Impact of the Accounting Information System on Corporate Governance: Evidence from Turkish Non-Listed Companies

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Abstract

Corporate scandals in the early 2000s have demonstrated how accounting and auditing failures, together with the abuses of managers have the ability to create major problems. In order to avoid future scandals, this study investigates the association between the accounting information system and corporate governance. We hope that these findings will contribute towards the enhancement of good corporate governance created by the accounting function of business organizations. The results of empirical analyses indicate that bookkeeping, financial reporting, and the budgeting system have a positive impact on the corporate governance level, whereas the adoption of Turkish Accounting / Financial Reporting Standards do not. Thus, in order to foster corporate governance, managers should establish internal reporting procedures as well as internal control and monitoring devices before attempting external control through independent auditing.

JEL Classification: M40, G34.

Keywords: Accounting information system, bookkeeping, financial reporting, accounting standards, corporate governance, management accounting, Turkey.

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Introduction

Corporate scandals (i.e. Enron, Tyco, and WorldCom) in the early 2000s have demonstrated how accounting and auditing failures have resulted in corporate failures, destroying investor confidence, and harming capital markets. In response to these corporate accounting scandals, the U.S. Congress passed the Sarbanes-Oxley Act (SOX) in 2002, to protect investors from possible future scandals as well as to prevent fraudulent financial reporting by companies. In fact, these corporate failures are not peculiar to just one country or a geographical region, and they are not limited to a time frame; they occur in various countries at varying time intervals, as past harsh experiences have shown. A quick Google search produces a comprehensive list of such scandals across countries and intervals. In the context of Australia, Garry et al. (2014) reported that these corporate scandals were cyclical over four rounds of corporate failures (i.e. early 1960s, late 1980s, early 1990s and the early 2000s), and that these corporate scandals were followed by a series of changes in governance (i.e. legislative reforms relating to financial reporting or auditing) to prevent their recurrence. For example, in response to the crisis in the early 2000s, the Corporate Law Economic Reform Program (Audit Reform and Corporate Disclosure) Act 2004 Cwlth (CLERP 9 Act 2004) was enacted, which included increased disclosure requirements, tightened requirements for continuous disclosure, enhanced accountability, increased penalties for non-compliance, and increased auditors' independence (Australian Securities and Investments Commission, 2012).

The adoption of corporate governance principles and the enactment of regulations to improve investor confidence in the marketplace were hastily put into place all around the world. Good governing practices are particularly important for emerging countries, since they need external funds to finance investments. Foreign investors are inclined to prefer countries that promise good investment opportunities and also an attractive investment environment such as appropriate regulations, transparency and accountability. In order to access international financing resources, Turkey must also provide quality financial information to stakeholders (Alp & Ustundag, 2009).

For this reason, regulations were enacted regarding corporate governance practices by the Capital Markets Board: The International Accounting/Financial Reporting Standards (TAS/TFRS) were adopted, a new Turkish Commercial Code was enacted, and the Corporate Governance Index was established by the Borsa Istanbul (formerly known as the Istanbul Stock Exchange). The purpose of these regulations and initiatives is to build a stronger, trustworthy, transparent business environment that confidently attracts investors. The recent worldwide corporate scandals have demonstrated that the proper functioning of accounting information system is crucial for improving governance in business organizations, since it produces primary financial reports utilized by stakeholders including investors, creditors and others. Although voluntary disclosures play a role in the decisions of investors, creditors, and other stakeholders, mandatory financial reports remain the primary tools for investing decisions particularly. Thus, the quality and reliability of information presented in financial reports is crucial to these stakeholders. A well-functioning accounting information system (AIS), free from fraud, is likely to improve the corporate governance level in organizations, build a better business world, improve investor confidence, and assist the efficiency of capital markets.

Corporate governance and accounting are interconnected with each other on the basis of the two principles of transparency and accountability. The effectiveness of the AIS is expected to strengthen governance mechanisms leading to the efficient functioning of capital markets. AIS

provides the information that flows from firm to stakeholders continuously. This flow of information forms the basis for the decision making of the stakeholders. For example, periodical financial reports are the primary tools of investors which enable the buying, holding, or selling decisions connected to shares. Therefore, the published periodical financial reports are expected to be relevant, faithfully represented, comparable, verifiable, timely, and comprehensible (EY, 2010).

Shil (2008) considered accounting to be a vehicle that ensures good corporate governance, and also that accounting may be practiced in such a way that corporate governance can be maintained. The author further explained how accounting can alleviate agency problems and resolve conflicts between various stakeholders. Collins and DeAngelo (1990) also pointed out the role of accounting in corporate governance through which managerial inefficiency is detected and punished. In recent years, research regarding the association between accounting and corporate governance has largely been based upon disclosure studies (Haniffa & Cooke, 2002; Eng & Mak, 2003; Tsamenyi et al., 2007; Bokpin & Isshaq, 2009; Uyar, 2012). This study aims at investigating the impact of the AIS on corporate governance. We have particularly focused on four attributes of AIS, namely: bookkeeping, the efficacy of financial reporting, the adoption of the Turkish Accounting/Financial Reporting Standards, and the efficacy of the budgeting system. These four attributes address different aspects of AIS. For example, bookkeeping refers to the recording function; financial reporting refers to the external reporting function; standards refer to the framework for the accounting practices; and finally, the efficacy of the budgeting system addresses the planning and controlling function. In prior studies, the role of financial reporting in corporate governance was prominently investigated (Naumann, 2000; Bushman & Smith, 2001; Sloan, 2001; Bushman et al., 2004; Kalbers, 2009); however, we cannot say the same thing for management accounting practices. Thus, we aim at filling this gap by operationalizing the budgeting system as one of the primary management accounting tools.

The remainder of the paper is organized as follows. The next section provides a literature review and formulates the hypotheses. The third section provides the methodology of the study. The fourth section analyzes the results, and the final section concludes the paper by providing implications.

Literature review and hypotheses

Bookkeeping system

The everyday recording of financial transactions by accountants in the accounting information system is called double-entry bookkeeping (Nobes & Stadler, 2013). Bookkeeping, which helps organize and classify business transactions, plays a fundamental role in accounting practices and financial reporting. It is the initial process which provides data for further accounting applications. Mistakes or fraud in bookkeeping has a domino effect on other practices; thus, the reliability of financial reports is closely connected to the appropriate bookkeeping practices. If, either intentionally or accidentally, bookkeepers make inappropriate recordings, this results in falsified financial statements and they lose their usefulness and efficiency in both internal and external decision-making.
Therefore, we formulate the following hypothesis:

H1. The effective use of the bookkeeping system impacts corporate governance positively.

Financial reporting

The corporate reporting process has become very dynamic in the last two decades due to an increase in demand for both financial and non-financial information by stakeholders. Although non-financial information disclosure has undergone tremendous change and improvement, financial reports are fundamental, particularly for those with financial interests in corporations, such as investors, creditors, and tax authorities. They present information regarding the financial position, performance, changes in stockholders' equity, and cash flow of a company relating to a specific date or period. Financial reports are prepared in accordance with accounting principles and financial reporting standards to enable a comparison across the years as well as various companies and industries. Directors are responsible for disseminating reliable information concerning the financial position of the company to investors; as well, they oversee, supervise and monitor the financial reporting process of the company as prepared by their accountants (Pallisserry, 2012). However, masking the real financial position of the company due to error or fraud leads to corporate failures (Pallisserry, 2012). One quality characteristic of financial reports is objectivity; Abraham et al. (2008) asserted that the subjectivity of financial reports threatens their usefulness and reliability across all industry sectors. The lack of reliability in financial reports is attributable to a deficiency in the people involved in preparing and monitoring the reports, such as board members and accounting personnel; a deficiency in the nature of accounting standards; a deficiency in the regulatory system; or a combination of any of these (Abraham et al., 2008). Hence, the quality of financial information presented in financial reports, and the effective use of reports by managers is expected to improve corporate governance positively. Therefore, we develop the following hypothesis:

H2. The effective use of financial reporting in decision-making impacts corporate governance positively.

Turkish Accounting Standards/Turkish Financial Reporting Standards (TAS/TFRS)

As with every aspect of business practice, accounting practices are going global. The trend is to converge accounting and/or financial reporting standards so that capital can flow more freely in global markets. The convergence of standards helps to make the financial reports of firms comparable from country to country; thus, allowing the boundaries that restrict investors to disappear. The importance of accounting standards, which are aimed at providing high quality, dependable, comparable, and comprehensible financial information, are recognized around the world (Alp and Ustundag, 2009). As a result, globally accepted financial reporting standards are vital to various stakeholders such as investors, creditors, financial analysts, and any others that utilize financial statements in their decision-making (Ankarath et al., 2010). In the literature, the advantages of using a common set of accounting or financial reporting standards are listed as improved efficiency and effectiveness in financial reporting and auditing (Joshi & Ramadhan, 2002; Uyar & Güngörmüş, 2013; Kılıç et al., 2014); enhanced comparability (Epstein & Jermakowicz, 2007; Jeanjean & Stolowy, 2008; Jones & Finley, 2011; Uyar & Güngörmüş, 2013; Kılıç et al., 2014); and greater transparency and reliability (Ball, 2006; Dumontier & Raffournier, 1998; Neag et al., 2009; Madawaki, 2012; Uyar & Güngörmüş, 2013; Kılıç et al., 2014). These advantages are closely tied to the corporate governance mechanism, and are

expected to contribute to good governance practices. Therefore, we formulate the following hypothesis:

H3. The use of TAS/TFRS impacts corporate governance positively.

Turkey is one of the countries which have adopted the International Accounting Standards and the International Financial Reporting Standards (Uyar et al., 2016); the standards have been named the Turkish Accounting Standards (TAS) and the Turkish Financial Reporting Standards (TFRS).

Budgeting system

In addition to the responsibilities of external monitors such as auditors and regulators, management accounting plays an important role in the execution of good corporate governance through internal reporting and monitoring (Seal, 2006), and providing timely and relevant information (Mayanja & Van der Poll, 2011). Recently, Wang and Huynh (2014) provided empirical evidence for the association between management accounting and corporate governance. Budgeting is a primary tool of management accounting, used as a planning and internal controlling device by business organizations (Uyar & Kuzey, 2016). Thus, the process of budgeting should not be considered routine. Many prior studies have demonstrated that companies still use it as an indispensable tool for managerial decision making. As well as setting targets, at the same time, it limits the boundaries of managers for discretionary expenditures. At the end of the stated period, it is then used as a check-and-control device, based upon the calculation of variances. Hence, an effective budgeting system contributes to corporate governance by not allowing managers to misuse the financial resources of firms and by setting the better allocation of resources. Therefore, we formulate the following hypothesis:

H4. The efficacy of the budgeting system impacts corporate governance positively.

Research Methodology

Sample

The sample for the study consisted of firms operating in Istanbul. Approximately 2,600,000 businesses currently operate in Turkey. The majority, 2,500,000, are considered to be "microbusinesses" that only employ between 1 to 9 employees, and have lower than a 1 million TRY annual turnover. Businesses with a 1 to 8 million TRY annual turnover employing 20 -50 workers are defined as "small-scale enterprises". There are approximately 46,000 small-scale enterprises. The businesses with an 8 to 40 million TRY annual turnover are classified as medium-sized businesses, of which there are 19,500 in Turkey (Güngörmüş, 2014).

Since it would be very difficult to access the population due to financial and technical difficulty in Turkey, Istanbul was selected as the target population. Istanbul was chosen because a large proportion of the firms are located there, and the results of studying these firms would provide a template for all of Turkey.

We contacted non-governmental business organizations, obtaining contact information of their members. This information assisted with communication with the firms, either through telephone calls or electronic mail. The research covers the SMEs and their managers located in Istanbul.

The ethical concerns that were identified before starting the survey were carefully considered. Procedures, safety and confidentiality, as well as permission issues were expressed in writing on the questionnaire as well as conveyed orally to the managers, so that they were adequately informed concerning the objectives of the research.

The survey was distributed to general managers, assistant general managers, directors of financial affairs, and those with similar titles of the firms. Questionnaires with a large proportion of unanswered questions were excluded from the analysis. We administered a questionnaire survey to collect the data. The data were collected by direct interviews with the managers, by online survey, and by telephoning the firms whose addresses were retrieved from business associations. In total, we contacted 400 firms, out of which 142 responded to the survey, yielding a response rate of 35.5%. A simple random sampling method was employed. In order to test the hypothetical association of the model in this study, the PLS-SEM method was employed. For this approach, 10 items per latent variables are sufficient (Hair et al., 2013). In the research model, seven latent variables existed which indicated that the sample size was sufficient. The questionnaire, which consisted of demographics and two sections, was constructed based upon prior studies (see Appendix). The section regarding their accounting information system was based on Dinç and Varıcı (2008), Acar and Özçelik (2011), and Dinç and Abdioğlu (2009). The corporate governance construct was formed based upon Alpay et al. (2008).

As the research methodology, CB-SEM was utilized. This estimates the coefficients of a set of equations by adjusting the covariance matrix. This model is required to satisfy the multivariate normality assumption as well as requiring a larger sample size. On the other hand, the PLS approach estimates the coefficients of a set of equations by applying the partial least squares method. This does not require the hard normality restriction or a large sample size. Partial Least Square Structural Equation Modeling (PLS-SEM) was used in this study rather than the Covariance-Based Structural Equation Modeling (CB-SEM) approach, since the sample size was small (142). The proposed model is illustrated in Figure 1.
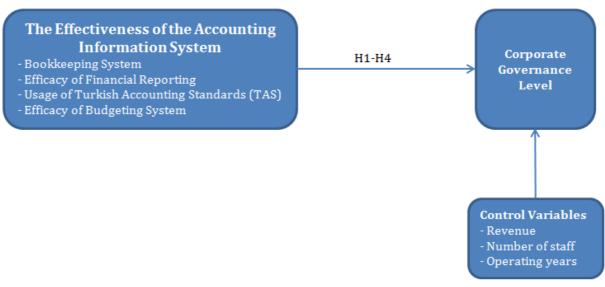

Figure 1: Proposed Model

Descriptive statistics:

The descriptive statistical values of staff size, number of operating years, sectors for providing service, revenue, number of senior managers, and education level are shown in Table 1. The results indicated that 32.4% of the surveyed firms had a staff numbering between 10 and 49 members, that 53.5% of the firms had been operating for about 20 years, that almost half of the firms provided service in the domestic market, that 31% had an annual revenue between 1 million and 8 million (TRY), and that 42.3% of the firms included some level of undergraduate education amongst their administrators. In addition, 31.7% of the firms did not have professional senior managers, meaning that only family members make decisions at the top level of the firm.

Table 1: Descriptive statistics

	Frequency	Percent
Number of staff members:		
0-9	31	21.8
10-49	46	32.4
50-99	22	15.5
100-249	27	19.0
250 over	16	11.3
Total	142	100.0
Operating years:		
Less than 10 years	35	24.6
10-19 years	41	28.9
20-29 years	31	21.8
30-39 years	21	14.8
40 over years	14	9.9
Total	142	100.0
Sector providing service:		
Only domestic market	62	43.7
Only international market	8	5.6
Both	72	50.7
Total	142	100.0
Revenue:		
Less than 1.000.000TRY*	27	19.0
1.000.000-8.000.000TRY	44	31.0
8.000.001-40.000.000TRY	30	21.1
40.000.001-80.000.000TRY	17	12.0
80.000.001-100.000.000TRY	6	4.2
100.000.001 over	18	12.7
Total	142	100.0
Number of senior managers outside family members:		
None	45	31.7
1-3	55	38.7
4-6	22	15.5
7-9	11	7.7
10 over	9	6.3
Total	142	100.0
Education level:		
Primary school	10	7.0
High school	33	23.2
College	25	17.6
Undergraduate	60	42.3
Post graduate	14	9.9
Total	142	100.0

* Turkish liras (TRY)

Factor Loadings:

Factor loading values based on PLS are shown in Table 2. There were five factors as well as three control variables. The latent variables were the effectiveness of the accounting information system (four sub-dimensions, being the bookkeeping system, the efficacy of financial reporting, the adoption of the Turkish Accounting Standards, and the efficacy of the budgeting system), as well as the corporate governance level. In addition, revenue, the number of staff members, and the number of years of operation by the firms were control variables. The selection of these control variables was based on prior works (Alpay et al., 2008; Afrifa & Tauringana, 2015; Arora & Sharma, 2016; Chen et al., 2016; Arunruangsirilert & Chonglerttham, 2017). Firm sizes, as measured by revenue and staff numbers, are expected to influence corporate governance positively, since larger firms tend to have a larger amount of resources to commit to the establishment of good corporate governance structure. On the other hand, firm longevity, as measured by the number of operating years, is assumed to also impact corporate governance structure. There were 17 items left after eliminating some items from the analysis, since they had a factor loading lower than the threshold value of .7. The value of factor loadings is recommended to be higher than the cross-loading value along each construct column. As well, they should have a higher relationship with the latent variable column than with any other variable column (Chin, 1998). Discriminant validity was also assessed when the study items had higher loading values on their own latent variables than on other variables.

Table 2: Factor Loadings

	BKS	FR	TAS	BS	CGL	OY	RVN	NSTFF
BKS1	**.899**	.670	.463	.654	.688	.127	.315	.290
BKS3	**.842**	.618	.474	.598	.641	.191	.360	.314
BKS4	**.875**	.705	.506	.660	.731	.133	.328	.273
FR1	.682	**.914**	.603	.714	.737	.188	.418	.425
FR2	.739	**.938**	.641	.751	.771	.190	.385	.385
FR3	.660	**.874**	.580	.715	.712	.145	.332	.347
TAS1	.461	.554	**.908**	.508	.515	-.055	.159	.155
TAS2	.550	.672	**.936**	.648	.614	-.069	.349	.321
BS1	.451	.527	.512	**.753**	.490	.072	.311	.403
BS2	.722	.790	.620	**.932**	.741	.211	.454	.377
BS3	.713	.754	.534	**.937**	.695	.215	.406	.379
CG11	.610	.648	.497	.606	**.843**	.142	.491	.448
CG15	.653	.644	.477	.590	**.822**	.047	.289	.234
CG17	.686	.699	.526	.629	**.870**	.044	.392	.290
CG5	.674	.758	.536	.725	**.854**	.180	.320	.416
CG6	.691	.719	.593	.632	**.867**	.162	.423	.441
CG9	.730	.703	.525	.629	**.874**	.080	.400	.399
OY	.171	.192	-.067	.199	.129	**1.000**	.142	.208
RVN	.382	.416	.284	.451	.451	.142	**1.000**	.524
NSTFF	.334	.424	.265	.433	.436	.208	.524	**1.000**

Notes: BKS: Bookkeeping system; FR: Efficacy of Financial reporting; TAS: Adoption of Turkish Accounting Standards; BS: Efficacy of the Budgeting System; CGL: Corporate Governance Level; OY: Number of operating years; RVN: Revenue; NSTFF: Number of staff members

Confirmatory factor analysis:

The reliability as well as the validity of the variables were assessed by using confirmatory factor analysis (CFA) as recommended by Fornell and Larcker (1981) and Anderson and Gerbing (1988). Following the data collection, the constructs were subjected to CFA in order to test the construct validity and the model fit of the research model, using the maximum likelihood method. Some of the metrics used for the goodness of fit are chi-square/df, comparative fit index (CFI), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA). The threshold values for some of the fit metrics are chi-square/df <3, CFI>.90, GFI>.95 (.90 is permissible), AGFI>.80, SRMR<.09, RMSEA<.05, and PCLOSE>.05 (Bagozzi and Yi, 1988; Hu and Bentler, 1999). The CFA results are shown in Table 3. The results indicated that: Chi-square was 144.93(p<.01), Chi-square/df was 1.39, the goodness of fit index was .90, the adjusted goodness of fit index was .85, the comparative fit index was .98, the incremental fit index was .98, the Tucker-Lewis index was .97, the root mean square error of approximation was .05, the value of PCLOSE was .40, and the standardized root mean residual was .03. The fit indices proved that they were above the recommended threshold values. Therefore, the model fit was satisfied, and the soundness of the measurement properties was confirmed.

Measurement model analysis:

Reflective versus formative: Reflective indicators for each construct were used since the direction of causality is from construct to assessment; therefore, the elimination of an indicator from the model does not affect the construct measures (Jarvis et al., 2003).

Validity and Reliability: Discriminant validity, internal consistency, and individual item reliability are necessary to investigate the measurement model analysis (Hair et al., 2010). For this purpose, the maximum-shared variance (MSV), the average-shared variance (ASV), the average variance extracted (AVE), the composite reliability (CR), and the Pearson correlation coefficients with the square root of AVE values were calculated (Table 3). Individual item reliability was related to the factor loadings of the indicators. Factor loadings of .70 were the threshold values, therefore all items above the threshold values were included in the analysis, while items lower than .7 were eliminated. It is clear from Table 3 that the reliability of the measurement model was satisfied. Internal consistency was assessed using the values of Cronbach's alpha as well as composite reliability. The suggested threshold value for CR is .70 (Nunnally, 1978). The Cronbach's alpha of the construct values ranged between .826 and .926 which were well above the suggested value of .7 while the CR values ranged between .905 and .942, which were also well above the threshold value of .7. In addition, the discriminant validity was determined by using AVE scores (Fornel and Larcker, 1981), and MSV and ASV values (Hair et. al, 2010), as well as comparing the square root of AVE values with the correlation coefficients. The discriminant validity showed that the given construct was different from the rest of the constructs. In order to prove this fact, the values of AVE should be above the threshold value of .5, the values of MSV and ASV should be lower than the values of AVE for each construct, and the square root of AVE scores on the diagonal of the correlation matrix should be higher than the correlation coefficients of the rest of the construct in the column and row levels. The results showed that the AVE values were higher than the MSV and ASV scores, that the square root of the AVE values was higher than the correlation coefficients at the column and row levels, and finally, that the values of AVE ranged between .731 and .851 which were

well above the benchmark value of .5. In conclusion, these results revealed that the study did not show that there was a discriminant validity issue.

Table 3: Correlation coefficients and reliability analysis results

Constructs	AVE	CR	α	MSV	ASV	1	2	3	4	5	6	7	8
1)BKS	.761	.905	.843	.623	.333	**.872**							
2)FR	.827	.935	.895	.663	.389	.764**	**.909**						
3)TAS	.851	.919	.826	.448	.241	.552**	.669**	**.922**					
4)BS	.771	.909	.849	.639	.365	.732**	.799**	.633**	**.878**				
5)CGL	.731	.942	.926	.663	.376	.789**	.814**	.616**	.744**	**.855**			
6)OY	1.000	1.000	1.000	.043	.027	.171*	.192*	-.067	.199*	.129	NA		
7)RVN	1.000	1.000	1.000	.274	.157	.382**	.416**	.284**	.451**	.451**	.142	NA	
8)NSTFF	1.000	1.000	1.000	.274	.151	.334**	.424**	.265**	.433**	.436**	.208*	.523**	NA

Notes: BKS: Bookkeeping system; FR: Efficacy of Financial reporting; TAS: Adoption of Turkish Accounting Standards; BS: Efficacy of the Budgeting System; CGL: Corporate Governance Level; OY: Number of operating years; RVN: Revenue; NSTFF: Number of staff members; CR: Composite reliability, α: Cronbach's Alpha, MSV: maximum-shared variance, ASV: average shared variance, AVE: average variance extracted;
CFA results: Chi-square=144.93, p<.01; Chi-square/df=1.39; GFI=.90; AGFI=.85; CFI=.98; IFI=.98; TLI=.97; RMSEA=.05; PCLOSE=.40; SRMR=.03
**p<.01; *p<.05

Structural Equation Modeling

Predictive power: The SEM with PLS approach was applied to test the hypothesized relationships as well as the validity of the proposed model. As suggested by Chin (1998), the bootstrapping with 5000 resampling method was employed to test the statistical significance of the path. The path coefficients and the directions, as well as their significance level between the latent variables are illustrated in Table 4 and Figure 2. The SEM results indicated that there was a highly significant positive association between the bookkeeping system and the corporate governance level at a 1% significance level ($\beta = .36$, p<.01); the efficacy of financial reporting and the corporate governance level at a 1% significance level ($\beta = .33$, p<.01); and efficacy of the budgeting system and the corporate governance level at a 5% significance level ($\beta = .22$, p<.05). However, the use of the Turkish Accounting/Financial Reporting Standards did not show a statistically significant relationship with the corporate governance level at 5%. Thus, the path analysis results indicated that H1, H2, and H4 were supported, but H3 was not.

Table 4: Structural Equation modeling results

Hypothesized relationships				Coefficients	t-statistics	Results
H1	BKS	→	CGL	.3589***	5.338	Supported
H2	FR	→	CGL	.3262***	3.399	Supported
H3	TAS	→	CGL	.051	.998	Not Supported
H4	BS	→	CGL	.2205**	2.275	Supported
Cont. Var.	OY	→	CGL	-.048	1.448	
Cont. Var.	RVN	→	CGL	.034	1.005	
Cont. Var.	NSTFF	→	CGL	.013	.408	

Notes: BKS: Bookkeeping system; FR: Efficacy of Financial reporting; TAS: Adoption of Turkish Accounting Standards; BS: Efficacy of the Budgeting System; CGL: Corporate Governance Level; OY: Number of operating years; RVN: Revenue; NSTFF: Number of staff members; CR: Composite reliability
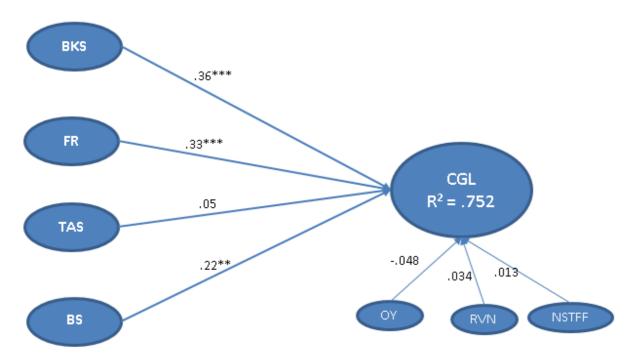****p<.01; **p<.05*

Figure 2: Path coefficients.
Notes: *p<.10; **p< .05; ***p<.01. *BKS: Bookkeeping system; FR: Efficacy of Financial reporting; TAS: Adoption of Turkish Accounting Standards; BS: Efficacy of the Budgeting System; CGL: Corporate Governance Level; OY: Number of operating years; RVN: Revenue; NSTFF: Number of staff members*

Explanatory power: In models using PLS-SEM as a base, Chin (1998) recommends evaluating the explanatory power, the predictive relevance, and the predictive power. Table 5 shows the predictive relevance (Q^2), goodness of fit index (GoF), and the explained variance (R^2). The value of the explained variance (R^2) of the dependent construct enabled us to determine the explanatory power. According to Chin (1998), the threshold values for R^2 ranges are: substantial (.67), moderate (.33), and weak (.19). Since the R^2 value of corporate governance level is 75.2% which indicates the extent to which the model explained dependent variable's variance. Therefore, the variance of corporate governance level was explained at a substantial level.

Predictive relevance: In addition to the explanatory power, the Q^2 test (Stone, 1974; Geisser, 1975) was used to assess the predictive relevance of the model for fit. It measures the successful reconstruction of the observed values of the model and its parameter estimates (Chin, 1998). The blindfolding method is used to calculate the Q^2 value by omitting one case at a time and then re-estimating the model parameters for the rest of the cases. Finally, the omitted case values are predicted, based upon the remaining parameters. Positive (Q^2>0) values indicate that the model has a predictive relevance while negative (Q^2<0) values represent that the model has no predictive relevance. Therefore, the highest Q^2 values showed the highest level of predictive relevance of the model. The predictive relevance of the corporate governance level was positive (48.7%), which indicated that the endogenous latent variable of the proposed model had a predictive relevance (Table 5). The GoF (Goodness of fit) index, developed by Tenenhaus et al. (2004), was employed to determine the overall prediction performance of the model. It is calculated by the geometric mean of the average communality index and the average R^2 value.

The GoF index of the proposed model was 80.8%, which indicated that the model took 80.8% of the achievable fit into account (Table 5).

Table 5: The explained variance and predictive relevance values of the corporate governance level

Total	SSO	SSE	Q^2	R^2
Corporate Governance Level	1846.000	947.418	.487	.775
GoF	.808			

Notes: SSO: Sum of the Squared Observation; SSE: Sum of the squared prediction errors. $GoF = \sqrt{\overline{Com} \times \overline{R^2}}$;

The f^2 effect size, as well as the q^2 effect size is related to the explained variance (R^2) with predictive relevance (Q^2) respectively. The value of f^2 indicates the extent to which the particular predecessor latent variable has a predictive value (effect size) in producing the R^2 for the dependent variable. Similarly, the value of q^2 indicates the extent to which the particular predecessor latent variable has a predictive relevance (effect size) in producing the Q^2 for the dependent variable. Therefore, the effect size is a measure to determine the effect of a particular predictor construct on an endogenous latent variable. The f^2 and q^2 evaluated the changes in the R^2 and in Q^2 respectively when the specified predecessor exogenous latent variable was eliminated from the model in order to show whether the eliminated variable had a significant impact on the R^2 and Q^2 values of the specific endogenous variable. The effect sizes for f^2 and q^2 values associated with the explained variance (R^2) and with the predictive relevance (Q^2) respectively. They are categorized (Cohen, 1988) as small (.02 - .14), medium (.15 - .34), and large (above .35). Table 6 shows the f^2 and q^2 effect sizes where the endogenous variable was the corporate governance level. According to the results, the bookkeeping system had a medium size effect in producing R^2 values for the corporate governance level, while the efficacy of financial reporting as well as the budgeting system had only a small effect. Moreover, the bookkeeping system, the efficacy of financial reporting and the budgeting system had a small effect in producing the predictive relevance (Q^2) for the corporate governance level.

Table 6: Effect sizes of the Corporate Governance Level

Predecessor Latent Variables	$R^2_{Included}$	$R^2_{Excluded}$	f^2	$Q^2_{Included}$	$Q^2_{Excluded}$	q^2
BKS	.775	.728	.209	.487	.457	.059
FR	.775	.748	.120	.487	.471	.031
TAS	.775	.774	.004	.487	.486	.001
BS	.775	.762	.058	.487	.479	.015
OY	.775	.773	.009	.487	.485	.003
RVN	.775	.774	.004	.487	.486	.001
NSTFF	.775	.775	.000	.487	.487	.001

Notes: BKS: Bookkeeping system; FR: Efficacy of Financial reporting; TAS: Adoption of Turkish Accounting Standards; BS: Efficacy of the Budgeting System; CGL: Corporate Governance Level; OY: Number of operating years; RVN: Revenue; NSTFF: Number of staff members;

The effect size was evaluated using $q^2 = \frac{Q^2_{Included} - Q^2_{Excluded}}{1 - Q^2_{Included}}$; $f^2 = \frac{R^2_{Included} - R^2_{Excluded}}{1 - R^2_{Included}}$;

Conclusion

This study aimed at investigating the association between the accounting information system (i.e. bookkeeping, financial reporting, the Turkish Accounting/Financial Reporting Standards, and budgeting system) and corporate governance. We assume that the findings of this study will contribute towards the enhancement of good corporate governance that alleviates agency problems in business organizations. The results of the empirical analyses indicated that

bookkeeping system, efficacy of financial reporting, and efficacy of the budgeting system have a positive impact on the corporate governance level, whereas the mere adoption of Turkish Accounting/Financial Reporting Standards do not.

The findings have several implications regarding board members, managers, and organizations. Establishing corporate governance mechanisms and resolving agency issues are among the boards' primary responsibilities. In this respect, they are expected to support managers and help them design an accounting information system so as to foster the employment of corporate governance mechanisms. In order to ensure this, managers should establish internal reporting procedures, and internal control and monitoring devices before inviting external control through independent auditing. Therefore, sufficient and necessary steps have to be taken from the very initial bookkeeping stage of financial transactions until the ultimate financial reporting process to ensure the delivery of quality financial information to their stakeholders.

Moreover, the contribution of management accounting techniques (i.e. budgeting) to corporate governance should not be underestimated, as indicated by the empirical evidence. In particular, they are important for the allocation of resources appropriately, preventing the misuse of the financial and nonfinancial resources of the company, and generating value for their shareholders. One significant effect of the budgeting system on corporate governance underlines the implication that boards should give emphasis to management accounting practices, such as budgeting, to ensure internal monitoring practices, together with external reporting and monitoring. External reporting is an "end", whereas internal reporting and controlling tools are "means". Thus, in order to ensure the quality of external reporting, the means are expected to facilitate operations in a timely manner. However, it is assumed that boards do not demand sufficient emphasis on the utilization of management accounting in decision making (Mayanja and Van der Poll, 2011). Thus, the subject should be dealt with at the board level more seriously.

There are implications for academics as well. Prior studies have mainly focused on the role of financial reporting and auditing in corporate governance, rather than management accounting. Ratnatunga and Alam (2011) also pointed out that the utilization of management accounting practices in strategic governance is barely mentioned in the relevant empirical studies. Thus, more studies are required regarding the influence of management accounting practices on corporate governance. As for the limitation of the study, we can say that the sample size is not large enough, thus, the reader should employ caution in terms of generalizing the results.

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QUESTIONNAIRE SURVEY

Name of the Organization	
Number of staff (NSTFF)	( ) 0-9 ( ) 10-49 ( ) 50-99 ( ) 100-249 ( ) more than 250
Operating years (OY)	( ) less than 10 years ( ) 10 – 19 years ( )20-29 years ( ) 30-39 years ( ) more than 40 years
Sector for providing service	( ) Only domestic market ( ) Only international market ( ) Both
Revenue (RVN)	( ) Less than 1.000.000 TRY ( ) Between 1.000.000 – 8.000.000 TRY ( ) Between 8.000.001 – 40.000.000TRY ( ) Between 40.000.001 – 80.000.000 TRY ( ) Between 80.000.001 – 100.000.000 TRY ( ) More than 100.000.001 TRY
Number of senior managers outside family member	( ) None ( ) 1-3 persons ( ) 4-6 persons ( ) 7-9 persons ( ) more than 10 persons
Education level	( ) Secondary school ( ) High school ( ) 2-year vocational school ( ) Faculty ( ) Master degree/PhD

	Accounting Information System *Evaluate the following statements by considering the applications in your firm.*	I strongly Disagree	I disagree	Neutral	I agree	I strongly agree
BKS1	Policies and procedures on how to record the accounting transactions are established in the firm.					
BKS2	The staff who record the transactions and verify them are always different.					
BKS3	The documents are always signed by the preparers and receivers of those documents.					
BKS4	Procedures are established regarding how to use the existing accounts.					
FR1	In addition to mandatory (legal) financial reports, supplementary financial reports are prepared in the firm.					
FR2	At the end of the year, financial analysis reports are prepared and used in decision-making process.					
FR3	Management uses the information on financial reports in performance evaluation.					
TAS1	The transactions are recorded according to Turkish Accounting Standards.					
TAS2	Financial reports are prepared in line with Turkish Financial Reporting Standards.					
BS1	Existence of a separate unit regarding budgeting enables better planning and controlling in the company.					
BS2	Operating budgets are regularly prepared and revised if necessary.					
BS3	Operating budgets are used in managerial decision-making.					

	Corporate Governance *Evaluate the following statements by considering the applications in your firm.*	I strongly Disagree	I disagree	Neutral	I agree	I strongly agree
CG1	Medium and long-term plans are shared with employees					
CG2	Employees know the organization's goals clearly					
CG3	Individual departures do not jeopardize business operations					
CG4	We have productive meetings where everyone has an equal saying					
CG5	In internal auditing, besides the family members we also include the department heads and specialists in the assessment process					
CG6	Job descriptions, rights and responsibilities of employees are written					
CG7	We have a succession plan for every top manager					
CG8	Meetings have planned agendas					
CG9	We have specific written codes of behavior for organizational processes and for the relationship among the departments					
CG10	We have a predefined system for decision-making					
CG11	We have written job descriptions for every position.					
CG12	We always keep record of the things discussed in our meetings					
CG13	There is a fair remuneration policy of the company					
CG14	Objective criteria are used in personnel selection					
CG15	Everyone's performance is fairly assessed					
CG16	Employee selection is done based on positional requirements					
CG17	Everyone's performance is assessed based on clearly defined and written rules					