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Analysis of Human Resource Status in Internal Accounting Control Systems in the Distribution and Service Industries

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Abstract

Purpose: We sought to investigate the operation status of internal accounting control systems in the distribution and service industries and verify whether investing in internal accounting personnel significantly influences the quality of the companies' financial reporting. **Research design, data and methodology:** We identified descriptive statistics and performed a univariate analysis. Furthermore, a regression analysis verified the impact of investing in internal accounting personnel on the absolute value of discretionary accruals, a proxy for financial reporting quality. **Results:** Distribution and service companies allocated a significantly higher number of accountants to their internal accounting control systems than companies in other industries. We also confirmed that the absolute value of discretionary accruals significantly decreased as the average working experience of internal accounting personnel in distribution and service companies, in months, increased. **Conclusions:** In this study, we confirmed that distribution and service companies are devoting efforts to establishing internal accounting control systems and found that financial reporting quality is more effectively controlled as companies allocate more experienced personnel in their internal accounting control system.

Keywords : : Internal Accounting Control System, Human Resources, Discretionary Accrual, Distribution and Service Industries

JEL Classification Code : D52, G30, M41

1. Introduction

In this study, focusing on companies in the distribution and service industries, we seek to investigate the operation status of internal accounting control systems and verify whether investing in internal accounting personnel actually affects the improvement of financial reporting quality.

According to a survey by the Korea Economic Research Institute, employment in the distribution and service industries increased by 426,000 from 2007 to 2017, an increase of 42%. Moreover, the share of new investment, by venture capitalists in the distribution and service industries, was 18.9% at the end of March 2017, up 2.4 times from 7.9% in 2013, and the highest among all industries. Due to the spread of COVID-19 in 2020, this upward trend is accelerating. Given this situation, research is necessary on corporate governance, which can improve the quality of financial reporting along with the increasing size of companies in the distribution and service industries. Financial reporting is a tool to provide external investors and creditors with useful company information for decision making. Among various internal control roles, internal accounting control systems aim to control errors and irregularities in accounting information and provide credible financial reports by regularly inspecting and adjusting financial reports. Accordingly, focusing on companies in the

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distribution and service industries, this study sought to inspect the operation status of internal accounting control systems and verify how investing in internal accounting personnel impacts the quality of companies' financial reporting.

Information on internal accounting control system personnel is disclosed only in Korea. Regulators mandate the disclosure of this information to provide external stakeholders with a basis to infer the effectiveness of a company's internal accounting control system. Thus, more effective operation of the internal accounting control system is expected as corporate investments in internal accounting personnel increase. Within the corporate governance of the distribution and service industries which are growing in size and investments, we investigated the status of internal accounting control systems, which serve an important role in the preparation of financial reports, and verified whether they impact the quality of financial reporting. This study's findings contribute to the literature in terms of these two aspects. This study is conducted as follows: Chapter 2 reviews the theoretical background and prior literature; Chapter 3 discusses the measurement and status of internal accounting control personnel; Chapter 4 reports additional tests results; and Chapter 5 summarizes the study and presents the conclusions and limitations.

2. Theoretical Background and Literature Review

2.1. Internal Accounting Control

Due to large-scale fiscal misconduct from entities, such as Enron and Worldcom, the United States enacted the Sarbanes-Oxley (SOX) Act in 2002 and established institutional mechanisms to ensure accounting transparency. SOX Article 302 covers regulations on the Chief Executive Officer (CEO) and Chief Financial Officer (CFO), and Article 404 covers reporting regulations and management evaluation related to internal controls for financial reporting. According to SOX Article 302, when submitting the annual report to the SEC, companies listed in the US must also submit a certificate stating that appropriate internal controls were conducted, that the CEO and CFO reviewed the report and found that no material information was distorted or omitted and that the company's financial position and management performance are appropriately expressed in terms of importance. Meanwhile, SOX Article 404 stipulates that managers are responsible for establishing and operating internal controls for financial reporting and requires them to disclose an internal control report in the annual report. SOX sought to improve the credibility of accounting information by requiring external auditors to audit the internal control report. In Korea, companies with a December fiscal year-end have been required to disclose the status of internal accounting controls, operation systems personnel, and CPAs in their annual reports since 2002.

2.2. Literature Review

Internal accounting control systems were introduced to improve and enhance the credibility of financial reports. Therefore, the internal accounting control system must be effectively operated, and its operation is directed by the personnel in charge of internal accounting controls. Choi et al. (2009) reported that in companies that allocate more human resources to the internal accounting control system, external auditors are less likely to report significant weaknesses when examining the internal accounting control system, and earnings management measured through discretionary accruals, decrease. Moreover, the Committee of Sponsoring Organizations (CSOs) recommends that companies allocate a sufficient number of internal control personnel to support effective internal controls. This suggests that companies can achieve effective internal control through the timely review and supervision of accounting functions and appropriate division of work when the company has sufficient internal accounting personnel.

Krishnan (2005) discovered significant internal control weaknesses and stated that the past practical experience of the company's internal management (including the CFO, Chief Accounting Officer (CAO), and Controller) and the audit period of external auditors are influencing factors. Summarizing these studies, an increase in the average working experience of internal accounting personnel, in months, signifies an increase in the learning effect due to repetitively performing internal accounting-related tasks (Ryu & Chae, 2019).

As society diversifies, financial and commercial transactions grow in complexity, as well as the accounting standards that reflect them in financial statements. Moreover, the enactment of numerous new accounting standards is increasing the necessity for professional accounting personnel to participate in the company's work. McMullen and Raghunandan (1996) found that companies without problems in financial reporting tend to include a higher proportion of Certified Public Accountants (CPAs) (i.e., accounting experts) in their audit committee. To ensure accounting transparency from the preparation stage of the accounting data, the Financial Services Commission (FSC) requires companies to disclose the status of CPAs in their internal accounting control system to actively encourage them to secure professional accounting personnel. Among internal accounting personnel, those with a certification (CPAs) can be considered to have objective expertise in accounting.

3. Measurement and Status Report of Internal Accounting Control System Personnel

3.1. Status Measurement of Internal Accounting Control System Personnel

This study selected a sample of companies, in the distribution and service industries, from among corporations with a December fiscal year-end listed on the Korean securities market and KOSDAQ between 2011 and 2017. To investigate the status of their internal accounting control system personnel, this study referred to the status of their CPAs, internal accounting controls, and operation system personnel have been disclosed in the internal accounting control system operation report since 2002, as a part of the annual report.

<Table 1> shows a portion of the internal accounting control system operation report included with the annual report. Companies disclose the number of internal accounting personnel by department, in addition to the number of CPAs by department. They also disclose the average working experience of internal accounting personnel in months, which is calculated by dividing the working experience of internal accounting control personnel (in months), including the previous experience of the internal accounting personnel, by the number of internal accounting personnel. To examine the quantitative and qualitative status of internal accounting personnel in the distribution and service industries, this study obtained three indicators: IC_NUM (the number of internal accounting personnel), IC_EXP (the average working experience [in months] of the internal accounting personnel, including previous experience), and CPA_NUM (the number of CPAs among the internal accounting personnel). <Table 1> shows the disclosure of Samsung Engineering Co. Ltd. on internal control personnel for the year 2012. The information is included in the report on the operation of internal control systems, which is a part of the firm's annual report.

Table 1: An Example of the Disclosure of Internal Control Personnel

Department	Total Employees	Internal Control Personnel (A)	CPAs (B)	Ratio of CPAs (B/A×100)	Average Working Experience of Internal Control Personnel in Months
Audit Committee	3	3	1	33%	41
Board of Directors	7	3	1	33%	41
Accounting	41	5	0	0	112
Information Technology and Systems	34	3	0	0	147
Finance	25	3	0	0	143
Others	0	0	0	0	0

3.2. Status Report on Internal Accounting Control System Personnel

< Table 2> shows the status of internal accounting control system personnel in companies listed from 2011-2017. Specifically, Panel A shows the status of internal accounting personnel in the distribution and service industries, where distribution and service companies have an average of 21 internal accounting personnel, with an average working experience of 119 months. Furthermore, an average of 0.8 accountants were allocated as internal accounting personnel. Panel B shows the status of internal accounting personnel in non-distribution and service industries, which were found to also allocate an average of 21 internal accounting personnel. Their average working experience was 125 months, with an average of 0.5 accountants allocated to the internal accounting control system.

The measurements of descriptive statistics in <Table 2> confirmed that both distribution and service companies and non-distribution and service companies systematically allocated internal accounting personnel. To examine the establishment level of internal accounting control systems in further depth, <Table 3> presents the results of a univariate analysis between distribution and service companies and non-distribution and service companies. The analytical results indicate that distribution and service companies have adequately established internal accounting control systems compared to companies in other industries. Distribution and service companies were found to allocate significantly more accountants to their internal accounting control systems than companies in other industries.

Table 2: Descriptive Statistics for Internal Control Personnel

Panel A. Distribution & Service Industries						
Variable	N	Mean	Std	Min	Med	Max
IC_NUM	820	21.857	27.83	3.000	14.000	241.000
IC_EXP	820	119.590	145.659	6.143	98.441	3,298.35
CPA_NUM	820	0.897	1.986	0.000	0.000	18.000
Panel B. Other Industries						
Variable	N	Mean	Std	Min	Med	Max
IC_NUM	3,061	21.884	39.369	2.000	13.000	737.000
IC_EXP	3,061	125.986	116.505	1.000	103.364	1,869.42
CPA_NUM	3,061	0.583	3.321	0.000	0.000	162.000

Note: Variable definitions: IC_NUM: the number of employees who are responsible for the internal control–related tasks, IC_EXP: the average working experience of internal control personnel in months, CPA_NUM: the number of CPAs who are responsible for the internal control–related tasks

Table 3: T-test Results

Variable	Distribution & Service Industries (N=820)	Other Industries (N=3,061)	t-test
	Mean	Mean	
IC_NUM	21.857	21.884	0.02
IC_EXP	119.59	125.986	1.32
CPA_NUM	0.897	0.583	-2.59***

Note: ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions: refer to <Table 2>

Table 4: Descriptive Statistics by Year

Year (N)	Variable	Mean	Std	Min	Med	Max
2011 (116)	IC_NUM	20.543	22.752	4.000	14.000	146.000
	IC_EXP	110.267	80.928	6.833	89.936	449.957
	CPA_NUM	0.802	1.939	0.000	0.000	16.000
2012 (117)	IC_NUM	21.675	25.45	4.000	14.000	166.000
	IC_EXP	110.591	93.143	6.833	92.429	647.857
	CPA_NUM	0.88	2.031	0.000	0.000	16.000
2013 (118)	IC_NUM	22.008	30.648	4.000	14.000	211.000
	IC_EXP	115.052	98.471	6.833	97.210	675.286
	CPA_NUM	0.831	2.109	0.000	0.000	18.000
2014 (119)	IC_NUM	21.563	28.867	3.000	13.000	195.000
	IC_EXP	114.968	89.781	6.143	104.647	675.286
	CPA_NUM	0.933	1.867	0.000	0.000	12.000
2015 (118)	IC_NUM	23.051	31.996	3.000	14.000	211.000
	IC_EXP	121.718	103.872	22.714	98.564	877.000
	CPA_NUM	1.034	2.386	0.000	0.000	18.000
2016 (118)	IC_NUM	21.644	25.588	3.000	14.500	199.000
	IC_EXP	119.233	99.18	24.000	103.310	907.000
	CPA_NUM	0.831	1.645	0.000	0.000	9.000
2017 (114)	IC_NUM	22.518	29.167	3.000	14.000	241.000
	IC_EXP	146.004	312.191	12.000	106.527	3298.350
	CPA_NUM	0.969	1.882	0.000	0.000	11.000

Note: Variable definitions: refer to <Table 2>

<Table 4> shows the status of internal accounting control system personnel in distribution and service companies by year. The average number of personnel in 2011 was the lowest at 20.543, which increased and decreased since then but maintained an average of 21.6 to 23.0. The average working experience was the lowest in 2011 at 110.2 months, which increased and decreased since then and peaked at an average of 146.0 months in 2017. The average number of accountants was 0.8 to 1.0. Overall, the number of internal accounting control personnel did not greatly differ by year, though investment has been steady since its lowest point in 2011.

4. Additional Tests

4.1. Additional Test Model

The previous chapter confirmed that the status of internal accounting control personnel in the distribution and service industries did not greatly differ from that in non-distribution and service industries. This chapter aims to verify whether the status of internal accounting control personnel actually enhances the quality of financial reporting. While internal accounting control systems are qualitatively and quantitatively sufficient in terms of formality, this study will verify whether this actually influences the quality of financial reporting. For this purpose, this study used IC1, the log of the number of internal accounting personnel (IC_NUM); IC2, the log of the average working experience of the internal accounting personnel in months (IC_EXP); and IC3, a variable for whether the company has internal accounting personnel possessing a CPA certification (CAP_NUM), as proxies that indicate the effective operation of the internal accounting control system. Additionally, this study utilized the absolute value of discretionary accruals, which was actively used in prior research, as a proxy for financial reporting quality. Prior studies on the quality of financial reporting measured the quality of specific corporate accounting information based on the degree of earnings management using accruals (Chae, Nakano, & Fujitani, 2020). Thus, they determined financial reporting quality based on the size of discretionary accruals. To measure this, researchers estimated the discretionary accruals using a performance adjustment model (Kothari, Leone, & Wasley, 2005) and used the absolute value of the calculated discretionary accruals as a proxy for financial reporting quality. Specifically, equation (1) is estimated by industry and year. The residual, which is the remainder of the total accruals minus non-discretionary accruals, indicates the discretionary accruals. The higher the value, the higher the earnings management. This study used the absolute value of discretionary accruals to measure financial

reporting quality.

$$TA_{i,t}/A_{i,t-1} = \beta_0 + \beta_1 (1 / A_{i,t-1}) + \beta_2 [(\Delta S_{i,t} - \Delta AR_{i,t}) / A_{i,t-1}] + \beta_3 PPE_{i,t} / A_{i,t-1} + \beta_4 ROA_{i,t} + \varepsilon_{i,t} \quad (1)$$

TAi,t = Net income − cash flow from operating activities;

Ai,t-1 = Total assets;

ΔSi,t = Changes in sales;

ΔARi,t = Changes in accounts receivable;

PPEi,t = Tangible assets − land-construction in progress;

ROAi,t =Net income/total assets;

E = Residuals; and

i,t = firm, year

Table 5: Variable Definitions

Variable	Definition
ABSDA	= absolute value of discretionary accruals
IC1	= a natural logarithm of the number of employees who are responsible for the internal control –related tasks
IC2	= a natural logarithm of the average working experience of internal control personnel in months
IC3	=1 if a firm has a CPA in the internal control system, and 0 otherwise
SIZE	= a natural logarithm of total assets
LEV	= total liabilities divided by total assets
MB	= market value to book value ratio
ROA	= net income divided by total assets
CFO	= cash flow from operations divided by total assets
LOSS	= 1 if a firm reports a loss for the year and 0 otherwise
i,t	= firm, year

The following regression equation (2) shows the specific empirical model. The absolute value of the discretionary accruals (ABSDA), a proxy for the quality of financial reporting, is set as the dependent variable. IC1, IC2, and IC3, which indicate the operation status of internal accounting control personnel, are the variables of interest. Consistent with previous research, variables considered to influence the dependent variable were also included. The financial data required for analysis were extracted from the KisValue. Furthermore, all variables were winsorized at the 1% level to control the influence of extreme values.

$$ABSDA_{i,t} = \beta_0 + \beta_1 IC1 \text{ or } IC2 \text{ or } IC3_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 MB_{i,t} + \beta_5 ROA_{i,t} + \beta_6 CFO_{i,t} + \beta_7 LOSS_{i,t} + \sum YEAR + \epsilon_{i,t} \quad (2)$$

4.2. Additional Test Result

<Table 6> shows the results of linear regression analysis, verifying how the size of discretionary accruals differs with the number of internal accounting personnel. If work becomes more effectively divided and the credibility of financial reporting improves as the number of internal accounting personnel increases, then the absolute value of discretionary accruals (ABSDA) will decrease. Accordingly, this study confirmed whether the coefficient of IC1, the main variable of interest indicating the number of internal accounting personnel, has a negative sign. According to the results, the regression coefficient of IC1 was -0.003, indicating that it did not significantly impact the dependent variable ABSDA.

Table 6: Number of Internal Control Personnel and Absolute Value of Discretionary Accruals

Dependent Variable: ABSDA		
Variables	Coeff	t value
Intercept	0.102	3.05***
IC1	-0.003	-0.38
SIZE	-0.002	-2.31**
LEV	0.03	3.29***
MB	0.007	5.18***
ROA	-0.003	-0.19
CFO	-0.005	-0.19
LOSS	0.003	0.64
Year Dummies	Included	
Model Fit	Adj. R^2	0.04
	F value	4.01***
Sample Size	820	

Note: ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.
Variable definitions: refer to <Table 4>

<Table 7> shows the results of regression analysis investigating the size of discretionary accruals according to the average working experience of the internal accounting personnel in months. IC2, the main variable of interest, indicates the average working experience of the internal

accounting personnel in months. The coefficient of IC2 is the coefficient of interest, where a negative sign signifies that the higher the average working experience of the internal accounting personnel in months, the greater the learning effect of the internal accounting tasks, thereby improving the credibility of financial reporting. According to the results, the regression coefficient of IC2 was -0.006 (t value=-2.3), indicating that it had a significant negative impact on the dependent variable ABSDA at the 5% level.

Table 7: Number of Internal Control Personnel and Absolute Value of Discretionary Accruals

Dependent Variable: ABSDA		
Variables	Coeff	t value
Intercept	0.140	3.75***
IC2	-0.006	-2.3**
SIZE	-0.003	-2.47**
LEV	0.029	3.33***
MB	0.006	4.69***
ROA	0.000	-0.05
CFO	-0.004	-0.16
LOSS	0.003	0.57
Year Dummies	Included	
Model Fit	Adj. R^2	0.05
	F value	4.43***
Sample Size	820	

Note: ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.
Variable definitions: refer to <Table 4>

Table 8: CPAs and Absolute Value of Discretionary Accruals

Dependent Variable: ABSDA		
Variables	Coeff	t value
Intercept	0.093	2.71***
IC3	-0.003	-0.77
SIZE	-0.002	-1.94*
LEV	0.031	3.63***
MB	0.007	5.18***
ROA	-0.003	-0.24
CFO	-0.005	-0.18
LOSS	0.003	0.61
Year Dummies	Included	
Model Fit	Adj. R^2	0.04
	F value	4.04***
Sample Size	820	

Note: ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.
Variable definitions: refer to <Table 4>

<Table 8> shows the results of regression analysis, investigating the size of discretionary accruals according to whether accountants are allocated in the internal accounting control system. IC3, the main variable of interest, indicates whether CPAs are allocated in the internal accounting control system. This study confirmed whether the coefficient of IC3, the coefficient of interest, has a negative sign. According to the results, the regression coefficient of IC3 was -0.003, though it was not statistically significant.

5. Conclusions

As the distribution and service industries grow in size, related stakeholders and investments also increase, which creates the need to inspect financial reporting quality and related corporate governance. Accordingly, in this study, we investigated the establishment status of internal accounting control systems in distribution and service companies. The internal accounting control system operation report, included in the annual report, discloses the number of internal accounting personnel, their working experience in months, and whether accountants are allocated. We manually collected relevant data, identified descriptive statistics, and performed a comparative analysis of the establishment status with other industries and verified how accounting quality is influenced by the number of internal accounting personnel, their working experience in months, and whether accountants are allocated. The more personnel, who have repeatedly performed internal control tasks, which are allocated to the internal accounting control/operation system, the greater the learning effect, which increases the appropriate disclosure of corporate information, including financial reports.

According to an investigation of data collected from companies listed on the KOSPI market from 2011 to 2017, distribution and service companies allocated an average of 21 personnel in their internal accounting control system, who had an average working experience of 119 months. Furthermore, they allocated an average of 0.8 accountants to the internal accounting control system. Notably, distribution and service companies allocated more accountants in their internal accounting control system than companies in other industries.

Meanwhile, the absolute value of discretionary accruals was found to decrease as the working experience of internal accounting personnel in months increased. Thus, repeatedly performing internal accounting-related tasks increases the learning effect and deepens the understanding of financial information, thereby effectively controlling errors in accounting information and improving the credibility of financial reporting.

There are few studies on corporate governance related to the financial reporting quality of companies in the

distribution and service industries, which are growing in size. In this study, we analyzed the establishment status of internal accounting control systems, which influence financial reporting quality, in the distribution and service industries, which are attracting more interest from external investors and creditors. Another contribution of this study is that it verified whether the internal accounting control system of distribution and service companies actually influences financial reporting quality. Additionally, a breakdown of internal accounting control and operation system personnel, which is disclosed in the internal accounting control system operation report, is unique data provided only in Korea. In the United States, since auditors evaluate the quality of internal control based on the presence of internal control weaknesses, it is difficult to evaluate the level of internal control in detail. However, in Korea, the level of the internal accounting control system can be evaluated for each company through a breakdown of the personnel allocated to the internal accounting control system. Based on the status of internal accounting personnel, which is unique data provided only in Korea, this study demonstrated that the operation level of internal accounting control systems in the distribution and service industries is adequate compared to other industries. Additionally, the quality of financial reporting improves as the working experience of personnel in the internal accounting control system increases. This study's findings provide useful implications for corporate stakeholders, such as regulators and investors. From the perspective of regulators aiming to improve corporate governance, this study's findings can be utilized in the process of establishing a system for improving corporate governance, as well as for supervising financial reporting quality. This study also provides the implication that when making decisions, investors should first review the financial statements considering the governance structure of distribution and service companies.

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