The Impact of Chief Privacy Officers' Background Knowledge and Role on Organizational Privacy Performance

Jiyoung Wee, Seyoon Ma, and Seok Kim

Abstract—As incidents of personal information leaking and hacking take place domestically and globally, ‘Privacy Act’ and ‘Act on Promotion of Information and Communication Network Utilization and Information Protection, etc.’ oblige the chief privacy officer (CPO). Nevertheless, there are insufficient studies on the definitions, roles, and characteristics of CPO. This study developed items of measurement of the CPO’s roles, background knowledge, and the performance of protection of personal information based on upper echelon theory. Factor analysis was carried out and convergent validity and discriminant validity were verified using SPSS and Smart PLS, and the causal relationships between the CPO’s roles of diplomacy and the technical background knowledge and the organizational privacy performance were analyzed. This study is an empirical one that applies the top management theory to CPO, which has mainly been applied to the CEO, CFO and CIO, and found that as important capabilities CPO needs, roles of diplomacy and technical background knowledge should be considered. In addition, this study has significance in that it presented a direction in which the incumbent or prospective CPOs should proceed in the field of protection of personal information.

Keywords—Chief Privacy Officer (CPO), Privacy, Personal Data, Personal Information, Personal Information Protection, CPO Characteristics, Organizational Privacy Performance

I. INTRODUCTION

In 2014, Company S, an American Social Network Service Business, was hacked into the 4.6 million personal information, and a total of 104 million personal information of Card Companies K, L and N in Korea were leaked. As the data spill occurs at home and abroad, it becomes a terrible social problem. As the personal information problem rises, consumers’ concerns and demand for privacy protection increase. In order to meet the user’s worry and the legal demands of data spill, a position of CPO (Chief Privacy Officer) was born in USA in the 1990s. Korea also made the appointment of CPO compulsory in the law in 2011[1]. Although the position of CPO greatly increases, there have been very few studies on the definition, role, and trait of that up to now, and the quantitative study of it lacks. Therefore, this study tries to investigate through the quantitative research what influence the role and background knowledge of CPO gives on the privacy performance.

II. THEORETICAL BACKGROUND

2.1 Definition and Duty of CPO

There is no clearly fixed definition, trait, and role of CPO so far. Detailed definitions of it are summarized in Table I below.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Source</th>
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<tbody>
<tr>
<td>The individual who has overall Agency responsibility for policy development, oversight, and implementation of an agency-wide privacy program.</td>
<td>USAID[2]</td>
</tr>
<tr>
<td>CPO is a person who takes responsibility for all the duties on privacy, who is responsible for carrying out, managing and supervising technical and administrative restraints for protection, so as to force people to observe the internal guidelines relevant to privacy for the privacy protection.</td>
<td>‘Standard and Guide for Personal Information Safety’ by the Ministry of Public Administration and Security of Korea[3]</td>
</tr>
<tr>
<td>CPO plays a role of handling all duties on the privacy protection at work.</td>
<td>A Guide to Standards of the Technical and Administrative Safeguards for Privacy Protection’ by the Korea Communications Commission[4]</td>
</tr>
</tbody>
</table>

According to the various definitions found in the existing literature, this study defines CPO as ‘a person who takes responsibility for all the duties on handling the organization privacy’.

The Privacy Protection Law states that CPO performs duties such as 1) establishment and implementation of privacy plan, 2) regular investigation into and improvement of handling state and practice of privacy, 3) remedy of complaints relevant to privacy and relief of its damage, 4) construction of the internal control system for protection of data spill and its misuse and abuse, 5) establishment and implementation of privacy protection education plan, and 6) protection, management, and supervision of the information files[1].
2.2 Upper Echelon Theory

Hambrick and Mason explained the effect of the management’s characteristics on the organizational performance through the Upper Echelon Theory in 1984. They forecasted that Chief Executive Officers (CEOs) with mutually similar cognitive structure and values would show the similar decision-making and behavior pattern, and considered that conditions in the specific circumstances combined with CEO’s characteristics and made a strategic choice. And they thought that the CEO’s characteristics and their strategic choice determined the organization performance level[5].

2.3 Precedent Studies

Li and Tan reported the research outcomes on the effect of the alignment of the business strategy and CIO’s characteristics on the organizational performance[6]. They found out that CIO’s age, tenure and educational level improved the organization performance, when those fit well the prospector and defen der strategies, the organization strategy types of Miles et al.[7].

Prior to this, Thomas and Ramaswamy studied the effect of the alignment of the upper echelon’s characteristics of an organization and the organization’s strategic composition on the organization performance[8]. This study also used organization strategy types of Miles et al.[7].

Banker et al. found out that the organization performance were high when CIO report system was suitably connected with organizational strategy[9]. He showed that the organization performance was higher when the cost leadership strategy conformed to the CIO-CFO report system (CIO-CFO report system) and when the differentiation strategy conformed to the CIO-CEO direct report system, among organizational strategies presented by Porter[10].

Also, Chen et al. showed that CIO’s characteristics affected the leadership regarding highly the supply-side that emphasized on the CIO’ traditional role and the leadership regarding highly the demand-side that emphasized on the innovation, which influenced IT to contribute to the company’s performance and strategic growth[11].

2.4 Conceptual Framework

The conceptual framework of this study based on the Upper Echelon Theory is shown in Fig. 2 below.

![Fig. 2 Conceptual Framework](image)

As we saw in the Theoretical Background, Hambrick and Mason[5] explained the effect of the upper echelon’s characteristics on the organization performance through the Upper Echelon Theory. This study applied the part relevant to the upper echelon’s characteristics and performance of the Upper Echelon Theory model for CPO. That is, this study tries to investigate the effect of the role and background knowledge of CPO on the privacy performance.

III. RESEARCH MODEL AND HYPOTHESIS

In this study a research model was deduced such as Fig. 3 through framework based on the Upper Echelon Theory, and drew role and background knowledge of CPO as the characteristics of CPO affecting privacy performance.

Of the characteristics of CPO affecting the organization privacy performance, information role, strategic role, and diplomacy role was deduced as the role of CPO, and technical background knowledge, legal background knowledge, and business background knowledge was drawn as the background knowledge of CPO.

In addition to these, as the control variable to influence privacy performance, age, tenure, education level, industrial type and firm size was set up.

![Fig. 3 Research Model](image)
3.2 Deduction of Hypothesis

To deduce the role factors of CPO at first, the Mintzberg’s 10 functions of manager were referred. Mintzberg divided function of traditional manager into 10 types and classified these types into 3 categories again[12].

Glick[13] developed measurement tool for the role of CEO, and divided the existing 31 roles of chief including Mintzberg’s role into the informational, interpersonal, decisional, operational, strategic and diplomacy types, for which he verified the measurement items. Through this classification the role of CPO was set up as the informational role, strategic role, and diplomacy role according to the Mintzberg’s manager function[12, 13].

Meanwhile, Hart and Quinn considered the role of CEO as the vision setter, motivator, analyzer, and task master, and carried out a research that these roles gave different influence each other on the organization performance such as financial performance, business performance, and organizational effectiveness[14]. Thus, hypothesis was set that the role of CPO such as the informational, strategic and diplomacy roles has a positive influence on the organization privacy performance.

**H1a: The informational role of CPO will have a positive influence on the organization privacy performance.**

**H1b: The strategic role of CPO will have a positive influence on the organization privacy performance.**

**H1c: The diplomacy role of CPO will have a positive influence on the organization privacy performance.**

The Upper Echelon Theory suggested that characteristics such as chief’s job experience or education affects organization performance[5].

Meanwhile, Bennett proposed that CPO definitely needed knowledge of law relevant to privacy/ data security, technology and business knowledge, mentioning the essential background knowledge of CPO[15]. Thus, hypothesis was set that technical, legal and business background knowledge of CPO will have a positive influence on the privacy performance.

**H2a: Technical background knowledge of CPO will have a positive influence on the privacy performance.**

**H2b: Legal background knowledge of CPO will have a positive influence on the privacy performance.**

**H2c: Business background knowledge of CPO will have a positive influence on the privacy performance.**

### IV. RESEARCH METHODOLOGY

#### 4.1 Operational Definition of Variables and Development of Questionnaire Items

In this study 6 independent variables which can be classified into 2 groups and a dependent variable was suggested, to investigate the effect of the characteristics of CPO on the organization privacy performance. The specific operational definitions are summarized in Table II below.

<table>
<thead>
<tr>
<th>Name of Variable</th>
<th>Operational Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of CPO</td>
<td>Informational Role</td>
<td>A role of handling knowledge and information relevant to privacy</td>
</tr>
<tr>
<td>Strategic Role</td>
<td>A role of developing, integrating and implementing organization privacy policy</td>
<td></td>
</tr>
<tr>
<td>Diplomacy Role</td>
<td>A role as the formal privacy representative for a company in the relationship with specialized privacy institutions, customers, suppliers and other institutions</td>
<td></td>
</tr>
<tr>
<td>Background knowledge of CPO</td>
<td>Technical Background Knowledge</td>
<td>Background knowledge acquired through technical education or technical job experience</td>
</tr>
<tr>
<td></td>
<td>Legal Background Knowledge</td>
<td>Background knowledge acquired through legal education or legal job experience</td>
</tr>
<tr>
<td></td>
<td>Business Background Knowledge</td>
<td>Background knowledge acquired through business education or business job experience</td>
</tr>
<tr>
<td></td>
<td>Organization Privacy Performance</td>
<td>Privacy performance of organization</td>
</tr>
</tbody>
</table>

Measurement tool verified in the precedent researches was used to measure each variable based on the operational definition. Some parts were modified partially to be suitable for this study, based on the verified items through the existing researches to secure content validity of measurement items. Also, some measurement items were drawn through the interviews with experts based on the relevant literature, as the prior studies on the privacy performance lacked. To raise reliability and validity of the measurement tool, plural questionnaire items was used, and every questionnaire item was measured with Likert 7-point scale (1=absolutely not, 7=very much so).

#### 4.2 Data Collection and Sample Property

To test research hypotheses, a survey targeted at the chief privacy officers of the Korean companies was carried out. The e-mail of CPOs was collected through each company’s privacy policy opened to the public on web. Questionnaires were distributed to a total of 6654 persons through e-mail, and used data of 71 persons after excluding 6472 nonresponses, 97 non-subjects for response, and 13 poor responses (response
rate= 2.74%).

The sample of this study was targeted at the chief privacy officers of domestic companies extracted randomly.

4.3 Analysis Tool and Method of Data

Data was analyzed using SPSS Version 18.0 and SmartPLS 2.0. Exploratory factor analysis was conducted with SPSS to identify reliability and validity of the measurement tool, and confirmatory factor analysis and analyses of convergent validity and discriminant validity using SmartPLS. Reliability analysis through Cronbach’s Alpha was also carried out, and research hypotheses were tested through multiple regression analysis.

V. DATA ANALYSIS AND TEST OF HYPOTHESIS

5.1 Analysis of Measurement Items

Exploratory factor analysis was conducted using SPSS 18 to analyze conceptual validity of the measurement items. Factors were extracted using principal component analysis, used equamax as the factor rotation method, and factor loading was applied when it is more than 0.5. Result of factor analysis was found that all factor loadings were more than 0.5. Also, as the cumulative dispersion was 78.086%, it shows to have approximately 78% explanation power of the whole dispersion. Therefore, variables and measurement items proposed in the research model are reliable.

The result of exploratory factor analysis was found that all 25 items of the total of 25 items were valid, and 7 variables such as privacy performance, technical background knowledge, business background knowledge, legal background knowledge, diplomacy role, strategic role and informational role were extracted.

If the factor loading of the individual items is more than 0.5 and larger than cross loading with other variable, measurement items are considered as conceptually valid[19, 20]. In this study all factor loadings were found to be significant with more than 0.5, and the composed questionnaire items were judged to faithfully measure what they try to do.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Factor 1</td>
</tr>
<tr>
<td>Organizational Privacy Performance (BPP)</td>
<td>BPP1</td>
<td>0.852</td>
</tr>
<tr>
<td></td>
<td>BPP2</td>
<td>0.850</td>
</tr>
<tr>
<td></td>
<td>BPP3</td>
<td>0.814</td>
</tr>
<tr>
<td></td>
<td>BPP4</td>
<td>0.786</td>
</tr>
<tr>
<td></td>
<td>BPP5</td>
<td>0.784</td>
</tr>
<tr>
<td></td>
<td>BPP6</td>
<td>0.662</td>
</tr>
<tr>
<td>Technical Background Knowledge (TEC)</td>
<td>TEC1</td>
<td>0.045</td>
</tr>
<tr>
<td></td>
<td>TEC2</td>
<td>0.116</td>
</tr>
<tr>
<td></td>
<td>TEC3</td>
<td>0.105</td>
</tr>
<tr>
<td></td>
<td>TEC4</td>
<td>0.233</td>
</tr>
<tr>
<td>Business Background Knowledge (BUS)</td>
<td>BUS1</td>
<td>0.053</td>
</tr>
<tr>
<td></td>
<td>BUS2</td>
<td>-0.014</td>
</tr>
<tr>
<td></td>
<td>BUS3</td>
<td>0.062</td>
</tr>
<tr>
<td>Legal Background Knowledge (LEG)</td>
<td>LEG1</td>
<td>0.110</td>
</tr>
<tr>
<td></td>
<td>LEG2</td>
<td>0.075</td>
</tr>
<tr>
<td></td>
<td>LEG3</td>
<td>0.079</td>
</tr>
<tr>
<td>Diplomacy Role (DIP)</td>
<td>DIP1</td>
<td>0.222</td>
</tr>
<tr>
<td></td>
<td>DIP2</td>
<td>0.138</td>
</tr>
<tr>
<td></td>
<td>DIP3</td>
<td>0.171</td>
</tr>
<tr>
<td>Strategic Role (STR)</td>
<td>STR1</td>
<td>0.085</td>
</tr>
<tr>
<td></td>
<td>STR2</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>STR3</td>
<td>0.111</td>
</tr>
<tr>
<td>Informational Role (INF)</td>
<td>INF1</td>
<td>0.073</td>
</tr>
<tr>
<td></td>
<td>INF2</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>INF3</td>
<td>0.130</td>
</tr>
</tbody>
</table>
5.1.1 Convergent Validity Testing
Convergent validity, testing to identify the correlation degree between two measurement tools to one concept, was conducted. The larger correlation value the higher convergent validity is, and 3 standards were used to estimate this. First, standardized path loadings indicating the relation degree between the relevant latent variable and each item must be at least more than 0.5, and if they are higher than 0.7 and statistically significant, they are ideal. Second, composite reliabilities of each variable and Cronbach’s Alpha must be larger than 0.7. Third, Average Variable Extracted (AVE) of each variable must exceed 0.5[21].

As seen in Table III, all standardized path loadings but INF3, which was higher than 0.6, were higher than 0.7, which showed statistically significant value (t-value > 1.96). Composite reliabilities of all variables and Cronbach’s Alpha exceeded the standard 0.7 and AVE value also exceeded the standard 0.5, which indicated that measurement items used in this study had convergent validity.

5.1.2 Discriminant Validity Testing
Discriminant validity, testing to judge how different a variable is from other variable actually, was conducted. As for the discriminant validity, square root of AVE is more than 0.7, and that of AVE of each variable exceeds a correlation coefficient when the correlation coefficient between the relevant variable and the other variables is compared, so measurement factors of this study can be seen to secure discriminant validity.

5.1.3 Reliability
Reliability is a scale of how consistently the target is measured to have accuracy. The social science research generally considers that the measurement items have reliability when Cronbach’s Alpha coefficient is more than 0.6. The result of reliability testing is summarized in the Table III above, and as the result of testing, all Cronbach’s Alpha values are over 0.7, which can be seen that those are composed of mostly consistent questions.
5.2 Testing of Hypothesis and Result

Reliability and validity of each variable were secured through testing of the measurement model conducted previously. Next, SmartPLS 2.0 was used for structural model testing, which is the second step of the structural equation model testing. By bootstrapping method of PLS 500 samples were comprised and hypotheses were tested. Fig. 4 shows the results of testing hypotheses of structural equation model. In this study, two-tailed t-test was carried out, and the rejection region t-values relevant to the standard p-value were 3.29(p<0.001), 2.58 (p<0.01), and 1.96 (p<0.05), respectively.

VI. CONCLUSION

6.1 Research Significance

This study empirically tested the characteristics of CPO who has influence on the organization privacy performance.

The result of testing hypotheses was found that diplomacy role of CPO had a significant influence on the organization privacy performance. It means that privacy performance is higher when CPO actively interacts with other specialized privacy institution or privacy organizations of other institutions, by benchmarking their better policies and methods and obtaining the more information of regulations related with privacy protection or legal response activity.

On the other hand, informational role and strategic role of CPO didn’t have a significant influence on the privacy performance. These two roles are the CPO’s basic role and duty, which are not the different things by each company, so it is judged that those two roles may not have a great influence on the privacy performance, which is relative to other institutions.

Lastly, as for the background knowledge of CPO, it was found that technical background knowledge of CPO had a positive influence on the privacy performance, but legal and business background knowledge of CPO had no significant influence. In Korea, as the law makes appointment of CPO compulsory, many companies make an executive in charge of CIO, CISO, CSO and the like hold the additional position of CPO. It is assumed that as they perform their job of privacy protection connecting their technical background knowledge with their job, the performance would be better than when they have legal and business background knowledge.
6.2 Research Implications

Theoretical implication of this study is as follows: this study is an early study that applied and proved the Upper Echelon Theory to CPO that has not been studied on so far. The existing studies applied the theory to CEO, CFO and CIO. And there were many studies on what linkage effect the organization strategy incurred in the relationship between the characteristics of the upper echelon and the organization performance. This study tried to prove this Upper Echelon Theory by applying it to CPO.

The practical implication of this study is as follows:

First, this study can be an important yardstick for judgment when companies select CPOs and vest authority in them. The diplomacy role and technical background knowledge proven in this study may be important items for CPOs to increase their job performance. If companies consider these points when appointing CPOs and vesting authority or role in them, they will increase privacy performance more efficiently.

Second, not only companies but also CPOs can judge what ability they should concentrate on for development of their career relevant to their job through results of this study. The results of this study say that the incumbent CPOs or those who want to be a CPO should enlarge their technical competence, and the diplomacy with other institutions or institutions related with privacy is an important item. CPOs will be able to establish the way forward in the field of organization privacy protection through this study.

6.3 Limitation of This Study and Future Research Direction

This study has the following limitations:

First, there can be difference between CPOs’ subjective judgment on their job performance and the actual performance. Also, as it measures performance relative to other institutions, it can be different depending on the competitor’s level. It is judged that future study should measure the absolute organization privacy performance to overcome this limitation.

Second, as the population is limited and target of analysis is not a person in charge or hands-on worker but an executive of an organization, there are difficulties in securing a sample. This small number of samples could affect data analysis and make valid hypotheses less extracted.

Third, as this study was targeted at the Korean CPOs, there could be a regional bias. It is necessary to study in the future whether this study on the CPO can be generalized by countries.

In addition to this, there is a need to identify whether job satisfaction of CPO shows a mediating effect between CPO’s characteristics and performance.

REFERENCES
