resources and create new knowledge (Nonaka and Konno, 1998).

In the context of compliance, compliance knowledge within the organization includes: 1) understanding other departments/teams whose main role and responsibility are related to a particular regulation, 2) identifying which laws and regulations govern a department or team, and 3) learning from other departments/teams on how to respond to law enforcement (Kim and Kim, 2016). By utilizing this knowledge, firms are able to minimize redundant use of resources and create synergies.

Relatedness is a key concept that predicts the existence and essence of the relationship between corporate diversification and performance (Nocker et al., 2016). Looking at the definition of knowledge relatedness, it means the level of using common knowledge resources among various business units of the multi-business company. This notion is theoretically based on RBV and resource relatedness because they posit utilizing common resources across business units help the company to gain synergies or economies

of scope (Farjoun, 1994; Markides and Williamson, 1994; Robins and Wiersema, 1995). Knowledge relatedness can be differently interpreted because firms hold different types of knowledge resources (Schulz, 2001).

Meanwhile, it is costly to create and exploit common knowledge resources across multiple business units (Hill and Hoskisson, 1987; Nayyar, 1993). If the benefits do not exceed these costs, achieving knowledge associations cannot yield desirable results (Gupta and Govindarajan, 2000). Therefore, to specify dimensions of knowledge relatedness, it is needed to focus on the knowledge resource that have a positive impact on firm performance.

Summarizing the existing literature studying knowledge relatedness, relatedness refers to the major three knowledge domains in which firms generate synergies, and its definition is based on product, customer and managerial knowledge. First, the literature about product relatedness, technological relatedness and R&D relatedness indicates that knowledge embedded in products is the key source of synergy. Second, market relatedness and advertising relatedness show that knowledge about customers is another critical source of synergy in the different markets. Third, critical managerial logic and managerial knowledge relatedness represent that firms gain synergies from managerial process and knowledge about the logic.

Based on the classification of knowledge resources, Tanriverdi (2005) identified product knowledge relatedness, customer knowledge relatedness, and managerial knowledge relatedness as the major sources of cross-business knowledge synergy. In particular, Tanriverdi and Venkatraman (2005) focused on the individual and joint effect of various types of knowledge relatedness, and empirically examined the importance of complementarity of knowledge resources.

2.2. Risk Management and Compliance Knowledge Relatedness

As mentioned above, managerial knowledge of each business unit can be utilized as the source of cross-business synergy (Prahalad and Bettis, 1986). Managerial knowledge includes managerial insights within the firm, experiences and best practices (Kim, 2019c). Contrary to an independent business, each business under the governance of the multi-business firm has opportunities to learn and utilize the firm's managerial knowledge.

A business, regardless of products and markets, faces a managerial challenge, and risk management is one of those challenges. Good basic principles in terms of management can be applied in many other contexts (Koontz, 1969). If a certain business understands how to effectively respond to managerial challenges, this managerial knowledge is acquired by other business units of the firm. Particularly, the extent of exploiting managerial knowledge across business units of the multi-business firm determines achieving economies of scope. Grant (1988) asserted that managerial knowledge of the multi-business firm exists in the managerial process at a firm level.

Risk management is of great importance in running businesses (Bettis and Mahajan, 1985). For the multi-business firms, reduction of corporate risk that may take place in different forms is one of the key objectives. The multi-business firms are able to coordinate risk management actions across their business units and systematically react to business risk by exploiting common risk management principles and processes.

Taking the view of compliance, risk management includes: 1) understanding the laws and regulations pertaining to the firm's business, 2) assessing the possibility and impact of non-compliance, 3) defining

principles and processes for effective prevention, and 4) preparing an effective response process to minimize the negative impact of non-compliance (Kim, 2019c). For an example of a food company, if this company's business area encompasses food and food ingredient manufacturing, retailing, catering and restaurant businesses, the multiple business units of this company are commonly subject to food-related licensing/consent, or the regulations pertaining to food sanitation. Therefore, when this company owns its managerial knowledge such as common prevention and response actions to react to these regulations, synergies arise from the aspect of corporate resource utilization. Without such a corporate-level coordination, duplicated managerial knowledge of each business unit leads to loss of opportunities, reduction of risk through cross-business cooperation is not maximized, and differences in risk management activities between business units result in inefficient corporate management. Firms need to be proactive to prevent non-compliance and try to reduce harmful influence of violations. That is why this study views knowledge relatedness as the theme of risk management and closely examines the aspect of managerial knowledge. A firm's managerial knowledge may accelerate or impede the operational competence (Bettis and Mahajan, 1985; Grant, 1988; Koontz, 1969; Prahalad and Bettis, 1986; Rumelt, 1974). To conclude, compliance knowledge relatedness eliminates redundant knowledge and promotes constant use of knowledge, which ultimately raising compliance performance (Davenport and Klahr, 1998; Grant and Baden-Fuller, 1995). Based on this, the following hypothesis is proposed:

H1: Compliance knowledge relatedness will positively influence compliance performance.

Meanwhile, the “common knowledge” is not created when one person simply transfers given knowledge to others, but it is defined as the identical knowledge possessed by two or more people (Kim, 2019a). In other words, the concept of common knowledge includes not only knowledge relatedness but exploitation of shared knowledge by way of organizational learning processes. According to March’s research (1991), organizational learning involves two different search modes - exploration and exploitation. Exploration, called as a distance search, includes exploring new opportunities or discovering new capabilities. Exploitation, deemed a local search, focuses on improving or refining what is already known (Benner et al., 2002; Kim, 2019a; March et al., 1958; Weick, 1979). Within the context of risk management, the use of compliance knowledge involves more exploitation mode because exploration is in a pursuit of new capabilities or innovativeness whereas exploitation is associated with enhancing efficiency. Thus, this study examined the use of compliance knowledge through the lens of exploitation. The common knowledge held by scores of people becomes a base for knowledge exploitation, and then, exploiting given knowledge may lead to improved performance. This process points to mediation effect of exploitation. Therefore, the following hypothesis is proposed:

H2: Knowledge exploitation mediates the relationship between compliance knowledge relatedness and compliance performance.

2.3. IT Resource and IT Relatedness

Based on RBV, many researchers have focused on 1) IT resources have a positive impact on firm performance, and 2) IT resources play an important

role in gaining competitive advantage (Barney, 1991; Bharadwaj, 2000; Cao et al., 2010). Bharadwaj (2000) empirically validated that IT capabilities are positively related to firm performance in terms of benefit analysis. To apply an extended perspective to the organizational capability related to the firm’s IT competence, the firm’s IT capability is defined as the ability to mobilize and deploy its IT-based resources in a way that IT resources work complementary to other resources of the company.

Bharadwaj (2000) conceptualized IT’s role as the organizational capability and empirically examined the relationship between IT capabilities and firm performance. What’s more, Bharadwaj adopted Grant (1991)’s classification scheme and divided key IT capabilities into three classes in the following:

- (1) Tangible resources that are base foundations for physical IT infrastructure
- (2) Human IT resources including technical IT skills and the managerial IT skills
- (3) IT-enabled intangible resources such as knowledge, customer

To sum, RBV views information technology as the firm’s key capability and IT resources enable firms to set themselves apart from others. In other words, the firm’s ability to leverage its IT infrastructure, human IT resource and IT-enabled intangible resources is the firm-specific resource, and the combination of these resources generate the firm-wide IT capability.

Based on knowledge management view, organizational learning outcomes are impacted by the level of using information technology to attain organizational knowledge (Durcikova et al., 2011). Alavi and Leidner (2001) stated that knowledge management system is the actual system that works by reinforcing

knowledge processes. Knowledge management system does not directly decide knowledge-related behaviors in itself, rather, provides infrastructure for supporting how to perform knowledge-related behaviors in the organizational context.

Thus, information technology provides individuals with more and various information, thereby supporting creation of new knowledge (Alavi and Leidner, 2001; Ofek and Sarvary, 2001). In other words, knowledge management system not only stores the existing solutions but owns productive resources that bring about creative behaviors. Especially, this newly created knowledge can mitigate the firm's weaknesses in principle-based regulations and help the firm agree with or accept these regulations over time (Sadiq and Governatori, 2010).

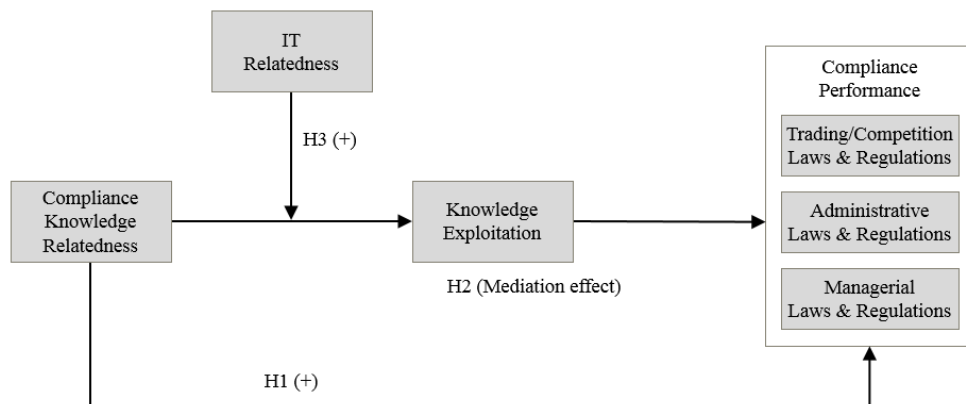
This study seeks to align the role of information technology based on RBV with exploitation of compliance knowledge, which will be further discussed from the perspective of IT relatedness. IT relatedness is defined as how firms exploit IT resources to balance conflicting objectives of headquarters and each business unit and achieve high performance under the multi-business environment (Tanriverdi, 2005). IT relatedness is the concept of managing and using IT resources to gain synergies by connecting and sharing resources under the multi-business environment. Thus, comprehensive management of IT resources and processes is critical to improve firm performance. IT relatedness has four components - IT infrastructure, IT strategy-making Processes, IT human resource management processes, IT vendor management processes - and, in terms of these four aspects, creating an appropriate level of linkage between the firm's headquarters and other business units leads to better performance.

The insight of Tanriverdi's work is that effective linkage between IT and organizational functions im-

prove interactions and knowledge sharing, which, in turn, leads to better performance. Building upon Tanriverdi's work, this study identifies that compliance knowledge relatedness and IT relatedness are the foundation for the exploitation of compliance knowledge which plays a role as a knowledge platform. Hence, this study hypothesizes that the exploitation of compliance knowledge allows employees to attain compliance knowledge more efficiently and make interaction and knowledge-sharing across organizations more flexible, which ultimately has a positive impact on compliance management performance.

Information technology helps building the infrastructure to support knowledge-related behaviors at organizational level, rather than determining compliance behavior of individuals in itself (Durcikova et al., 2011). IT enhances the knowledge management process (Alavi and Leidner, 2001). IT systems - such as groupware, multimedia system and the system serving a specific purpose - play a crucial role in ensuring information distribution, facilitating communication and tacit knowledge creation (Brown and Duguid, 1991).

The use of IT is critical in managing non-compliance with laws and regulations related to employees' tasks (Arnold et al., 2011; Kumar et al., 1993; Mundy and Owen, 2013). From the perspective compliance, IT relatedness improves the efficacy of compliance process, which contributes to having a timely discussion on the exploitation of compliance knowledge (Granlund, 2011). In other words, IT-based coordination mechanism facilitates connection across different business units and enriches corporations' knowledge resources (Sambamurthy et al., 2003). As well, cross-unit synergies can be generated by knowledge sharing and learning across business units (Broadbent et al., 1999; Brown and Magill, 1998; Weill and Broadbent, 1998; Weill and Ross, 2004).



<Figure 1> Research Model

Therefore, compliance knowledge may bring about compliance management performance through the exploitation of compliance knowledge when it gets better embedded in IT systems and individuals of the organization (Kim and Kim, 2017). Based on these discussions, the following hypothesis is proposed:

H3: IT relatedness strengthens the relationship between compliance knowledge relatedness and knowledge exploitation.

2.4. Research Model

<Figure 1> shows a research model that combines the hypotheses set out above. Overall, this study examines how compliance knowledge relatedness affects compliance performance through knowledge exploitation, taking into account the interaction effect of IT relatedness.

III. Methodology

3.1. Data Collection

The present study conducted a preliminary and

full-scale surveys to investigate compliance knowledge relatedness, IT relatedness, and knowledge exploitation level of each firm, as well as the compliance performance. It is not feasible to survey all Korean businesses, but there are several institutions who provide education programs for employees responsible for compliance management from each company. The participants of these programs typically include managers or those with higher level positions from compliance-related departments such as Compliance Support Team, Legal Affairs Team, or Internal Audit Team, and they are recruited because they are knowledgeable enough to give quality answers to compliance-related questions. Some participants responded to the survey in writing and others were surveyed by e-mail. The response rate reached 73% with 187 responses being completed. <Table 1> shows the demographic profiles of the respondents.

3.2. Operationalization of the Variables and Measurement Items

3.2.1. Compliance Knowledge Relatedness

Building upon a review of literature on knowledge relatedness (Tanriverdi, 2005; Tanriverdi and

<Table 1> Demographic Characteristics of the Respondents

Criteria		Freq.	%	
Firm	Industry	Manufacturing	63	33.7%
		Construction	66	35.3%
		Wholesale and Retail	22	11.8%
		Financial and Insurance	36	19.3%
	Firm Revenue (Won)	Less than 10 billion	26	13.9%
		10 billion to 100 billion	49	26.2%
		100 billion to 500 billion	22	11.8%
		500 billion to 1 trillion won	61	32.6%
		More than 1 trillion	29	15.5%
	Years of operation	Less than 5 years	4	2.1%
		5 to 10 years	13	7.0%
		10 to 20 years	31	16.6%
		20 to 30 years	28	15.0%
More than 30 years		109	58.3%	
No answer		2	1.1%	
Individual	Gender	Male	161	86.1%
		Female	24	12.8%
		No answer	2	1.1%
	Work Experience	Less than 2 years	6	3.2%
		2 to 5 years	15	8.0%
		5 to 10 years	64	34.2%
		10 to 15 years	38	20.3%
		More than 15 years	62	33.2%
		No answer	2	1.1%

Venkatraman, 2005), this study defines compliance knowledge relatedness as the extent to which common compliance knowledge resources are utilized across different business units, views compliance knowledge from the aspect of risk management. By doing so, this study wishes to focus on managerial knowledge relatedness and measure compliance knowledge relatedness by three dimensions: prevention knowledge relatedness, detection knowledge relatedness, and responsive knowledge relatedness.

3.2.2. IT Relatedness

Tanriverdi (2005) suggested four dimensions of IT relatedness from the perspective of IT - IT infrastructure, IT strategy, IT human resource, and IT vendor management - and claimed that complementarity of these IT resources generates cross-unit synergies. This study defines IT relatedness as the utilization level of common IT infrastructure and IT management processes across business units, and measures it with three dimensions including

IT infrastructure, IT strategy and IT human resource.

3.2.3. Knowledge Exploitation

This study focuses on the exploitation in terms of risk management using compliance knowledge, thus measures by Prieto et al. (2009) and Kim (2019a) were appropriately modified and applied to this study.

3.2.4. Compliance Performance

Compliance performance is defined as the extent to which corporations observe the laws and regulations in carrying out their tasks. Unlike previous studies that measured the perception level of compliance intention or behavior, this study classified compliance performance by focusing on the areas actively involved in knowledge exploitation. A panel of experts consisting of compliance managers, consultants and professors discussed how to classify compliance performance depending on managerial features of a vast array of areas, and as a result, this study measured compliance performance - a dependent variable - depending on the following three dimensions:

- (1) *Comply with Trading/Competition Laws & Regulations*: Complying with the laws and regulations relating to fair-trade, competition, customer protection, and outsourcing
- (2) *Comply with Administrative Laws & Regulations*: Complying with the laws and regulations relating to licensing, registering, and reporting
- (3) *Comply with Operational Laws & Regulations*: Complying with the laws and regulations relating to operational aspects such as environment/safety, finance/accounting, human resource management, and information security

3.2.5. Control Variables

This study used the industry type, firm size, and business years of operation as the control variables to control other factors affecting the research model. First, this study uses industry dummy variables to control industry impact. Second, this study wishes to argue that companies can be governed by different kinds of laws and regulations and compliance intensity can be varied according to the company's revenue size (firm size). Therefore, this study includes a total revenue as a control variable. Third, business years of operation is selected as a control variable and it is measured by a difference between the year of inception and the time for analysis.

3.2.6. Survey Design

Excepting compliance performance, a dependent variable, all constructs were measured with a five-point Likert-scale. In particular, a five-point scale from Tanriverdi (2005) and Tanriverdi and Venkatraman (2005) was adopted to measure compliance knowledge relatedness and IT relatedness to ask whether a given knowledge/IT resource is used for a particular business unit or used commonly across multiple units. As for knowledge exploitation, a five-point scale was used to ask the level of agreement (strongly disagree ↔ strongly agree). Three items for compliance performance were measured on an 11-point scale from 0 to 10 (Paternoster and Simpson, 1996).

IV. Results

In this study, the data were analyzed using SPSS and the reliability was evaluated by cronbach alpha value. First, exploratory factor analysis was per-

formed, followed by correlation analysis to verify how closely the variables were related to each other. Finally, hypotheses testing of the research model was confirmed through regression. The mediating effect was confirmed by performing the 3 step analysis proposed by Baron and Kenny (1986) (Step 1: independent variable → dependent variable; Step 2: independent variable → mediator; Step 3: independent variable and mediator → dependent variable).

4.1. Reliability and Validity Test

The reliability of the scale is based on internal consistency, and it is generally known that it is applicable when it is over .6. All cronbach's alpha was highly reliable, with compliance knowledge relatedness of .91, IT relatedness of .93, and knowledge exploitation of .89. Then exploratory factor analysis was performed to verify the validity. The loadings of all the questionnaires were confirmed to be .7 or more. Convergent validity was verified by composite reliability and average variance extracted (AVE) (Bagozzi and Yi, 1988). The analysis shows that the AVE of all variables is greater than .5 (Fornell and Larcker, 1981). The composite reliability of compliance knowledge relatedness was .93, IT relatedness .95, and knowledge exploitation .93, thus, all met criteria exceeded the evaluation standard of .7 (Hair et al., 2010). Discriminant validity is valid if the square root of AVE is greater than the correlation coefficient between each variable. In this study, the AVE square root of compliance knowledge relatedness was .85, IT relatedness .88, and knowledge exploitation .87. Thus, the square root of AVE of each variable is larger than all correlation coefficients between variables.

As the correlations among the constructs were relatively high, common method bias may be an

issue (Podsakoff et al., 2003). In this study, two methods were used to evaluate common method bias. First, using Harman's single-factor test, four factors were extracted with eigenvalues greater than 1, and the first principle component explained no more than half of the overall variance, suggesting that common method bias was not serious. Second, to further check the issue, the marker variable test (Lindell and Whitney, 2001; Malhotra et al., 2006) was conducted with a five-item scale variable, outdoor activities ($\alpha = 0.71$), for which there exists little theoretical basis for a relationship with our research variables. The average correlation of the study's principal constructs with it was low and insignificant ($r = -0.012$), providing no evidence of common method bias. Taken together, it can be concluded that common method bias is not a serious threat in this study.

4.2. Correlation Analysis

<Table 2> shows the correlation of these variables. Pearson correlation analysis was used to show the relationship of each variable. As a result, compliance knowledge relatedness showed a significant positive correlation with knowledge exploitation and compliance performance. In addition, knowledge exploitation showed a positive correlation with IT relatedness and the three compliance performance variables. It is confirmed that the variables used in this study almost have a significant correlation with each other.

4.3. Hypotheses Test

Hypothesis 1, which examines the effects of compliance knowledge relatedness on compliance performance, is based on regression analysis and the results can be seen in Model 4, 6, 8 of <Table 3>.

<Table 2> Mean, SD, and Correlation

Variables	Mean	SD	1	2	3	4	5	6	7	8
1. Revenue size	3.10	1.33	1							
2. Operation years	4.22	1.09	.25**	1						
3. CKR	3.37	.83	.13	.12	1					
4. ITR	3.61	.86	.13	.16*	.18*	1				
5. KE	3.62	.82	.21**	.28**	.65**	.42**	1			
6. CP1	7.99	1.45	.12	.12	.50**	.30**	.58**			
7. CP2	8.59	1.20	.19**	.18*	.48**	.27**	.62**	.75**		
8. CP3	8.10	1.37	.12	.08	.55**	.25**	.55**	.75**	.70**	1

Note: * $p < .05$; ** $p < .01$

CKR=compliance knowledge relatedness, ITR=information technology relatedness, KE=knowledge exploitation, CP1=Comply with Trading/Competition Laws & Regulations, CP2=Comply with Administrative Laws & Regulations, CP3=Comply with Operational Laws & Regulations

<Table 3> Hypotheses Test Results

Factors	Mediator: Knowledge exploitation			Dependent variables: Compliance performance					
				CP1		CP2		CP3	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Industry_d1	-.01	-.00	-.01	.05	.06	.02	.03	.06	.06
Industry_d2	.01	-.01	-.13	-.01	-.02	.00	.00	.03	.03
Industry_d3	-.01	.02	.00	-.13	-.13	-.10	-.10	-.12	-.12
Industry_d4	.06	.03	.01	.05	.02	.04	.01	-.09	-.12
Revenue	.07	.05	.04	.03	.00	.10	.06	.07	.04
Operation years	.19**	.15**	.13*	.03	-.06	.10	.00	-.03	-.10
CKR	.62***	.58***	.57***	.47***	.19*	.44***	.12	.53***	.29***
ITR		.29***	.27***						
CKR × ITR			.12*						
KE					.46***		.52***		.38***
ΔR^2	.48	.08	.01	.28	.11	.28	.14	.33	.08
R^2	.48	.56	.57	.28	.39	.28	.42	.33	.41
<i>F-statistics</i>	23.53***	27.71***	25.78***	9.85***	14.18***	9.59***	15.66***	12.69***	15.32***

Note: * $p < .05$; ** $p < .01$, *** $p < .001$

Industry_d1=manufacturing, Industry_d2=construction, Industry_d3=wholesale/retail, Industry_d4=financial/Insurance, CKR=compliance knowledge relatedness, ITR=information technology relatedness, KE=knowledge exploitation, CP1=Comply with Trading/Competition Laws & Regulations, CP2=Comply with Administrative Laws & Regulations, CP3=Comply with Operational Laws & Regulations

The effects of compliance knowledge relatedness on the three compliance performance variables with industry type, revenue size, and business years of operation were statistically significant (CP1: $\beta =$

.47, $p < .001$; CP2: $\beta = .44$, $p < .001$; CP3: $\beta = .53$, $p < .001$). Therefore, Hypothesis 1 of this study was adopted.

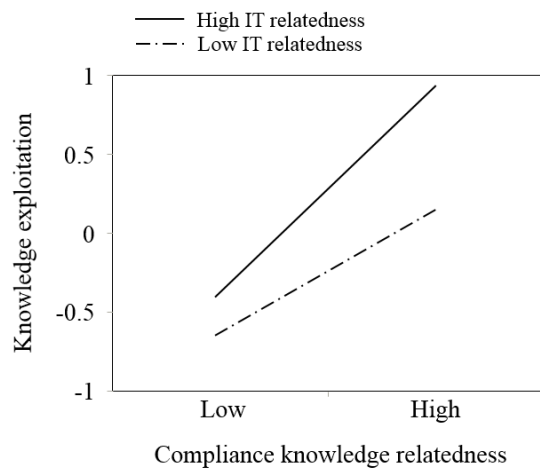
This study used the method proposed by Baron

and Kenny (1986) to verify mediating effects. First, as confirmed in Model 4, 6, 8 of <Table 3>, the effects of compliance knowledge relatedness on all three compliance performance variables were significant. Second, as shown in Model 1 of <Table 3>, the effect of compliance knowledge relatedness on knowledge exploitation was statistically significant with industry type, revenue size, and business years of operation included ($\beta = .62, p < .001$). Finally, Model 5, 7, 9 of <Table 3> showed statistically significant effects of knowledge exploitation on the three compliance performance variables in the presence of industry type, revenue size, business years of operation, compliance knowledge relatedness, and IT relatedness (CP1: $\beta = .47, p < .001$; CP2: $\beta = .44, p < .001$; CP3: $\beta = .53, p < .001$). In addition, the path coefficients between compliance knowledge relatedness and the three dependent variables were smaller than those of direct paths. Despite smaller values of path coefficients, they were valid in Model 5 and Model 9. However, Model 7 was found to have invalid path coefficients. These results demonstrated: 1) knowledge exploitation has a partial mediating effect on the relationship between compliance knowledge relatedness and CP1, and the relationship between compliance relatedness and CP3; 2) knowledge exploitation has a full mediating effect on the relationship between compliance knowledge relatedness and CP2. Therefore, Hypothesis 2 was supported.

Hypothesis 3 verifies the interaction effect of compliance knowledge relatedness with IT relatedness, which can be confirmed in Model 3 of <Table 3>. The effect of the interaction terms of compliance knowledge relatedness and IT relatedness on knowledge exploitation was statistically significant ($\beta = .12, p < .05$) with the industry type, revenue size, business years of operation, compliance knowledge relatedness and IT relatedness included, and the in-

creased R^2 was also significant ($\beta = .01, p < .05$). Therefore, it can be said that there is a moderating effect of knowledge exploitation, and Hypothesis 3 is adopted.

<Figure 2> is a plot to show the moderating effect of IT relatedness on the relationship between compliance knowledge relatedness and knowledge exploitation. The IT relatedness was divided into a group of values obtained by subtracting the standard deviation from the average value (low IT relatedness group), and a group of values added (high IT relatedness group). The graphs were shown by these two groups. As a result of simple slope test (Cohen et al., 2003), the relationship between compliance knowledge relatedness and knowledge exploitation was statistically significant at both high and low IT relatedness levels.



<Figure 2> Moderating Effect of IT Relatedness

The graph shows that knowledge exploitation is increasing when compliance knowledge relatedness is higher than when it is lower. Especially, when the IT relatedness is high, the slope increases sharply, indicating that amplification is present. In other

words, the relationship between compliance knowledge relatedness and knowledge exploitation is positively enhanced when IT relatedness is high.

This study further verified the moderated mediation effect to determine whether compliance knowledge relatedness affects compliance performance through knowledge exploitation depending on the level of IT relatedness (Hayes, 2013). To do this, 1,000 times bootstrapping resampling estimation was performed. If the confidence interval for the indirect effect estimate does not include zero, the mediation effect is significant. As a result, the moderated mediation effect was significant in relation to compliance knowledge relatedness, knowledge exploitation, and compliance performance (CP1: lower CI = .02 and upper CI = .27, CP2: lower CI = .02 and upper CI = .25, CP3: lower CI = .02 and upper CI = .19) after controlling for industry type, revenue size, and years of operation. In addition, it is statistically confirmed that the indirect effect varies by the level of IT relatedness, so that the higher the IT relatedness, the greater the indirect effect between compliance knowledge relatedness and compliance performance through knowledge exploitation have.

V. Discussions and Implications

5.1. Discussions of the Key Findings

This study examines corporate compliance performance effects of compliance knowledge synergies in firms. It synthesizes Tanriverdi's relatedness concept to conceptualize compliance knowledge and IT synergies in terms of the relatedness. The study hypothesizes that corporate compliance performance is improved when the firm simultaneously exploits a complementary set of related compliance knowl-

edge resources across its business units. The key findings of this study can be summarized as follows. First, it confirms the positive relationship between compliance knowledge relatedness and compliance performance, which is consistent with the prior knowledge relatedness contribution literature (e.g., Tanriverdi, 2005; Tanriverdi and Venkatraman, 2005). Second, it shows that knowledge exploitation plays as a mediator between compliance knowledge relatedness and compliance performance. Finally, this study finds that IT relatedness moderates the relationship between compliance knowledge relatedness and knowledge exploitation, suggesting that the proposed effects become more important when IT relatedness is high.

5.2. Theoretical and Practical Implications

This study has both theoretical and practical contributions. First, this study applies the theories related to knowledge relatedness and IT relatedness to the field of compliance, which may extend the scope of applicability of the theories and help empirically verify the proposed research model. By examining compliance knowledge in light of knowledge relatedness, this study proved that relatedness could have a significant effect on measuring compliance performance. Although previous research has usually studied surveillance activities to check for violations or post-violation activities to respond to law enforcement, this research verified the role of compliance knowledge relatedness as the antecedent of compliance performance. In addition, the mediating effects of compliance knowledge exploitation were verified in this study, implying that active knowledge exploitation is more important than simply raising relatedness itself. Moreover, the result of interaction effect between IT relatedness and compliance knowl-

edge relatedness indicated that IT relatedness plays a significant role in keeping the exploitation process more efficient. To summarize, a company gets results only when accumulated compliance knowledge is actively exploited and the exploitation process can go more efficiently when IT relatedness is higher. Along with such an academic implication, this study offers useful insights based on the relatedness concept regarding compliance with various laws and regulations that control the activities of multi-business firms, which can consequently improve the firms' compliance performance.

Second, the research subjects of this study were employees responsible for corporate compliance, which makes this study more significant. To further explain, selecting compliance managers of each firm as the subjects implies that this study applied a relatively stricter criterion for its data collection. Of course, it is hard to argue that sufficient number of samples were used for the survey, but conducting an empirical study at a corporate level based on the compliance perspective distinguishes this study from other research.

Third, this study breaks down compliance performance depending on the managerial features of different fields of compliance, which is distinct from the previous studies whose main focus was measuring the perception level of compliance intention or behavior. This study set up three dimensions of variables to measure compliance performance: trading/competition, administration, and operational laws and regulations. Of course, there is room for further refinement in future studies, analyzing compliance performance based on which area is actively involved in knowledge exploitation is a novel attempt.

In addition to academic contributions, this study offers useful insights to companies so that they can improve the exploitation level of compliance

knowledge. Companies are able to re-organize a variety of methodologies individual employees possess and alter compliance climate in a more cohesive manner when compliance knowledge is fully leveraged by the use of knowledge-platform-based compliance management. If these processes work well, knowledge integration mechanism could be formulated across the company and so the utilization level of mechanism can be enhanced. Moreover, when companies come up with viable methodologies available to all employees based on better understanding of the nature of each task, compliance knowledge will be highly utilized in terms of both quantity and quality. Looking into the interaction effect between compliance knowledge relatedness and IT relatedness, organizations are able to build positive compliance climates in which their compliance initiatives can be reinforced, and employees' exploitation level of compliance knowledge can be facilitated.

5.3. Limitations and Future Research

This paper is not free from several limitations and how to address these limitations needs to be discussed to help further improvement of future studies. First, this study cannot directly show evidence for causality between constructs because it is based on cross-sectional analysis. In particular, exploitation of compliance knowledge does not immediately make employees practice compliance behavior, rather, it takes time until compliance practice is established within the organization. To remedy this problem, a longitudinal research design is recommended so that future research is able to extend the outcome by investigating how compliance knowledge relatedness influences knowledge exploitation and the resultant performance over time.

Second, this study's results are still exposed to

common method bias. In the process of conducting a survey to verify its research model, the survey subjects were (carefully) chosen after considering who can represent the firm they are currently working for, and the selected employees of each firm participated in the survey. Though various methods were already mobilized to avoid common method bias, the nature of this study's topic - compliance - is not free from a possible distortion of results. Also, as this study sought to measure the respondents' perception, research results could be biased due to the respondent's conscious or unconscious tendency of social desirability. To control for this issue, data collection needs to be diversified. For example, it would be better to conduct a survey of employees working at IT departments to examine IT relatedness. Another remedy to avoid common method bias is using quantitative indicators, not measuring the respondents' perception. For instance, the level of compliance can be measured with the number of violations or the records of sanction. Also, customers or other institutions can participate in the process of measuring the perceived compliance level of each company, which may further eliminate the impact of common method bias on research results.

Third, the research results are not entirely free from the fallacy of generalization. As the survey respondents were employees of Korean companies and their background such as nationality, race, culture and others might influence the findings of this study in unforeseen ways. Therefore, future studies need to pay more attention to consider characteristics of research subjects and understand how they influence the process of compliance knowledge exploitation.

VI. Conclusion

The term "compliance knowledge" coined by this study is not confined to using compliance knowledge only to minimize harmful repercussions of non-compliance. The use of compliance knowledge includes leveraging experience-based knowledge such as foreign regulations, which can help companies draw up strategies when they enter new foreign markets. Ultimately, using compliance knowledge contributes to not only benefitting their businesses but also enhancing corporations' credibility among their counterparts.

This study, based on the relatedness concept, aims to examine corporate compliance management, and focus more on identifying factors corporate compliance performance and how compliance knowledge exploitation and its preceding factors influence each other. 187 firms in a variety of industries took part in this study's research, and the main findings include; (1) the influence of compliance knowledge relatedness on compliance performance, (2) the mediating role of knowledge exploitation on the relationship between compliance knowledge relatedness and compliance performance, and (3) the moderating role of IT relatedness on the relationship between compliance knowledge relatedness and knowledge exploitation. To conclude, this study empirically proved that compliance knowledge relatedness impacts compliance performance through knowledge exploitation by interacting with IT relatedness, which will contribute to advancement of future research in the field of IS and compliance.

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<Appendix>

Constructs and items	Sources
<i>Compliance knowledge relatedness^a</i>	
In conducting business of my company, the content and scope of application of the laws and regulations that the company should follow are ____.	
In conducting business of my company, the education and training programs not to violate the laws and regulations that the company should follow are ____.	Tanriverdi (2005);
In conducting business of my company, the policies and procedures to respond to the laws and regulations that the company should follow are ____.	Tanriverdi and Venkatraman (2005)
In conducting business of my company, the experience and knowledge to respond to the laws and regulations that the company should follow are ____.	
In conducting business of my company, the way to check whether the company follow the laws and regulations related to its business is ____.	
<i>IT relatedness^a</i>	
In my company the strategic rationale and procedures for IT investment are ____.	Tanriverdi (2005);
In my company the relationship between IT departments and other departments is ____.	Tanriverdi (2006)
In my company the education and training programs related to IT utilization are ____.	
In my company the policies and procedures related to IT utilization are ____.	
In my company the communication standards with the use of IT are ____.	
<i>Knowledge exploitation^b</i>	
Employees of my company combine the existing valuable compliance knowledge elements not to violate laws and regulations that are related to their work/role.	
Employees of my company carry out the task by applying the existing compliance experiences related to their work/role.	Prieto et al. (2009);
Employees of my company check internal compliance rules and guidelines whether they are observing laws and regulations related to their work/role.	Kim (2019a)
Employees of my company apply the lessons learned in other areas of the organization not to violate laws and regulations that are related to their work/role.	
<i>Compliance performance^c</i>	
the level of compliance with the laws and regulations related to trading. (e.g., fair-trade, competition, customer protection, outsourcing)	—
the level of compliance with the laws and regulations related to administrative activities. (e.g., licensing, registering and reporting)	
the level of compliance with the laws and regulations related to operational activities. (e.g., environment/safety, finance/accounting, human resource management and information security, food safety)	

Note: ^a Scale: ① Unique in all or almost all of the business units.

② Unique in a majority of the business units.

③ Unique in about half of the business units; common across the other half.

④ Common across a majority of the business units.

⑤ Common across all or almost all of the business units.

^b Scale: ① Strongly disagree ~ ⑤ Strongly agree

^c Scale: 0 ~ 10

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