

# **A TALE OF TWO CITIES: POLICY COMPLIANCE OF THE BANKS IN THE UNITED STATES AND SOUTH KOREA**

*Complete Research*

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## **Abstract**

*This study compares the information security policy (ISP) compliance of the banking industry between the United States and South Korea. The distinctive differences of national culture between both nations has led to meaningful findings of ISP compliance at the organizational and individual levels. Drawing on the Cross Value Framework (CVF), this study conducted a survey and distributed questionnaires to the banking employees in the United States and South Korea. Our analysis results reveal that organizational cultures, namely, hierarchical and rational cultures, drive organizational norms in support of ISP compliance in the banking sectors in both nations. While organizational cultures demonstrate no direct effect on individual's compliance among the banking employees in the United States, organizational cultures consisting of team, rational, and entrepreneurial cultures directly influence individual's compliance in South Korean banking. Accordingly, this study suggests that common industry characteristics play a role in ISP compliance at the organizational level and that national culture may act as a moderator in ISP compliance at the individual level.*

*Keywords: Organizational culture, norms, information security policy compliance, banking industry*

# 1 Introduction

Banking industry is a highly regulated industry in that regulations like Sarbanes-Oxley (SOX) mandate financial institutions to practice standardized financial reporting for upholding ethical conducts. Presently, IT governance frameworks provide guidelines to organizations for complying with SOX. Organizations are using IT governance frameworks, such as Control Objectives for Information and Related Technology (COBIT), to align IT security strategies with business/enterprise strategies and to comply with information security regulations (Symons 2005). However, these IT governance frameworks are blind to national and organizational culture that may improve or impede the enforcement of security policies. The solutions outlined in the IT governance frameworks may not work in all cultural settings.

Given the criticality of culture, there are several studies examining cultures in the Information Systems Security (ISS) literatures (Interligi 2010; Smith, Winchester, Bunker and Jamieson 2010; Da Veiga and Eloff 2010; Hu, Dinev, Hart and Cooke 2012; Hovav and D'Arcy 2012; Kim, Ryu and Kwark 2013; Rocha Flores, Antonsen and Ekstedt 2014). However, there is a lack of study focusing on ISP compliance from both the organizational and national perspectives to shed lights on individual-level compliance.

Therefore, this study intends to (1) investigate the effectiveness of organizational culture and the role of national culture on information security policy (ISP) compliance in the banking industry; and (2) provide suggestions on how to implement security practices in different cultural settings. Drawing on the Competing Values Framework (CVF) (Quinn and Rohrbaugh 1983), this study assesses organizational culture as a predictor for individual compliance and organizational norms supporting ISP compliance. Particularly, this study examines how organizational culture in the banks in the United States and South Korea drive ISP compliance at the individual and organizational levels.

Mainly, this study chooses the banking industry as most banks across nations are saddled with regulatory pressures that compel banks to comply (Kam, Katerattanakul and Gogolin 2013). Therefore, ISP compliance is highly applicable to the banking industry. In addition, this study selects the United States and South Korea because their distinctive differences in national culture (Hofstede 1983) will reveal meaningful findings, offering suggestions to improve individual and organizational compliance in multiple cultural settings.

## 2 Literature Review

### 2.1 National Culture: The United States vs. South Korea

Culture is defined as *“the collective mental programming of the people in an environment...it encompasses a number of people who were conditioned by the same education and life experience.”* (Hofstede 1980, pg. 43). In other words, culture pertains to a way of thinking, feeling, and acting acquired since early childhood (Hofstede 1991). Accordingly, national culture discerns one group of people from another through a distinctive set of values, beliefs, and assumptions learned in early childhood (Hofstede 1991). National culture is profoundly integrated into everyday life, making it hard to change (Newman and Nollen 1996).

Hofstede (1983) suggests that the national culture of the United States is defined by high individualism (focus on individual welfare), low uncertainty avoidance (risk taking), low power distance (perception that superior is equal as oneself), and high masculinity (focus on success and ambition rather than the well-being of people and environment). In contrast, the national culture of South Korea is characterized by high collectivism (group consciousness), high uncertain avoidance (risk averse), high power distance (perception that superior has higher status than oneself), and high masculinity (Hofstede 1983).

In the organizational context, national culture dictates employees' understanding of work, their approach to work, and the way they want to be treated (Newman and Nollen 1996; Schneider and DeMeyer 1991; Straub1994). Given the differences in national culture between the United States and South Korea, this study suggests that compliance behavior among banking employees in both nations differ. That is, ISP compliance

in each nation is motivated by different factors built on national culture (Hovav and D'Arcy 2012; Kim et. al. 2013).

## **2.2 Banking Industry**

The distinctive traits of banking culture is hierarchical, bureaucratic, and slow to change (Davis 2004). Banks operate in relational systems consisting of a governance unit that monitors banking regulative and normative controls (Scott 2008, pg. 186). Mainly, governance units refer to regularized controls organized by authorities and legitimate parties (Scott 2008, pg. 186). For example, banks in the United States are related to Federal Deposit Insurance Corporation (FDIC) and Office of the Comptroller of the Currency (OCC). The relational systems (Scott 2008, pg. 85) create a regulatory environment (Park and Weber 2006), causing banks to outline formal policies and procedures (Argyris 1958) in organizational settings.

Banks in the United States and South Korea are facing tremendous pressure to comply with regulations. In the United States, after the financial scandal involving Enron and WorldCom, the banking industry has been confronting immense pressure to comply with regulations such as Sarbanes-Oxley Act (SOX) of 2002, which dictates standard accounting and financial reporting. In addition, banks in the United States are mandated to abide by Gramm Leach Bliley Act (GLBA), a comprehensive federal law that requires financial institutions to develop, implement, and maintain administrative, technical, and physical safeguards for defending the security, integrity, and confidentiality of customer information. The pressure to comply has compelled U.S. banks to incorporate information security into their daily operations.

In South Korea, the government re-regulated and restructured the banking industry after the financial crisis in 1997-1998 (Park and Weber 2006) to restore confidence in the banking systems (Banker, Chang and Lee 2010). The regulatory reform has compelled banks to comply with stringent regulations. In addition, the Korean government has enacted Personal Information Protection Act of 1995 to protect the privacy of citizen from unauthorized data collection and leakage (Greenleaf 2011). Additionally, Act on Promotion of Information and Communications Network Utilization and Information Protection of 2001 (or Data Protection Act) mandates entities, which use computer and network to process personal data for profit, to safeguard personal data for preventing data breaches (Greenleaf 2011). These regulations impose heavy regulatory pressures on South Korean banks.

## **3 Research Methodology**

### **3.1 Competing Values Framework (CVF)**

Organizational culture constitutes (1) a socio-structural system defined by perceived operation of organizational structures, strategies, policies and management procedures, (2) a cultural system incorporating organization's myths, values, and ideology; and (3) the legacies, experience, and personality of individual actors (Allaire and Firsirotu, 1984). Organizational culture also refers to taken-for-granted values and assumptions in organizations, representing a collective set of expectations, definition and memories in the organizational setting (Cameron and Quinn, 1999). That is, organizational culture represents an implicit, internal social systems that exudes its influences on organizational practices, management strategic planning, and employee's behavior. As a result, organizational behavior, decision making, and employee's daily operations align with organizational culture.

A prior study suggested that organizational culture is shaped by human systems that are inherently fraught with competing tensions (Quinn and Rohrbaugh 1983). In particular, Competing Values Framework (CVF) investigates organizational culture by suggesting that conflicting tensions can be used to uncover "*the basic assumptions that are made about such things as the means to compliance, motive, leadership, decision making, effectiveness, values, and organizational forms*" (Quinn and Kimberly 1984, pg. 298). Therefore, this study adopts organizational culture as a predictor for ISP compliance.

Particularly, the concept of competing tensions is represented by (1) one dimension of flexibility vs. stability and control in which organizations will tilt toward either flexibility for changes or stability to retain control; and (2) another dimension of internal focus vs. external focus in which organizations will prefer either improving and maintaining existing organization or adapting and interacting with the external environment (Quinn and Rohrbaugh 1983). The intersections of these two dimensions shape four archetypes, namely, hierarchical, rational, entrepreneurial, and team cultures (Quinn and Rohrbaugh 1983; Denison and Spreitzer 1991) in organizational settings. Please refer to Figure 1.

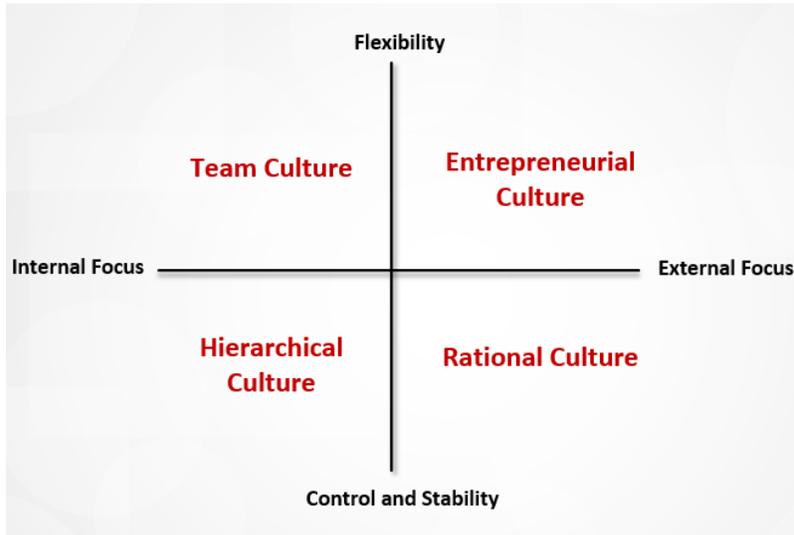


Figure 1. Cross-Cultural Framework (CVF) (Denison and Spreitzer 1991)

Focusing on human relations, team culture highlights flexibility and change in the internal organizations (Denison and Spreitzer 1991). The core values consisting of trust, belonging, participation, and team work propel leaders to act supportively and considerately for developing human potential and promoting memberships (Denison and Spreitzer 1991).

Like team culture, entrepreneurial culture values flexibility and change but its external focus promotes growth, resource acquisition, and adaptation to the external environment (Denison and Spreitzer 1991). Leaders are entrepreneurial, risk takers and visionary, striving for achieving visibility, legitimacy, and external support (Denison and Spreitzer 1991).

At the end of the spectrum, rational culture emphasizes achieving well-defined objectives through directing organizational members to become more competitive and successful (Denison and Spreitzer 1991). Leaders are very goal-oriented, directive, and effective to facilitate high productivity and efficiency for winning the market competition (Denison and Spreitzer 1991).

On the other hand, hierarchical culture emphasizes internal efficiency, homogeneity and coordination to maintain internal security, control, order, and stability (Denison and Spreitzer 1991). Leaders are methodical, conservative, and rule enforcers who exert control to bring order through attentions to technical matters (Denison and Spreitzer 1991).

In organizational context, the moral dimension of compliance embodies social norms and values that organizations must fulfill through regulatory compliance (Interligi 2010). Since organizational culture subsumes social norms and values (Schein 1984) that define the moral dimension of compliance, we posit that organizational culture incorporates norms that shapes policy compliance (Da Veiga and Eloff 2010). Accordingly, we posit that organizational culture including team, entrepreneurial, rational, and hierarchical cultures drive organizational norms for policy compliance.

- H1: Team culture drives organizational norms to stay compliant*
- H2: Entrepreneurial culture drives organizational norms to stay compliant*
- H3: Rational culture drives organizational norms to stay compliant*
- H4: Hierarchical culture drives organizational norms to stay compliant*

As stated earlier, organizational culture generates impacts on employee’s behavior (Schein 1984; Allaire and Firsirotu, 1984). Therefore, organizational culture affects employee’s behavior for ISP compliance.

- H5: Team culture drives employee to comply*
- H6: Entrepreneurial culture drives employee to comply*
- H7: Rational culture drives employee to comply*
- H8: Hierarchical culture drives employee to comply*

### 3.2 Information Security Policy Compliance

Organizational norms refer to informal rules that monitor member’s conduct (Feldman 1984), creating powerful and consistent effects on member’s behavior (Hackman 1976). In other words, organizational norms entail perceived norms that dictate the right thing to do (Herath and Rao 2009). Perceived norms enforce ISP compliance (Johnston and Warkentin 2010), encouraging user to comply. That is, as users perceive that complying with ISP is construed as the right thing to do, they will be more willing to comply.

*H9: Organizational norms drive users to comply with ISP*

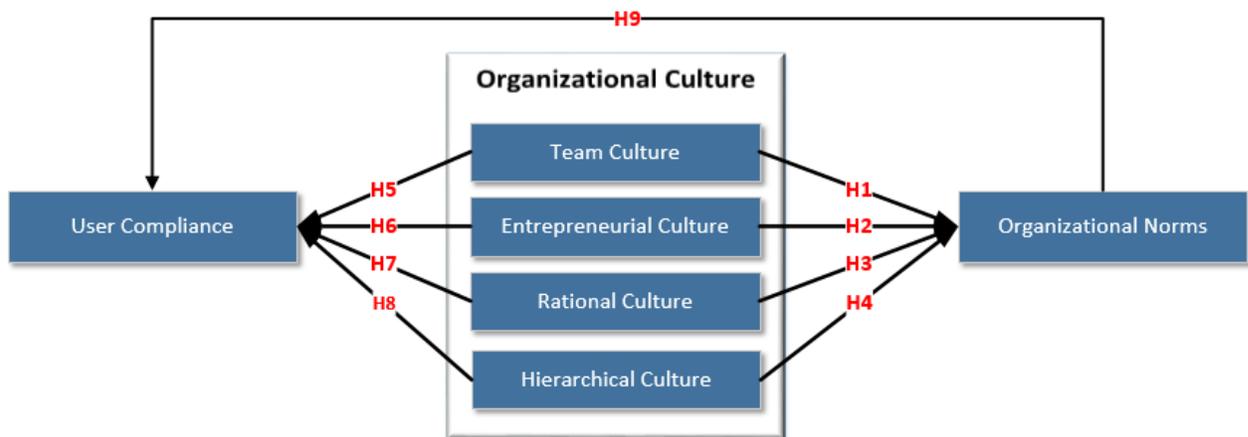


Figure 2. Proposed Research Model

Based on the proposed model (figure 2), we formed an online survey using 7-points Likert scales with 1 for strongly disagree, 4 for neutral, and 7 for strongly agree. We adopted measurement items from the prior studies (Helfrich, Li, Mohr, Meterko and Sales 2007; Herath and Rao 2009; Bulgurcu, Cavusoglu and Benbasat 2010). First, we ran a pilot study by sending out online survey to the banking employees in the Midwest of the United States. After two months, we got 51 responses (N=51). Upon reviewing feedback from the banking participants, we modified our measurement items. Finally, our measurement items consist of 6 reflective constructs, namely, team culture (TEAM), entrepreneurial culture (ENT), rational culture (RAT), hierarchical culture (HIE), organizational norms, and user’s ISP compliance (POL). See Table 1.

Measurement Items with 6 Reflective Constructs

Construct	Measurement Items	Reference
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TEAM	TEAM1	Managers in my organization are warm and caring. They seek to develop employees' full potential and act as their mentors or guides.	Helfrich et al. 2007	
	TEAM2	My organization emphasizes human resources. High cohesion and morale in the organization are important.		
	TEAM3	The glue that holds my organization together is loyalty and tradition. Commitment to this organization runs high.		
ENT	ENT1	My organization is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	Herath and Rao 2009	
	ENT2	Managers in my organization are risk-takers. They encourage employees to take risks and be innovative.		
RAT	RAT1	My organization emphasizes competitive actions and achievement. Measurable goals are important.		
	RAT2	The glue that holds my organization together is the emphasis on tasks and goal accomplishment. A production orientation is commonly shared.		
HIE	HIE1	My organization is a very formalized and structured place. Bureaucratic procedures generally govern what people do.		
	HIE2	Managers in my organization are rule-enforcers. They expect employees to follow established rules, policies, and procedures.		
	HIE3	The glue that holds my organization together is formal rules and policies. People feel that following the rules is important.		
NORM	NORM1	Top management thinks I should follow ISP.		
	NORM2	My boss thinks that I should follow ISP.		
	NORM3	My colleagues think that I should follow ISP.		
POL	POL1	I comply with the requirements of the ISP of my organization.		Bulgurcu, Cavusoglu and Benbasat 2010
	POL2	I protect information and technology resources according to the requirements of the ISP of my organization.		
	POL3	I carry out my responsibilities prescribed in the ISP of my organization when I use information and technology.		

Table 1. *Measurement Items*

### 3.3 Data Collection

We sent out the online survey to the target audience in the banking industry in the United States and South Korea. Basically, we sent the online questionnaires to the banking employees working in the community and commerce banks in the United States and paper surveys (translated from English to Korean) to the banking employees working in the national banks in South Korea. After ten months, we received 127 responses from the participants in United States (N=127) and 121 responses from South Korea (N=121).

The banking participants in the United States came from the east coast (23%), Midwest (40%), south (31%), and west coast (15%). On the other hand, most of the participants in South Korea were from Seoul (65%) and Busan (35%). All the participants have attained at least a bachelor degree. Additionally, in each sample, a majority of participants were born and raised in the nation. For the banking participants in the United States, almost everyone grew up in the United States speaking English as their first language. Similarly, all the participants from South Korea were born and raised in South Korea and they have been living and working in the country throughout their lives.

The average age of banking participants is 45 year old in the United States and 37 year old in South Korea. In each data sample, 60% of participants is female and 40% is male. Among the banking participants in the United States, there are participants working as top management (12%), account manager (9%), compliance

officer (6%), middle management (35%), system design and administration (3%), IT support staff (3%), clerical staff (12%), and other (20%). However, 74% of participants from South Korea are working as IT support staff, 18% as clerical staff, and the rest (8%) are in managerial position.

### 3.4 Construct Validity and Reliability

SmartPLS 3.0 software supports component-based path modelling (Vance, Elie-Dit-Cosaque, and Straub 2008), enabling us to work with small sample size (Chin 1998; Haenlein and Kaplan 2004; Henseler, Ringle and Sinkovics 2009; Marcoulides, Chin, and Saunders 2009). Particularly, the component-based Partial Least Squares (PLS) path modelling has the ability to operate with a sample size as small as 50 (Chin 1999). This is in contrast to the covariance-based Structural Equation Modelling (SEM) that requires a sample size over 100 observations (Nasse and Wisenbaker 2003). At this moment, we managed to collect banking data from the banking employees in the United States (N=127) and in the South Korea (N=121). The sample size from each country is relatively small, thus making PLS a desirable choice.

Additionally, PLS is a preferable choice to work with non-normal data (Marcoulides, Chin, and Saunders 2009). Since the banking industry is under tremendous pressure to comply with regulations, we expected that the data we received would be skewed, especially for dependent variables including organizational norms (NORM) and user compliance (POL). This is another reason we went with PLS.

Construct Validity and Reliability: United States vs. South Korea

Construct	United States			South Korea		
	AVE	Cronbach's Alpha	Composite Reliability	AVE	Cronbach's Alpha	Composite Reliability
TEAM	0.844	0.842	0.915	0.785	0.732	0.880
ENT	0.748	0.841	0.897	0.678	0.769	0.861
RAT	0.807	0.777	0.893	0.800	0.750	0.889
HIE	0.772	0.861	0.910	0.682	0.777	0.866
NORM	0.864	0.920	0.950	0.834	0.900	0.938
POL	0.981	0.990	0.994	0.895	0.941	0.962

Table 2. Results of Hypotheses Testing

The Cronbach's Alpha and composite reliability for each construct in both the United States and South Korea samples are larger than 0.7 (see Table 2), thus displaying construct reliability (Fornell and Larcker 1981; Chin 1998). Since Table 2 shows that the Average Variance Extracted (AVE) for each construct exceeds 0.5 in both samples, this study attains convergence validity (Fornell and Larcker 1981).

Table 3 and 4 show that the correlation values between a construct with all the corresponding constructs are less than the square root of the AVE for the particular construct. This proves discriminant validity (Chin 1998) for all the constructs in both the USA and South Korea samples.

Discriminant Validity (USA Sample)

	ENT	HIE	NORM	POL	RAT	TEAM
ENT	0.865					
HIE	-0.336	0.879				
NORM	0.114	0.139	0.930			
POL	0.080	0.072	0.648	0.991		
RAT	0.554	-0.126	0.253	0.187	0.898	
TEAM	0.622	-0.235	0.030	0.049	0.678	0.918

Table 3. Discriminant Validity of the Constructs (Square Root of AVE in Shaded Cells)

Discriminant Validity (South Korea Sample)

	ENT	HIE	NORM	POL	RAT	TEAM
ENT	0.823					
HIE	0.651	0.826				
NORM	0.311	0.627	0.913			
POL	0.213	0.566	0.736	0.946		
RAT	0.404	0.623	0.617	0.638	0.894	
TEAM	0.634	0.688	0.366	0.401	0.444	0.886

Table 4. Discriminant Validity of the Constructs (Square Root of AVE in Shaded Cells)

### 3.5 Hypotheses Testing

Adopting the bootstrapping technique with 500 random re-samples (Mathieson, Peacock, and Chin 2001; White, Varadarajan, and Dacin 2003), this study calculated the path coefficients ( $\beta$ ) of the structure model. Table 5 displays the results of hypotheses testing. The R-Square values for Organizational Norm (NORM) and User Compliance (POL) are 10.5% and 42.3%, respectively, for the United States and 47.0% and 61.1% for South Korea.

Results of Hypotheses Testing: United States vs. South Korea

Hypotheses	United States			South Korea		
	$\beta$	t-Value	Supported	$\beta$	t-Value	Supported
H1: TEAM $\rightarrow$ NORM	-0.136	1.221	No	0.033	0.486	No
H2: ENT $\rightarrow$ NORM	0.097	1.064	No	-0.132	1.334	No
H3: RAT $\rightarrow$ NORM	0.314	***2.685	Yes	0.332	**2.106	Yes
H4: HIE $\rightarrow$ NORM	0.187	**2.172	Yes	0.471	****3.384	Yes
H5: TEAM $\rightarrow$ POL	0.006	0.099	No	0.179	**2.035	Yes
H6: ENT $\rightarrow$ POL	-0.029	0.518	No	-0.236	**2.372	Yes
H7: RAT $\rightarrow$ POL	0.032	0.563	No	0.203	**2.316	Yes
H8: HIE $\rightarrow$ POL	-0.023	0.524	No	0.120	1.597	No
H9: NORM $\rightarrow$ POL	0.648	****10.856	Yes	0.534	****5.393	Yes

\*\*p-value < 0.05 \*\*\*p-value < 0.01 \*\*\*\*p-value < 0.001

Table 5. Results of Hypotheses Testing

Total Effects on Dependent Variables (NORM and POL)

	United States		South Korea	
	NORM	POL	NORM	POL
ENT	0.097	0.034	-0.132	***-0.306
HIE	**0.187	0.098	****0.471	***0.372
NORM		****0.648		****0.534
RAT	***0.314	**0.236	**0.332	***0.381
TEAM	-0.136	-0.082	0.033	*0.196

\*p-value < 0.10 \*\*p-value < 0.05 \*\*\*p-value < 0.01 \*\*\*\*p-value < 0.001

Table 6. Total Effects

Indirect Effects on Dependent Variable (POL)

	United States	South Korea
	POL	POL
<b>ENT</b>	0.063	-0.070
<b>HIE</b>	*0.121	***0.252
<b>RAT</b>	**0.204	**0.178
<b>TEAM</b>	-0.088	0.018

\*p-value < 0.10 \*\*p-value < 0.05 \*\*\*p-value < 0.01 \*\*\*\*p-value < 0.001

Table 7. Indirect Effects

## 4 Discussion

Analysis results demonstrate that organizational cultures cultivate organizational norms supporting Information Security Policy (ISP) compliance in the banking industries of the United States and South Korea. Consistent with the prior studies (Herath and Rao 2009; Johnston and Warkentin 2010), organizational norms drive banking employees in both nations to comply.

The R-Square values for organizational norms (NORM) differ between the United States (10.5%) and South Korea (47%). This suggests that, in South Korea, organizational culture in banks is more influential in shaping organizational norms for ISP compliance than that of the United States. The main reason is that hierarchical culture exerts greater impact on organizational norms in the banking of South Korea (total effect = 0.471,  $p < 0.001$ ) than on those of the United States (total effect = 0.187,  $p < 0.05$ ).

Specifically, hierarchical culture shapes organizational norms favoring ISP compliance in the banking industry in both nations ( $\beta=0.187$ ,  $p < 0.05$  for USA and  $\beta=0.471$ ,  $p < 0.001$  for South Korea). In general, hierarchical culture encourages internal control, order, and rule enforcement (Denison and Spreitzer 1991). This suggests that hierarchical culture facilitates top-down management that enforces policies (Hu, Dine, Hart and Cooke 2012), creating organization norms for ISP compliance (Smith, Winchester, Bunker and Jamieson 2010).

Hierarchical culture generates much stronger impact on the organizational norms in banks of South Korea than on those of the United States because South Korea has a national culture of high power distance (Hofstede 1983). Mainly, high power distance requires subordinates deferring to superiors in decision making (Hofstede 1983), thus giving superiors more power. In this respect, high power distance augments hierarchical culture by granting management higher power and control. As a result, top-down management can be carried out effectively to cultivate organizational norms for ISP compliance. Conversely, the national culture of low power distance in the United States is not as effective in enhancing hierarchical culture as the national culture of high power distance in South Korea. This explains as to why hierarchical culture in banks of the United States generates smaller effect on organizational norms favoring ISP compliance.

Additionally, rational culture in organizations constructs organizational norms for ISP compliance in both nations ( $\beta= 0.314$ ,  $p < 0.01$  for USA and  $\beta=0.332$ ,  $p < 0.05$  for South Korea). In the banking industry, failing to comply will result in fines and even bad reputation that will negatively affect a bank's revenue. To stay competitive, banks must attain compliance. Since rational culture emphasizes organizational competitiveness (Denison and Spreitzer 1991), we assert that rational culture pinpoints security policies to protect organizations for the purpose of sustaining market competition. Gradually, rational culture develops organizational norms for ISP compliance.

However, in the banking industry of both nations, entrepreneurial culture does not have any direct effects on shaping organizational norms in favor of ISP compliance. As stated earlier, banking is a highly regulated industry in that it is an institution that has to confront regulatory pressures imposed by authorized and legitimate parties (Kam, Katerattanakul and Gogolin 2013). This does not blend well with entrepreneurial culture wherein its core values lie within promoting flexibility, creativity, and growth rather than fostering internal control for organizational stability (Denison and Spreitzer 1991). That is, entrepreneurial culture nurtures an “open” organizational environment favoring creativity and risk-taking as opposed to shaping a more restrictive environment for ISP compliance.

In the same token, team culture displays no direct impact on constructing organizational norms for ISP compliance in both nations. This is mainly because team culture fosters leaderships favoring mutual understanding and human relation to promote morale and group cohesion (Denison and Spreitzer 1991). In other words, team culture cultivates a “clan” environment (Zammuto and O’Connor 1992) in that maintaining human relationships is more important than penalizing employees who fail to comply.

The main distinction between the banking industry in the United States and South Korea is that organizational culture of banks in the United States does not show any direct impacts on employee’s compliance. However, team, rational and entrepreneurial cultures in South Korean banks directly affect employee’s effort to comply.

Drawing on the American culture of low uncertainty avoidance (Hofstede 1983), we assert that risk-taking and innovation facilitated by entrepreneurial culture (Denison and Spreitzer 1991) coordinates with low uncertainty avoidance that promotes embracing the unknown (Hofstede 1983). In other words, low uncertainty avoidance blends well with risk-taking supported by entrepreneurial culture to encourage individuals to take risk for creating innovative ideas rather than following some restrictions to stay compliant. Hence, entrepreneurial culture does not drive individuals to comply in banks of the United States.

Nevertheless, nations with high uncertainty avoidance, such as South Korea, tend to espouse well-defined rules and eschew risk (Hofstede 1983). We maintain that entrepreneurial culture that encourages risk-taking and creativity (Denison and Spreitzer 1991) collides with South Korean’s culture of high uncertainty avoidance. This is mainly because flexibility and risk-taking advocated by entrepreneurial culture has a negative effect on implementing well-defined, rigid rules embraced by a national culture of high uncertainty avoidance. Accordingly, this explains as to why entrepreneurial culture perpetuates negative impacts on employee’s compliance in South Korean banking ( $\beta = -0.236$ ,  $p < 0.05$ ).

In the United States, team culture advocating loyalty to organizations (Zammuto and O’Connor 1992) does not fit well into American culture of individualism that values personal welfare over loyalty to organizations. As a result, team culture does not directly promote employee’s effort of achieving compliance in banks of the United States. However, by promoting group affiliation, team culture reinforces collectivism, which is a part of the national culture in South Korea (Hofstede 1983). Therefore, banking employees in South Korea are obliged to comply with ISP due to their loyalty to and identification with their organizations. This thus produces a direct impact on employee’s efforts of staying compliant ( $\beta = 0.179$ ,  $p < 0.05$ ).

Furthermore, rational culture exhibits positive effect on employee’s effort of staying compliant in the banks of South Korea ( $\beta = 0.203$ ,  $p < 0.05$ ). Rational culture drives individuals to comply because it reinforces South Korean’s culture of high power distance and masculinity. Since rational culture is control-oriented, national culture of high power distance makes it acceptable for top management to dictate employee’s behavior and coerce employees to comply with ISP. Additionally, the success-focused masculinity complements rational culture that stresses success and achievement. In the banking industry, doing a good job entails staying compliant. Hence, employees will comply with ISP in order to be perceived as a competent worker and to be considered in the next job promotion.

Nevertheless, in the banking industry of the United States, rational culture does not demonstrate any direct impacts on employee’s compliance. Supposedly, American culture of masculinity (Hofstede 1983)

synchronizes with the achievement-oriented aspect of rational culture that propels employees to comply. But we maintain that masculinity is countered by another elements of national culture incorporating individualism and low power distance. As individuals highly value their personal welfare and freedom, control mechanisms that restrict individual's behavior may not appeal to individuals. Furthermore, in the context of low power distance, employees appreciate equality, and therefore, stricter authority that imposes tighter control and coercive force may be a turn-off to employees. This explains as to why rational culture that focuses on control (Denison and Spreitzer 1991) does not synchronize with high individualism and low power distance, thereby generating no direct impact on employee's compliance in the banks of USA.

Interestingly, hierarchical culture does not have any direct effects on employee's effort of staying compliant in the banking industries of the United States and South Korea. On the basis that hierarchical culture cultivates organizational norms for ISP compliance in banks of both nations, we assert that hierarchical culture plays a more prominent role in organizational settings rather than in individual's efforts of staying compliant. In hierarchical culture, cautious and conservative leadership attempts to protect organizational welfare by mandating employees to abide by rules (Zammuto and O'Connor 1992). This suggests that emphasis on strict rules and regulations stresses organizational operation but ignores employee's well-being. That is, restriction and control on individuals do not synchronize with American culture of individualism. Accordingly, hierarchical culture has no direct impact on employee's compliance in the American banks.

While the national culture of South Korea values low individualism and high collectivism (Hofstede 1983), hierarchical culture based on bureaucracy (Zammuto and O'Connor 1992) lacks a "human" perspective. This makes it hard for employees to identify with organizations and subsequently creates difficulties to harness the power of collectivism built on group affiliation. In other words, hierarchical culture does not display any direct impact on employee's compliance in South Korean banks because its bureaucratic nature fails to build human relations; and as a result, hierarchical culture does not complement collectivism that encourages individual compliance through group affiliation.

Additionally, in both nations, hierarchical culture shows indirect effects on employee's compliance in the banking industries in both nations (indirect effect = 0.121,  $p < 0.10$  for USA and indirect effect = 0.252,  $p < 0.01$  for South Korea). Alternatively, hierarchical culture indirectly drives banking employees to comply through organizational norms. Rational culture also has an indirect effect on employee's effort of staying compliant (indirect effect = 0.204,  $p < 0.05$  for USA and indirect effect = 0.178,  $p < 0.05$  for South Korea). That is, rational culture fosters organizational norms supporting ISP compliance, which, in turn, generates mediating effects on employee's effort of staying compliant. These indirect effects corroborate with the notion that organizational culture shapes organizational norms (Schein 1984) that later drive employee's compliance (Herath and Rao 2009).

Finally, the following table summarizes the research findings in this study.

#### Summary of Research Findings

Research Findings	United States	South Korea	Reasoning
Types of organizational culture that support organizational norms for ISP compliance	Hierarchical and rational cultures	Hierarchical and rational cultures	The common industry characteristics, such as, hierarchical structure and market competition, may reflect upon organizational cultures. These characteristics support organizational-level compliance.
Types of organizational culture that do not support organizational norms for ISP compliance	Team and entrepreneurial cultures	Team and entrepreneurial cultures	Entrepreneurial culture cultivates an "open" environment for innovation and team culture fosters human relations. Both cultures do not align with industry characteristics (e.g. hierarchical).

Overall impacts of organizational culture on organizational norms supporting ISP compliance	Lower impact (R-square for NORM is 10.5%)	Higher impact (R-square for NORM is 47%)	South Korean's culture of high power distance augments hierarchical culture to enable top-down management that creates internal norms for ISP compliance. But the American culture of low power distance does not.
Types of organizational cultures that support individual's efforts of staying compliant	None	Entrepreneurial culture (negative impact)	Collides with high uncertain avoidance in South Korea; risk-taking aspect of entrepreneurial culture does not favor stricter control for compliance.
		Team culture	Reinforces collectivism in South Korea but does not coordinate with high individualism in USA
		Rational culture	Reinforces masculinity and high power distance in South Korea but the control-oriented rational culture collides with low power distance in USA
Do organization norms support individual compliance?	Yes	Yes	Consistent with the findings of prior studies (Herath and Rao 2009)

Table 8. Summary of Research Findings

## 5 Conclusion, Research Implications and Limitations

In summary, the main differences of Information Security Policy (ISP) compliance in the banking industry between the United States and South Korea are: (1) organizational culture does not have any direct impact on employee's compliance in the banks of United States but exhibits some effects on the banking employees in South Korea; and (2) organizational cultures (hierarchical and rational cultures) in South Korean banks are more influential in shaping organizational norms supporting ISP compliance than those of the banks in the United States.

On the other hand, the banking industries in both nations share some similarities in that organizational cultures, namely, hierarchical and rational cultures, build organizational norms in support of ISP compliance. Additionally, hierarchical and rational cultures have indirect mediating effects on employee's efforts of staying compliant in the banking industries of both nations.

By drawing similarities and differences between the banking industries in both nations, this study contributes to the research findings by presenting ISP compliance at the organizational (macro) and individual (micro) levels. First of all, this study infers that industry characteristics of banking influence the organizational norms (macro) for ISP compliance. For example, hierarchical culture in the organizational settings can be attributed to the hierarchical and bureaucratic nature (Davis 2004) of the banking industry. Overall, hierarchical culture directly shapes organizational norms for ISP compliance in banks of the United States and South Korea.

Similarly, rational culture can be ascribed to the profit-oriented and competitive nature of the banking industry. Since banks rely heavily on data for decision making (Yeh and Chang 2007), policy compliance may help banks to assure data integrity for good decision making. In other words, the accomplishment-oriented aspect of rational culture drives banks to make good decision built on data integrity, and therefore, banks must safeguard data integrity to support decision making that will lead to winning the market competition. Accordingly, rational culture motivates banks to shape organizational norms supporting ISP compliance in the banking industries of both nations.

Second, for ISP compliance at the individual (micro) level, this study infers that national culture has some moderating effects on individual's compliance. This study suggests that individuals will incline to exercise compliance if national culture ingrained on individuals reinforces organizational culture. Conversely, organizational culture that collides with national culture may negatively affect employee's compliance.

## **5.1 Theoretical and Practical Implications**

Drawing on the conclusion above, this study suggests that there is an interplay between national culture and organizational culture in term of ISP compliance. The interactive effect is mainly applicable to ISP compliance at the individual (micro) level. That is, organizational culture contrasting national culture may be ineffective in promoting employee's compliance and vice versa.

Next, we posit that industry characteristics may have some impacts on organizational norms (macro level) for ISP compliance. Drawing on the Neo-Institutional Theory (NIT), industry is an institution that encourages and/or restricts organizational actions and behavior; and as a consequence, organizations have to adapt to the institutional framework in order to survive (DiMaggio and Powell 1983; Meyer and Rowen 1977). Mainly, NIT suggests organizations survive by replicating mechanisms that have been proven successful to adapt to the external environment (DiMaggio and Powell 1983; Meyer and Rowen 1977). For instance, as shown in the analysis results, rational and hierarchical cultures in organizations are more effective in shaping organizational norms supporting ISP compliance, and therefore, most banks may employ these cultures. This is reflected upon the hierarchical, bureaucratic, and competitive nature (Davis 2004) of the banking industry. Consequently, this suggests that industry characteristics may transcend national boundaries and play a key role in policy compliance.

In this respect, we further suggest that there is a three-way interaction among organizational, national, and industry cultures for ISP compliance at the individual-level. A future research can be conducted to examine these interactive effects by examining ISP compliance in multiple industries of multiple nations.

As for practical implications, this study suggests that international branches of banking organizations should incorporate local culture to promote ISP compliance. For instance, a U.S. bank located at South Korea can exert more managerial controls to encourage employees to comply because South Korean's culture of high power distance (Hofstede 1983) supports tighter management scrutiny.

Drawing on the analysis results, hierarchical culture directly creates organizational norms for ISP compliance but it does not directly drive individual's efforts of staying compliant. Rather than enforcing rigid rules with coercive force, we suggest that banks should foster understanding among employees when promoting ISP compliance. For example, banks can organize informal sessions to discuss about security policies and build human relations to encourage employee's participation in ISP compliance. Having face-to-face communication will not only establish relationships but also convey the importance of security policies. This may be a better way to increase employee's willingness to comply in comparison to coercing employee's compliance through pressures imposed by management.

## **5.2 Limitation**

Finally, this study is not without limitation. First of all, due to the difficulties of data collection, our sample sizes are relatively small (N=127 for the United States and N=121 for South Korea). Additionally, this study only selects one industry and does not conduct a cross-industry study to draw comparison in ISP compliance. Therefore, the findings are mostly applicable in highly regulated industries. Researchers may want to exercise caution when referencing the research findings.

## References

- Argyris, C. 1958. "Some Problems in Conceptualizing Organizational-Climat - A Case-Study of a Bank," *Administrative Science Quarterly* (2:4), pp. 501-520.
- Allaire, Y. and Firsirotu, M. E. 1984, " Theories of Organizational Culture," *Organization Studies* (5:3), July, pp 193 – 226.
- Banker, R. D., Chang,H. and Lee, S. Y. 2010. "Differential Impact of Korean Banking System Reforms on Bank Productivity," *Journal of Banking & Finance* (34:7), pp. 1450-1460.
- Bulgurcu, B., Cavusoglu, H. and Benbasat, I. 2010, "Information Security Policy Compliance: an Empirical Study of Rationality-Based Beliefs and Information Security Awareness," *MIS Quarterly* (34:3), September, pp 523-548.
- Cameron, K. S., and Quinn, R. E. 1999. *Diagnosing and Changing Organizational Culture*. Reading: Addison-Wesley.
- Chin, W.W. 1998. *The Partial Least Squares Approach to Structural Equation Modelling*. Lawrence Erlbaum Associates, NJ: Mahwah.
- Chin, W.W. and Newsted, P.R. 1999, *SEM Analysis with Small Samples using Partial Least Squares*, In R. Hoyle (Ed.), *Statistical Strategies for Small Sample Research*, Thousand Oaks: Sage.
- Davis, S. 2004. *Culture in Banking: The "Soft Stuff" Drives the Hard Results*. URL: [http://www.dibc.co.uk/culture\\_in\\_banking.pdf](http://www.dibc.co.uk/culture_in_banking.pdf).
- Da Veiga, A. and Eloff, J.H.P. 2010, "A Framework and Assessment Instrument for Information Security Culture," *Computers and Security*, (29:2), pp.196-207
- Denison, D.R. and Spreitzer, G.M. 1991. *Organizational Culture and Organizational Development: A Competing Values Approach*, in *Research in Organizational Change and Development*, CT: JAI Press, Inc.
- DiMaggio, P. J., Powell, W.W. 1983, "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields," *American Sociological Review*, (48:2) April, pp 147-160.
- Feldman, D. C. 1984, "The Development and Enforcement of Group Norms," *Academy of Management Review*, (9:1), pp. 47-53.
- Fornell, C. and Larcker, D. 1981, "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research*, (18:1), February, pp 39-50.
- Gefen, D. and Straub, D.W. 2005, "A Practical Guide to Factorial Validity Using PLS-Graph: Tutorial and Annotated Example," *Communications of AIS* (16:5), September, pp 91-109.
- Greenleaf, G. 2011, *Asia-Pacific Data Privacy: 2011, Year of Revolution?* URL: <http://austlii.edu.au/~graham/publications/2011/OIpaper0711.pdf>
- Hackman, J. R. 1976. *Group Influences on Individuals*, In *Handbook of Industrial and Organizational Psychology*, ed. M. D. Dunnette. Chicago: Rand MacNally.
- Haenlein, M and Kaplan, A.M. 2004. "A Beginner's Guide to Partial Least Squares Analysis," *Understanding Statistics* (3:4), pp 283 – 297.
- Helfrich, C.D., Li, Y. F., Mohr, D.C., Meterko, M. and Sales, A.E. (2007). "Assessing an Organizational Culture Instrument based on the Competing Values Framework: Exploratory and Confirmatory Factor Analyses," *Implementation Science* (2:13), pp. 1-14
- Henseler, J., Ringle, C.M. and Sinkovics, R.R. 2009. "The Use of Partial Least Squares Path Modeling in International Marketing," *Advances in International Marketing* (20), pp 277-319.
- Herath T and Rao H. 2009, "Protection Motivation and Deterrence: a Framework for Security Policy Compliance in Organisations," *European Journal of Information Systems* (18), April, pp. 106-125.
- Hrebiniak, L. G. and Snow C. C. 1980. "Industry Differences in Environmental Uncertainty and Organizational Characteristics Related to Uncertainty", *Academy of Management Journal* (23:4), pp. 750-759

- Hofstede, G. 1980, *Culture's Consequences: International Differences in Work-Related Values*. Sage Publications, CA: Beverly Hills.
- Hofstede, G. 1983, "The Cultural Relativity of Organizational Practices and Theories," *Journal of International Business Studies* (14:2), June, pp. 75–90
- Hofstede, G. 1991. *Cultures and Organization: Software of the Mind*. McGraw-Hill, NJ: New York.
- Hovav, A. and D'Arcy, J., 2012, "Applying an Extended Model of Deterrence across Cultures: An Investigation of Information Systems Misuse in the U.S. and South Korea," *Information & Management* (49:2), March, pp 99-110.
- Hu Q, Dinev T, Hart P, Cooke D, 2012, "Managing Employee Compliance with Information Security Policies: The Role of Top Management and Organizational Culture," *Decision Sciences* (43:4), August, pp. 615-660.
- Interligi, L. 2010. "Compliance Culture: a Conceptual Framework," *Journal of Management and Organization* (16:2), pp. 235-249.
- Johnston, A. C. and Warkentin, M. 2010, "Fear Appeals and Information Security Behaviors: An Empirical Study," *MIS Quarterly* (34:4), September, pp 549–566.
- Kam. H. J., Katerattanakul, P. and Gogolin G. 2013, "A Cross Industry Study: Differences in Information Security Policy Compliance between the Banking Industry and Higher Education," *In: 34th International Conference on Information Systems (ICIS) Proceedings*.
- Kim D., Ryu Y. and Kwark, Y. 2013, "A Cross-Cultural Perspective of Information Security Collective Efficacy," *In: 34th International Conference on Information Systems (ICIS) Proceedings*.
- Leidner, D. E., Carlsson, S., Elam, J. and Corrales, M. 1999, "Mexican and Swedish Managers' Perceptions of the Impact of EIS on Organizational Intelligence, Decision Making, and Structure," *Decision Sciences* (30:3), June, pp 632–658.
- Marcoulides, G. A., Chin, W. W. and Saunders, C. 2009. "Foreword: A Critical Look at Partial Least Squares Modeling," *MIS Quarterly* (33:1), pp.171-176
- Mathieson, K., Peacock, E., and Chin, W.W. 2001. "Extending the technology acceptance model: the influence of perceived user resources," *The data base for advances in information systems* (32:3), 86–112.
- Meyer J. W. and Rowan B. 1977, "Institutionalized Organizations - Formal-Structure as Myth and Ceremony," *American Journal of Sociology* (83:2), September, pp 340-363.
- Nasser, F. and Wisenbaker, J. 2003, "A Monte Carlo Study Investigating the Impact of Item Parceling on Measures of Fit in Confirmatory Factor Analysis," *Educational and Psychological Measurement* (63:5), October, pp 729-757.
- Newman, K.L and Nollen, S. D. 1996, "Culture and Congruence: the Fit between Management Practices and National Culture," *Journal of International Business Studies* (27:4), October, pp 753–779.
- Park, K., Weber, W., 2006. "A Note on Efficiency and Productivity Growth in the Korean Banking Industry, 1992-2002," *Journal of Banking and Finance* (30:8), pp. 2371-2386
- Rocha Flores, W., Antonsen, E. and Ekstedt, M. 2014, "Information Security Knowledge Sharing in Organizations: Investigating the effect of Behavioral Information Security Governance and National Culture," *Computers & Security* (43), June, pp 90–110.
- Quinn, R. E. and Kimberly, J. R. 1984, *Paradox, Planning, and Perseverance: Guidelines for Managerial Practice*, In *Managing Organizational Transitions*, pp. 295-313. Homewood, IL: Dow Jones-Irwin.
- Quinn, R. E., J and Rohrbaugh. 1983, "A Spatial Model of Effectiveness Criteria: Towards a Competing Values Approach to Organizational Effectiveness," *Management Science* (29:3), pp. 363–377
- Schein E. H. 1984. "Coming to a New Awareness of Organizational Culture," *Sloan Management Review* (25:2), pp. 3–16.
- Schneider, S.C. and DeMeyer, A. 1991, "Interpreting and Responding to Strategic Issues: the Impact of National Culture," *Strategic Management Journal* (12:4), May, pp. 307–320.

- Scott, W.R. 2008. *Institutions and Organizations, Ideas and Interest*. 3rd Edition, Thousand Oaks, CA: Sage
- Smith S, Winchester D, Bunker D and Jamieson R. 2010, "Circuits of Power: a Study of Mandated Compliance to an Information Systems Security De Jure Standard in a Government Organization," *MIS Quarterly* (34:3), pp. 463–486.
- Straub, D. 1994. "The Effect of Culture on IT Diffusion: Email and FAX in Japan & United States," *Information System Research*, (5:1), pp. 24-47.
- Symons, C. 2005. *IT Governance Framework*. URL: <http://i.bnet.com/whitepapers/051103656300.pdf>.
- Vance, A., Elie-Dit-Cosaque, C., and Straub, D. 2008, "Examining Trust in Information Technology Artifacts: The Effects of System Quality and Culture," *Journal of Management Information Systems* (24:4), pp 73-100.
- White, J.C., Varadarajan, P.R., Dacin, P.A. 2003. "Market situation interpretation and response: the role of cognitive style, organizational culture, and information use," *Journal of Marketing* (67:3), pp. 63–79.
- Yeh, Q. and Chang, A. J. 2007. "Threats and Countermeasures for Information System Security: A Cross-Industry Study," *Information and Management* (44:5), pp. 480-491.
- Zammuto, R. F. and O'Connor, E. J. 1992. "Gaining Advanced Manufacturing Technologies' Benefits: The Roles of Organization Design and Culture", *Academy of Management Review* (17:4), pp. 701-728