

Full Length Research Paper

Firm characteristics and voluntary disclosure of graphs in annual reports of Turkish listed companies

Ali Uyar

Faculty of Economics and Administrative Sciences, Fatih University, Istanbul, Turkey. E-mail: aliuyar@hotmail.com.
Tel: +90 212 866 33 00. Fax: +90 212 866 33 42.

Accepted 31 May, 2011

The purpose of this study is to investigate the association between firm characteristics and the voluntary disclosure level of graphs in annual reports of Turkish companies listed on the Istanbul Stock Exchange (ISE). The firm characteristics used in the study are auditor size, ownership structure, firm performance (profitability), and firm size. The methodology of the study is content analysis of annual reports of the corporations listed on the ISE-100 Index for the year 2006. The results of univariate and multivariate analyses indicated that firm size, and auditor size has significant positive association with voluntary disclosure level of graphs. On the other hand, profitability and ownership structure do not have any significant association with graphical disclosure level.

Key words: Graphs, annual reports, auditor size, ownership structure, firm size, profitability, voluntary disclosure, Turkey.

INTRODUCTION

Corporate reporting is evolving as technology advances, and as report readers demand better and more complete information. While currently used tools are improved, new tools are being developed. Penrose (2008b: 91) summarizes the situation saying "corporate reporting is no longer restricted to only hard copy, periodic, template-driven financial and accounting reporting that includes the income statement, the balance sheet, the statement of retained earnings, and the statement of cash flow, but now also extends to such dynamic media as internet web sites and automated telephone systems".

Corporations communicate with stakeholders through various ways such as face-to-face meetings, written and visual media, and corporate websites. However, one of the most important communication tools corporations use is annual reports they publish. A company's published annual report and accounts are important primary documents for anyone who is interested in that organization (Reid, 2002). Stanton et al. (2004) define the corporate annual report as "the traditional, statutory formal communication vehicle between a publicly listed corporation and its interested constituencies". The audiences of annual reports include stockholders, financial specialists, financial analysts, employees, lenders, and creditors (David, 2001).

Corporate annual reports may be utilized in a variety of ways. Many of the recent company collapses, such as Enron, WorldCom, Tyco and Global Crossing, are believed to have been predictable by the detailed analysis of a company's annual report and accounts over a number of years (Reid, 2002). Penrose (2008a: 158) states that one of the elements readers often use in assessing whether to buy, keep, or sell stock in the corporation is the annual report.

Although corporate annual reports are designed first and foremost for financial disclosure and to fulfill the legal requirements for financial statements (Ball, 2011), Beattie et al. (2008) state that, during the past few decades, they have been transformed from a rather dull financial document to a colorful marketing and public relations vehicle. Corporations used to publish paper-based annual reports, but nowadays, they are made available on the corporate websites. This enables more timely and, in addition, less costly publication of annual reports.

The information published in the annual reports may be classified as mandatory and voluntary. Mandatory disclosures are disclosures required by laws and regulations. On the other hand, voluntary disclosures are not necessarily required; their availability is made possible by corporate fiat. It depends on the decision of corporation.

For example, while disclosure of financial statements by publicly traded companies is mandatory according to legislations of most countries, environmental and social responsibility disclosures are voluntary. One of the voluntary disclosure areas is graphical presentation in annual reports. It is increasingly becoming a common practice for annual reports to include visual graphical summaries of the company's financial position/progress (Ball, 2011). Amer (2005), Arunachalam et al. (2002), and Chan (2001) state that graphical displays are increasingly being used as decision aids. Companies use graphs in disclosing both financial and non-financial information. Among the variables disclosed by graphs are share performance, sales revenues, net income, sales volume, production, owners' equity, number of customers, ownership structure, energy consumption, water consumption, number of personnel. The typical graphic forms found in annual reports are pie charts, line graphs, column and bar graphs, and histograms. Compared to studies focusing on environmental and social disclosures, disclosure of graphs is not studied at all despite being an indispensable part of the majority of annual reports. Beattie and Jones (2001) stress the inadequacy of research studies about the subject despite the rising popularity of graph utilization in annual reports.

While some earlier studies present guidelines for proper graphing of variables (Chevalier and Roy, 1993; Hill and Milner, 2003; Taylor and Anderson, 1986; Fulkerson et al., 1999; Zekany and Elsass, 2004), several have concentrated on empirical analysis of the nature and extent of graph usage (variables graphed, graph types used, graphic inclusion percentage of annual reports), measurement distortions in graphs (Uyar, 2009a; Steinbart, 1989; Beattie and Jones, 1992b, 1999a, b, 2002), and the association between graph usage and firm performance (Beattie and Jones, 2000; Dilla and Janvrin, 2010).

Uyar (2009a) states that as most of the past studies regarding graphic disclosure have been conducted in developed countries such as U.S, U.K, Australia, and Canada, there is a scarcity of similar analysis in developing countries. This study aims at narrowing this gap by investigating the subject in a developing country, namely, Turkey. More specifically, the objective of this article is to investigate the association between firm characteristics and the voluntary disclosure level of graphs in annual reports of Turkish companies listed on the Istanbul Stock Exchange (ISE) (2008).

LITERATURE REVIEW

Graphical presentation of quantitative data within corporate annual reports has become one of the techniques used by management in disclosing quantitative information (Courtis, 1997: 269). Beattie and Jones (1992b) state that graphs are used in two fundamentally

different ways: to analyze data and to present/communicate information to an audience. Ruchti and Wasserman (1983) state in their articles that public companies have to view themselves as publishers assuming the annual report is a periodical. Therefore, they say that the annual reports require "graphic ignition" to make them successful periodicals. If drawn appropriately, graphs serve many beneficial purposes. If not properly constructed, however, graphs may become a tool of deception with which companies distort numbers to mask their poor performance (Uyar, 2009a). Since graphs reduce the time and effort senior executives and managers spend for analyzing tables, they are increasingly opting for information generated by computers in graphic form (Sullivan, 1988).

Voluntary presentation of graphics is increasingly being used in the corporate annual reports of large companies in many countries to reap the advantages graphical presentation of information offers. Among these are increasing the speed of decision-making (Sullivan, 1988), being remembered better than tables (Smith and Bain, 1987), enabling visual comparisons (Smith and Bain, 1987), being effective for summarizing financial and non-financial information (Fulkerson et al., 1999), being more user-friendly than tables (Beattie and Jones, 1997), simplifying complex quantitative data, and providing immediate insight into operating, investing and financing activities (Chevalier and Roy, 1993), being a visually appealing and effective means of communicating financial information to shareholders, regulators, and the media (Chevalier and Roy, 1993), mitigating the adverse effects of information overload (Chan, 2001), describing the relationship between variables (Moriarty, 1979), improving communicative effectiveness of annual reports (Wilson and Stanton, 1996), and capturing attention and allowing readers to scan the information (David, 2001).

While utilization of graphs in annual reports may offer many advantages, they should be drawn properly in order not to mislead report readers. Frownfelter-Lohrke and Fulkerson (2001) cite eleven potential pitfalls encountered in graphic presentations. Hill and Milner (2003) provide 3-staged guidelines for improving graphical displays: aims and objectives of graphing, graph type choice, and graphical design. Fulkerson et al. (1999) present three basic guidelines for preparation of financial graphics constructed by the Canadian Institute of Chartered Accountants. These three guidelines are: choosing a graph type, preparing the graph, and making sure the graph is not deceptive.

Earlier studies also provide information regarding the most widely used graph types and the most frequently graphed variables. According to the findings, line, bar, and pie graphs are the most widely used types (Chevalier and Roy, 1993; Davis, 1987), and the most frequently graphed variables are sales, earnings, earnings per share, and dividend per share (Beattie and Jones 1992a: 2002). These four variables are named as key financial

variables (Beattie and Jones, 1999a, b, 2002; Mather et al., 2000).

Hypotheses development

Auditor size

Earlier studies have investigated the association between auditor size and the disclosure level of corporations (Wang et al., 2008; Patton and Zelenka, 1997; Raffournier, 1995; Singhvi and Desai, 1971; Inchausti 1997; Wallace et al., 1994; Malone et al., 1993; Bonsón and Escobar, 2006; Uyar, 2009b; Hossain et al., 1995; Aripin et al., 2009). Malone et al. (1993) argue that smaller auditing firms are more sensitive to client demands because of the economic consequences associated with the loss of a client; on the other hand, larger firms have a greater incentive to demand adverse disclosures from the client. A number of studies failed to discover a significant relationship between the auditor size and disclosure level (Wallace et al., 1994; Hossain et al., 1995; Malone et al., 1993). On the other hand, many earlier studies have found a positive association between the auditor size and the extent of disclosure (Patton and Zelenka, 1997; Singhvi and Desai, 1971; Raffournier, 1995; Aripin et al., 2009; Bonsón and Escobar, 2006; Inchausti 1997). Hence, the following hypothesis is stated:

H₁: There is a positive significant association between auditor size and the voluntary disclosure of graphs in annual reports.

In testing this hypothesis, auditors of the corporations were classified as Big4 and non-Big4. In Turkey, the "Big4 auditors" are the following local affiliates of the Big4 international firms (Wikipedia, 2010);

- i. Güney Bagimsiz Denetim ve S.M.M. A.S. - member of Ernst and Young,
- ii. Akis Bagimsiz Denetim ve S.M.M. A.S. - affiliate of KPMG,
- iii. Basaran Nas Bagimsiz Denetim ve S.M.M. A.S. - affiliate of PricewaterhouseCoopers
- iv. DRT Bagimsiz Denetim ve S.M.M. A.S. - affiliate of Deloitte Touche Tohmatsu

Profitability

The association between profitability and voluntary disclosure has also been investigated in previous studies (Wang et al., 2008; Oyelere et al., 2003; Marston and Polei, 2004; Marston, 2003). Marston (2003) argues that the more profitable the companies, the more likely it is for them to disclose financial information. Marston and Polei

(2004) also stress that "good news" firms are encouraged to distinguish themselves out from other firms by disclosing more information. This provides the basis for the following hypothesis:

H₂: There is a positive association between profitability (as measured by return on assets) and the voluntary disclosure of graphs in annual reports.

Firm size

Prior studies have investigated the association between firm size and voluntary disclosure in annual reports (Gao et al., 2005; Leventis and Weetman, 2004; Liu and Anbumozhi, 2009; Hossain and Hammami, 2009; Uyar, 2009a; Patton and Zelenka, 1997; Inchausti, 1997; Watson et al., 2002; Bonsón and Escobar, 2006; Abdullah and Ku Ismal, 2008; Raffournier, 1995; Hossain et al., 1995; Wallace et al., 1994). Several studies have investigated the existence of a positive relationship between firm size and voluntary disclosure due to agency theory (Oyelere et al., 2003; Marston and Polei, 2004; Marston, 2003). Marston (2003) claims that higher level of disclosure is expected to decrease agency cost which may arise from the conflicting interests of shareholders, managers and debt holders. Furthermore, voluntary disclosures are expected to decrease political costs that are higher for larger companies compared to smaller companies (Marston, 2003; Marston and Polei, 2004). Hence, based on the literature, the following hypothesis is stated:

H₃: There is a positive association between firm size (as measured by total assets) and the voluntary disclosure of graphs in annual reports.

Ownership structure

Several studies have examined the association between ownership structure and voluntary disclosure practices of the corporations (Raffournier, 1995; Aripin et al., 2009; Singhvi and Desai, 1971; Uyar, 2009b; Oyelere et al., 2003; Malone et al., 1993). Among these, Raffournier (1995) states that agency relations are likely to play a major role in the disclosure policy of companies, because annual reports can be used to reduce monitoring costs. He argues that managers of firms whose ownership is diffuse have an incentive to disclose more information in order to help shareholders in monitoring their behavior. Moreover, Malone et al. (1993) state that as the number of shareholders increases, one would expect financial disclosures to increase. Singhvi and Desai (1971) point out that there may be positive relationship between the number of stockholders and the quality of disclosure in annual reports. Thus the following hypothesis is

Table 1. Descriptive statistics.

Variable	Minimum	Maximum	Mean	Standard deviation
Number of graphs	0	34	8.60	9.009
Auditor (1 for Big4; 0 for non-Big4)	0	1	0.71	0.458
Total assets (Turkish liras)	68,198,700	75,203,939,544	5,665,448,930	13,584,611,973
Return on assets	-0.22	0.58	0.0578	0.108
% of shares held by unknown shareholders	0.03	1.00	0.3780	0.202

Table 2. Correlation analysis.

Variable	Number of graphs	Auditor	Total assets	Return on assets	% of shares held by unknown shareholders
Number of graphs	1				
Auditor	0.329*	1			
Total assets	0.264*	0.165	1		
Return on assets	-0.006	0.016	-0.117	1	
% of shares held by unknown shareholders	-0.020	-0.416*	-0.148	-0.059	1

*Correlation is significant at the 0.01 level (2-tailed).

formulated:

H₄: A positive association exists between a firm's ownership diffusion and the voluntary disclosure of graphs in annual reports.

In this study, ownership diffusion is defined as the percentage of shares not held by known shareholders (Raffournier, 1995).

SCOPE AND METHODOLOGY

The sample of the study is the ISE-100 companies listed on the Istanbul Stock Exchange (2008). Annual reports of the companies for the year 2006 were downloaded from corporate web sites of the companies. The web site addresses of the companies were obtained from the official web site of the governmental regulatory and supervisory body for capital markets (Capital Markets Board, 2008). Out of 100 corporations, annual reports of 4 corporations could not be reached. Hence, final sample comprised 96 corporations.

The methodology of the study is content analysis conducted on the corporate annual reports of the firms. Annual reports were analyzed to determine the number of graphs disclosed by each corporation. Firm characteristics such as auditor type, total assets, net income, and ownership structure were also noted. In the statistical analysis, univariate analysis and multivariate analysis have been used in order to demonstrate the impact of firm characteristics on the graphic disclosure level of the companies.

The research model includes one dependent variable TOTGRAPHS (total number of graphs disclosed by the firms in annual reports), and four independent variables: FSIZE (firm size which is measured by total assets), PROFIT (profitability which is measured by return on assets), AUDSIZE (auditor is either a member of Big-4 or non-Big-4), and OWNERSHIP (ownership structure which is measured by percentage of shares held by

unknown shareholders).

For the purpose of investigating the determinants of voluntary disclosure level of graphs in the annual reports, the following model was set up:

$$\text{TOTGRAPHS} = \beta_0 + \beta_1 \text{FSIZE} + \beta_2 \text{PROFIT} + \beta_3 \text{AUDSIZE} + \beta_4 \text{OWNERSHIP} + \varepsilon$$

The model is explained in multivariate analysis part in greater detail.

RESEARCH FINDINGS

Descriptive statistics

The results showed that 72 companies out of 96 (75%) use graphic disclosure in their annual reports. Hence, annual reports of 24 four companies do not include any graphic disclosure. Total number of graphs in annual reports is 826 indicating an average of 8.6 per annual report. However, since in four annual reports, the auditing firm was not stated, further analyses are conducted on the basis of 92 firms. Out of these 92 firms, 27 worked with non-Big4 auditing firms, while 65 worked with Big4 in the year 2006. Table 1 presents the descriptive statistics of the study.

Correlation analysis

Table 2 presents the correlation results between total numbers of graphs disclosed and firm characteristics. The results indicate that there is a significant correlation between graph disclosure level, and auditor size (at 0.01

Table 3. Explanations of dependent and independent variables.

Variable	Explanation
Dependent	
TOTGRAPHS	Total number of graphs
Independent	
FSIZE	firm size which is measured by total assets
PROFIT	profitability which is measured by return on assets (that is, net income/total assets)
AUDSIZE	type of the auditor (that is, 1 if auditor is a member of Big-4 auditing firms, 0 if auditor is not a member of Big-4 auditing firms)
OWNERSHIP	ownership structure of the firm (that is, the percentage of shares not held by known shareholders)

level) and firm size (at 0.01 level). This means that the larger the firm size, the more likely is the firm to disclose graphs in annual reports. Furthermore, the firms who work with Big-4 auditors are more likely to disclose graphs.

Multivariate analysis

As in many previous disclosure studies, regression analysis has been preferred to investigate the association between firm characteristics and disclosure level of graphs in annual reports. The independent variables of the study contain both continuous and categorical data. Since the dependent variable is count data which indicates the number of graphs disclosed in the annual reports, count regression is more appropriate than linear regression statistically (Cameron and Trivedi, 1998; Coxe et al., 2009; Zeileis et al., 2008; Saxton and Benson, 2005). Count regression model has also been used in some recent publications in the accounting and finance discipline (Boubaker and Labégorre, 2008; Kelton and Yang, 2008; Farrel and Hersch, 2005; Wang et al., 2008).

For the purpose of investigating the determinants of voluntary disclosure level of graphs in the annual reports, the following model was set up:

$$\text{TOTGRAPHS} = \beta_0 + \beta_1 \text{FSIZE} + \beta_2 \text{PROFIT} + \beta_3 \text{AUDSIZE} + \beta_4 \text{OWNERSHIP} + \varepsilon$$

The explanations of dependent and independent variables are presented in Table 3.

Among count regression models, Poisson regression (nonlinear regression model) is the standard one and has provided a starting point for many analyses (Cameron and Trivedi, 1998). However, Poisson regression model has an important constraint which is the equality of mean and variance (equidispersion) assumption (Boubaker and Labégorre, 2008; Cameron and Trivedi, 1998). Overdispersion occurs if the variance exceeds the mean (Cameron and Trivedi, 1998). In order to overcome this constraint of Poisson regression, negative binomial

regression which accounts for overdispersion is used (Cameron and Trivedi, 1998; Coxe et al., 2009; Zeileis et al., 2008; Saxton and Benson, 2005; Kelton and Yang, 2008; Boubaker and Labégorre, 2008). Therefore, in the analyses, the existence of overdispersion was tested with likelihood ratio test (Coxe et al., 2009). Due to the existence of overdispersion, negative binomial regression has been used in the analysis. Table 4 reports the regression results.

H₁ predicts that there is a positive significant association between auditor size and the voluntary disclosure of graphs in annual reports. As shown in Table 4, the coefficient of AUDSIZE is significant at 0.01 level. Hence, H₁ is supported.

H₂ posits that there is a positive association between profitability and the voluntary disclosure of graphs in annual reports. As shown in Table 4, the coefficient of PROFIT is not significant. Hence, H₂ is rejected.

H₃ states that there is a positive association between firm size and the voluntary disclosure of graphs in annual reports. As presented in Table 4, the coefficient of FSIZE is significant at 0.10 level. Hence, H₃ is supported.

H₄ states that a positive association exists between a firm's ownership diffusion and the voluntary disclosure of graphs in annual reports. As indicated in Table 4, the coefficient of OWNERSHIP is not significant. Hence, H₄ is rejected.

Conclusion

Although there are plenty of voluntary disclosure studies, there are only a few focusing on voluntary disclosure of graphs in annual reports. This study extends prior research by investigating the influence of firm characteristics on voluntary disclosure level of graphs in the annual reports of Turkish listed companies.

In order to test the influence of firm characteristics on disclosure of graphs in annual reports, four hypotheses were proposed. In testing hypotheses, negative binomial regression from count data regression models was used. The results of multivariate analyses indicated that firm

Table 4. The results of regression analysis.

Variable	Coefficient	Standard error	z	P>z
AUDSIZE	0.96	0.30	3.21 ^a	0.001
FSIZE	1.74E-11	1.01E-11	1.72 ^b	0.085
PROFIT	0.40	1.23	0.33	0.744
OWNERSHIP	0.66	0.76	0.88	0.380
Constant	1.02	0.44	2.30	0.021
Log likelihood	-286.82			
Likelihood-ratio test χ^2	436.91	(p<0.000)		

a and b indicate significance at the 0.01 and 0.10 levels respectively. In all regressions, dependent variable is count data. Graphic disclosure scores were coded as 1 or 0 (1 if graph is disclosed, 0 if graph is not disclosed) for the dependent variable. TOTGRAPHS is the dependent variable which gives total disclosure count. AUDSIZE is a binary variable used for auditor size (that is, 1 if auditor is a member of Big-4 auditing firms, 0 if auditor is not a member of Big-4 auditing firms). FSIZE is the firm size which is measured by total sales revenue. PROFIT = profitability which is measured by return on assets (that is, net income/total assets). OWNERSHIP is the ownership structure of the firm (that is, the percentage of shares not held by known shareholders).

size and auditor size have significant positive association with voluntary disclosure level of graphs. On the other hand, profitability and ownership structure do not have any significant association with graphical disclosure level.

The study offers certain implications for firms. Based on the experiences during data collection and analysis of the results, implications for firms are explained as follows. Some firms disclose no graphs in their annual reports. As the advantages of graphical representation are counted in the literature review part, firms should disclose graphs of at least some key financial variables such sales, income, share performance, and the like. This is likely to improve the report readers' understanding of the performance of the firm. Furthermore, regulatory bodies should take some encouraging steps to improve graphical disclosure in annual reports. Finally, auditing firms may also play a role in improving the situation in this respect. Besides auditing financial statements, auditors may help firms improve corporate reporting.

The study has got its limitations. The sample consists of the listed companies in the ISE-100 Index. When generalizing the results to the entire ISE Index, one should be cautious. In addition, the findings may not be valid for non-listed companies.

ACKNOWLEDGEMENT

The author is grateful to Professor Mustafa Dilber for his valuable support in editing the paper.

REFERENCES

- Abdullah A, Ku Ismal KNI (2008). Disclosure of voluntary accounting ratios by Malaysian listed companies. *J. Financ. Report. Account.*, 6(1): 1-20.
- Amer TS (2005). Bias due to visual illusion in the graphical presentation of accounting information. *J. Inform. Syst.*, 19(1): 1-18.
- Aripin N, Tower G, Taylor G (2009). Reporting financial ratios in annual reports: voluntary disclosure perspective. 10. *Annual Asian Academic Accounting Association Conference Proceedings* (E-Book): pp. 1818-1842.
- Arunachalam V, Pei BKW, Steinbart PJ (2002). Impression management with graphs: effects on choices. *J. Inform. Syst.*, 16(2): 183-202
- Ball M (2011). Images, language and numbers in company reports: a study of documents that are occasioned by a legal requirement for financial disclosure. *Qual. Res.*, 11(2): 115-139.
- Beattie VA, Jones MJ (1992a). The communication of information using graphs in corporate annual reports. *Certified Research Report 31*, Chartered Association of Certified Accountants, Certified Accountants Educational Trust, London.
- Beattie V, Jones MJ (1992b). The use and abuse of graphs in annual reports: a theoretical framework and empirical study. *Account. Bus. Res.*, 22(8): 291-303.
- Beattie V, Jones MJ (1997). A comparative study of the use of financial graphs in the corporate annual reports of major US and UK companies. *J. Int. Financ. Manage. Account.*, 8(1): 33-68.
- Beattie V, Jones M (1999a). Financial graphs: true and fair? *Australian CPA.*, 69(5): 42-44.
- Beattie V, Jones MJ (1999b). Australian financial graphs: an empirical study. *Abacus*, 35(1): 46-76.
- Beattie V, Jones MJ (2000). Impression management: the case of inter-country financial graphs. *J. Int. Account. Audit. Tax.*, 9(2): 159-183.
- Beattie V, Jones MJ (2001). "A six-country comparison of the use of graphs in annual reports". *Int. J. Account.*, 36: 195-222.
- Beattie V, Jones MJ (2002). Measurement distortion of graphs in corporate reports: an experimental study. *Account., Audit. Accountab. J.*, 15(4): 546-564.
- Beattie V, Dhanani A, Jones MJ (2008). Investigating presentational change in U.K. annual reports: a longitudinal perspective. *J. Bus. Comm.*, 45(2): 181-222.
- Bonsón E, Escobar T (2006). Digital reporting in Eastern Europe: An empirical study. *Int. J. Account. Inform. Syst.*, 7: 299-318.
- Boubaker S, Labegorre F (2008). Ownership structure, corporate governance and analyst following: A study of French listed firms. *J. Bank. Financ.*, 32: 961-976.
- Burgess DO (2002). Graphical sleight of hand. *J. Account.*, 193(2): 45-51.
- Cameron AC, Trivedi PK (1998). *Regression analysis of count data*. Cambridge University Press, Cambridge.
- Capital Markets Board (2008). Available at: <http://www.spk.gov.tr> (accessed 25 March 2008).
- Chan SY (2001). The use of graphs as decision aids in relation to information overload and managerial decision quality. *J. Inform. Sci.*, 27(6): 417-425.
- Chevalier G, Roy JP-E (1993). Guidance on graphics. *CA Mag.*, 126(11): 44-47.

- Courtis JK (1997). Corporate annual report graphical communication in Hong Kong: effective or misleading? *J. Bus. Comm.*, 34(3): 269-288.
- Coxe S, West SG, Aiken LS (2009). The analysis of count data: A gentle introduction to Poisson regression and its alternatives. *J. Person. Assess.*, 91(2): 121-136.
- David C (2001). Mythmaking in annual reports. *J. Bus. Tech. Comm.*, 15(2): 195-222.
- Davis LR (1987). Reporting financial information graphically. *J. Account.*, 164(6): 108-117.
- Dilla WN, Janvrin DJ (2010). Voluntary disclosure in annual reports: the association between magnitude and direction of change in corporate financial performance and graph use. *Account. Horiz.*, 24(2): 257-278.
- Farrel KA, Hersch PL (2005). Additions to corporate boards: the effect of gender. *J. Corp. Financ.*, 11: 85-106.
- Frownfelter-Lohrke C, Fulkerson CL (2001). The incidence and quality of graphics in annual reports: an international comparison. *J. Bus. Comm.*, 38(3): 337-355.
- Fulkerson CL, Pitman MK, Frownfelter-Lohrke C (1999). Preparing financial graphics: principles to make your presentations more effective. *The CPA J.*, 69(6): 28-33.
- Gao SS, Heravi S, Xiao JZ (2005). Determinants of corporate social and environmental reporting in Hong Kong: a research note. *Account. Forum.*, 29(2): 233-242.
- Hill WY, Milner MM (2003). Guidelines for graphical displays in financial reporting. *Account. Educ.*, 12(2): 135-157.
- Hossain H, Hammami M (2009). Voluntary disclosure in the annual reports of an emerging country: the case of Qatar. *Adv. Account.*, 25(2): 255-265.
- Hossain M, Perera MHB, Rahman AR (1995). Voluntary disclosure in the annual reports of New Zealand companies. *J. Int. Financ. Manage. Account.*, 6(1): 69-85.
- Inchausti BG (1997). The influence of company characteristics and accounting regulation on information disclosed by Spanish firms. *Eur. Account. Rev.*, 6(1): 45-68.
- Istanbul Stock Exchange (2008). Available at: <http://www.imkb.gov.tr> (accessed 12 February 2008).
- Kelton AS, Yang Y (2008). The impact of corporate governance on Internet financial reporting. *J. Account. Publ. Pol.*, 27: 62-87.
- Leventis S, Weetman P (2004). Voluntary disclosures in an emerging capital market: some evidence from the Athens Stock Exchange. *Adv. Int. Account.*, 17: 227-250.
- Liu X, Anbumozhi V (2009). Determinant factors of corporate environmental information disclosure: an empirical study of Chinese listed companies. *J. Clean. Prod.*, 17(6): 593-600.
- Malone D, Fries C, Jones T (1993). An empirical investigation of the extent of corporate financial disclosure in the oil and gas industry. *J. Account., Audit. Financ.*, 8: 249-273.
- Marston C (2003). Financial reporting on the internet by leading Japanese companies. *Corp. Commun. Int. J.*, 8(1): 23-34.
- Marston C, Polei A (2004). Corporate reporting on the internet by German companies. *Int. J. Account. Inform. Syst.*, 5: 285-311.
- Mather P, Ramsay A, Steen A (2000). The use and representational faithfulness of graphs in IPO prospectuses. *Account., Audit. Accountab. J.*, 13(1): 65-83.
- Moriarty S (1979). Communicating financial information through multidimensional graphics. *J. Account. Res.*, 17(1): 205-224.
- Oyelere P, Laswad F, Fisher R (2003). Determinants of internet financial reporting by New Zealand companies. *J. Int. Financ. Manage. Account.*, 14(1): 26-63.
- Patton J, Zelenka I (1997). An empirical analysis of the determinants of the extent of disclosure in annual reports of joint stock companies in the Czech Republic. *Eur. Account. Rev.*, 6(4): 605-626.
- Penrose JM (2008a). Annual report graphic use: a review of the literature. *J. Bus. Comm.*, 45(2): 158-180.
- Penrose JM (2008b). Introduction to the business communication of corporate reporting: a special issue. *J. Bus. Comm.*, 45(2): 91-93.
- Raffournier B (1995). The determinants of voluntary financial disclosure by Swiss listed companies. *Eur. Account. Rev.*, 4(2): 261-280.
- Reid CD (2002). Company annual reports: ensuring access for researchers. *Bus. Inform. Rev.*, 19(4): 10-15.
- Ruchti U, Wasserman N (1983). Public companies have to view themselves as publishers: the annual report is a periodical. *Public Relat. Q.*, Winter: 9-13.
- Saxton GD, Benson MA (2005). Social capital and the growth of the nonprofit sector. *Soc. Sci. Q.*, 86(1): 16-35.
- Singhvi SS, Desai HB (1971). An empirical analysis of the quality of corporate financial disclosure. *Account. Rev.*, 46: 120-138.
- Smith LM, Bain CE (1987). Computer graphics for today's accountant [2]. *The CPA J.*, 57(2): 18-35.
- Stanton J, Pires G (2004). Impressions of an annual report: an experimental study. *Corp. Comm. Int. J.*, 9(1): 57-69.
- Steinbart PJ (1989). The auditor's responsibility for the accuracy of graphs in annual reports: some evidence of the need for additional guidance. *Account. Horiz.*, 3(3): 60-70.
- Sullivan JJ (1988). Financial presentation format and managerial decision making. *Manage. Comm. Q.*, 2(2): 194-216.
- Taylor BG, Anderson LK (1986). Misleading graphs: guidelines for the accountant. *J. Account.*, October: pp. 126-135.
- Uyar A (2009a). An analysis of graphic disclosure in annual reports: the case of Turkey. *Manage. Audit. J.*, 24(5): 423-444.
- Uyar A (2009b). The influence of company characteristics on corporate reporting on the internet by Turkish listed firms. 10. Annual Asian Academic Accounting Association Conference Proceedings (E-Book): pp. 2130-2153.
- Wallace RSO, Naser K, Mora A (1994). The relationship between the comprehensiveness of corporate annual reports and firm characteristics in Spain. *Account. Bus. Res.*, 25(97): 41-53.
- Wang K, OS, Claiborne MC (2008). Determinants and consequences of voluntary disclosure in an emerging market: Evidence from China. *J. Int. Account., Audit. Tax.*, 17(1): 14-30.
- Watson A, Shrives P, Marston C (2002). Voluntary disclosure of accounting ratios in the UK. *Br. Account. Rev.*, 34(4): 289-313.
- Wikipedia (2010). Available at http://en.wikipedia.org/wiki/Big_Four_auditors#Turkey (accessed 03 February 2010).
- Wilson K, Stanton P (1996). Pretty pictures, damned lies, and graphs in reports. *Australian Account.*, 66(5): 42-43.
- Zeileis A, Kleiber C, Jackman S (2008). Regression models for count data in R. *J. Stat. Soft.*, 27(8): 1-25.
- Zekany K, Elsass A (2004). Great graphics. *Strat. Financ.*, 85(9): 52-55.