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Significancy Altman's Z-Score Method
as a Predictor for the Going Concern Opinion of a Corporation

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1.	Judul Penelitian	:	**Significancy Altman's Z-Score Method as a Predictor for the Going Concern Opinion of a Corporation**
2.	Bidang Penelitian	:	Terapan (Applied Research)
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Dengan ini menyatakan bahwa benar saya yang mengajukan proposal penelitian tahun 2018 dengan judul: **"Significancy Altman's Z-Score Method as a Predictor for the Going Concern Opinion of a Corporation"** dan proposal ini belum pernah dibiayai dan tidak sedang diajukan untuk dibiayai oleh instansi/badan lain. Saya bersedia menjadi peneliti utama dan mendedikasikan waktu untuk penelitian selama 6 (enam) jam/minggu dalam penelitian yang saya usulkan dengan judul tersebut di atas.
Demikian pernyataan ini dibuat dalam keadaan sadar dan tanpa ada unsur paksaan dari siapapun untuk keperluan pengajuan proposal penelitian di Universitas Bakrie.

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Meterai Rp6.000,00

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ABSTRACT

The bankruptcy prediction methods have utilized Altman's Z-score method for the last several years connected to the Going Concern Opinion. It is reported in many studies that Z-score is sensitive to changes in accounting figures. Researchers have proposed different variations to conventional Z-score that can improve the prediction accuracy. In this paper, we develop a new multivariate nonlinear model for computing the Z-score.

In addition, we develop a new credit risk index by fitting a Pearson Type 3 distribution to the transformed financial ratios. The results of our study have shown that the new Z-score can predict the bankruptcy with an accuracy of 98.6% as compared to 93.5% by Altman's Z-score. Also, the discriminate analysis revealed that the new transformed financial ratios could predict the bankruptcy probability with an accuracy of 93.0% as compared to 87.4% using the weights of Altman's Z-score.

Only additional sensitivity analysis performed with audit fees divided by total assets as the dependent variable provided any evidence thata going-concern modification in the current year may increase auditfees charged. However, Big-4 fi rms do charge significantly higher fees to their clients. Thus, managers/owners of DSEs should weigh the benefits of having a Big-4 firm audit their financial statements against the higher fees charged by those firms.

Keywords: Bankruptcy - Prediction - Opinion - Going Concern

1. BACKGROUND

1.1. Going Concern Opinion in Big-4

Start-up entities have been the focus of much political and academic interest recently. Development Stage Enterprises (DSEs), as de fined by SFAS 7 (Statement of Financial Accounting Standards), are start-up entities for which some publicly available information exists. New accounting standards have removed the DSE designation and related extra reporting requirements, and placed more responsibility on owners and managers to assess the ability of entities to continue as a going concern. This condition was examined information from financial statements and audit reports of companies previously reporting as DSEs to investigate what increases the likelihood of receiving a going concern modification in auditors' opinions (GCO = Going Concern Opinion) and what affects audit fees. Our overall analyses indicate that the asset size of DSEs, negative working capital, and prior-year going concern modifications consistently influence going concern modifications to auditors' opinions. Managers should clearly consider these conditions when making their assessment of their companies' future going concern status. Our results indicate that the size of the audit firm did not influence the going concern modification decision, but Big-4 auditors charge significantly higher fees than other auditors. Thus, managers/ owners of DSEs should weigh the bene fits of having a Big-4 firm audit (EY, KPMG, PWC and Deloitte) on their financial statements against the higher fees charged by those firms.

Policy makers have recognized that smaller companies (enterprises), including start-up entities, are important for innovation and future economic

growth. These companies are also more likely to be faced with going-concern conditions than established entities. In 1975, the FASB (Financial Accounting Standard Board, 1975) issued SFAS 7, Accounting and Reporting by Development Stage Enterprises that de fined a category of companies as DSEs and regulated their financial reporting. Under SFAS 7, companies meeting the FASB de finition of a DSE, to comply with GAAP (General Accepted Accounting Principles), had to disclose more information (e.g., inception-to-date data) than other companies. According to SFAS 7, DSEs were companies that conducted substantially alltheir efforts to establishing a new business and had not begun planned principal operations, or had begun operations, but had not generated significant revenue. Consequently, companies reported as DSEs should serve as a valid proxy for start-up entities that are important for innovation and future economic growth.

To raise capital through equity or debt, many DSEs need to have their financial statements audited by independent accountants. When financial and other conditions indicate the existence of substantial doubt that a company will continue as a going-concern, the auditors issue anauditor's report containing a going-concern emphasis-of-matter (explanatory) paragraph that describes those conditions. Research has shown that receiving an auditor's report with a going-concern modification may impede an entity's ability to raise additional capital. Even though potentially large amounts of money may have been invested in DSEs, due to their nature, financial statements of most DSEs receive auditors' opinions with a going-concern modification. However, many DSEs receive unqualified (clean) auditors' opinions with the a going-concern modification.

The Public Company Accounting Oversight Board (PCAOB, 2014) is now reviewing going-concern related standards due to investor dissatisfaction with current reporting practices. Also, the Financial Accounting Standards Board (FASB, 2014a, 2014b) issued new updates related to Development Stage Enterprises (DSEs) and going-concern opinions. Likewise, the IAASB (2015) has issued ISA570 (revised) on Going Concern. Unlike prior research, this study focuses on determinants of going-concern opinions (GCO) in auditor's reports and audit fees for DSEs, a set of relatively small publicly traded start-up companies. Distinctfrom typical samples, over 59% (862 the of 1448) of these companies received a GCO, and the majority of DSEs were audited by other (not Big-4 or Tier-2) auditors. Also, these relatively small, other auditors issued the highest proportion (662 the of 862, i.e., 77%) of GCOs included in the sample.

This study investigates what factors influence why some DSEs receive going-concern opinions (GCO) and others receive no-GCO (clean) opinions. Also, because audit costs can be substantial for a start-up company, we examine determinants of audit fees charged to DSEs. Results indicate that going-concern modifications for DSEs are significantly more likely/frequent for relatively smaller companies (measured by the log of total assets), companies with negative workingcapital, and companies that received an auditor's going-concern modi fi-cation in the prior-year. Despite other (non-Big-4 or Tier-2) audit firms issuing the largest proportion of GCOs to DSEs, we found little evidence that the going-concern modification decision is impacted by audit firm size. We also found no evidence that going-concern modifications significantly affect the log of audit fees for DSEs. However, sensitivity analysis provided some

evidence that going concern opinions might affect audit fees as a percent of assets (**Audit fees ÷ Total assets**) for larger DSEs. As expected, Big-4 audit firms charge higher fees than other auditors of DSEs. The next section describes the motivation for this study and our research questions. We then review prior literature, followed by discussions of our research methods and results. Limitations to our study and areas for future research are discussed before was provide a summaryand conclusion.

1.2. Motivation and Research Questions

Research confirms the importance of financial information/statements to investors in early-stage business ventures. Armstrong, Davila, and Foster (2006) found that investors considered many reported expenses and sales relevant to assess the value of companies prior to Initial Public Offerings (IPO). The nature of reported expenses was important because investors viewed some of early-stage companies' costs incurred as investments made for a foundation having the potential to increase futurerevenue. Gavious and Schwartz (2008) concluded that investors used continuously increasing or decreasing reported sales by a DSE to measure its market penetration and viability. **Smolarski, Wilner, and Yang (2011)** found that as start-up companies matured, private equity funds increasingly used audited financial statements as valuation tools indicating the importance of audited financial statements. Likewise, Foster, Garrett, and Shastri (in press) found that a clean (unqualified) auditor's report provides potential investors with a more effective/persuasive signal than an independent accountant's review or compilation report. Therefore, the clean audit report increased the

likelihood of new/start-up enterprises obtaining funding and reduced the amount ofadditional information entrepreneurs must provide to obtain financing from investors/lenders compared to statements that are reviewed or compiled. Because financial information is important to investors in start-up organizations, the perceived reliability of that information should also impact potential investors' decisions. Potential investors' perceptions may be impacted by whether the independent accountant's report accompanying the financial information is unqualified or contains a going-concern modification. Also, auditor quality, as evidenced by audit firm size, could impact potential investors' perceived reliability of the financial statements (DeFond & Lennox, 2011). Management is responsible for preparing financial statements in accordance with Generally Accepted Accounting Principles (GAAP). GAAP assumes that an entity will continue to be a going-concern unless circumstances indicate otherwise. Doubt abthe the ability to continue as a going-concern is present when an entity faces serious operating and/or financing difficulties; in extreme situations, such an entity may have to liquidate. Under the FASB definition of DSEs, one would expect DSEs to more likely face going-concern difficulties than established businesses due to operating, financing and other factors.

To conform to GAAP, the financial statements of companies facing difficulties must make proper disclosures relating to going-concern issues and management's plans/actions to mitigate such problems; the auditor's opinion contains a going-concern emphasis-of-matter paragraph (GCO) following the opinion paragraph. In contrast, auditors would issue a clean (unqualified) audit report (non-GCO) withthe an emphasis-of-matter paragraph to a DSE not facing

going-concern problems. This emphasis-of-matter paragraph draws users' attention to the DSE's going-concern conditions and could lead them to request/ obtain appropriate additional information with which to make informed investment decisions (Carson et al., 2013). In contrast, financial statements of DSEs with an unqualified (no-GC) opinion may be perceived by users as similar to those of established entities.

Investors likely prefer DSEs to engage Big-4 audit firms because of their credibility. In addition to their perceived credibility, Big-4 firms are perceived to have deep-pockets and have the resources to service large clients. Consequently, large public companies are mostly audited by a Big-4 audit firm. For example, in 2006, the four largest auditing firms audited 98% of the 1500 largest public companies with annual revenues over $1 billion (U.S. Department of the Treasury, 2008, II:1). However, because Big-4 firms are likely to charge more for their audit services, not all companies can engage Big-4 firms. In fact, some small enterprises, presenting a relatively high level of engagement risk (particularly DSEs faced with going-concern conditions) would be less likely to be accepted as audit clients by Big-4 firms.

2.1. Going Concern Standards

The term substantial doubt has not been adequately defined and its application in the audit process has not been well established, leaving the decision to auditor judgment. More reliance on judgment could increase the likelihood that auditors act to minimize their exposure to litigation or yield to management pressure, rather than protect investors' interests. Consequently, auditor's GCO-

related reporting decisions may frequently be erroneous, adversely affecting the entity, investors, and/or the auditor. For example, an auditor may issue a report with a GCO when in fact the entity under audit does not experience any financial/operating difficulties (Type I error), or the auditor may issue a clean/ unqualified (no GCO) audit report when in fact the entity under audit goes into bankruptcy (Type II error). Francis (2004) observed that although bankruptcies of public companies per year were few, seven of ten bankrupt companies received a clean audit report for the year prior to bankruptcy (Type II error). Also, six the of seven going-concern opinions were issued for companies that did not subsequently fail or become financially distressed (Type I error). These numbers suggest that auditing standards could be improved to reduce audit reporting errors, which would benefit business entities and investors.

In fact, the PCAOB's Investor Advisory Group reported (PCAOB_IAG_01, 2012) that success with standards covering consideration of GCOs in audits has been somewhat spotty. A PCAOB report identified deficiencies in existing standards and provided several recommendations for improvement based on a survey of investors (PCAOB_IAG_02, 2012). The PCAOB (2014) is now reviewing going-concern related standards. As mentioned earlier, the IAASB issued ISA 570 (revised) on going concern matters, which becomes effective for audits of financial statements for periods ending on or after December 15, 2016.

The FASB has also expressed dissatisfaction with going-concern standards. A FASB news Release from 2014 notes that GAAP provides 3 Big-4 audit firms are Deloitte & Touche, Ernst & Young, KPMG, & PricewaterhouseCoopers. Another indication of audit firm size is that the PCAOB annually inspects audit firms that

audit more than 100 public companies. For 2015, in addition to the Big-4 firms, the PCAOB conducted annual inspections of BDO USA, Crowe Horwath, Grant Thornton, MaloneBailey, Markham, and McGladrey & Pullen (http://pcaobus.org/Inspections/Pages/default.aspx). Hence, we refer to these firms as Tier-2 audit firms (significant in size but smaller than Big-4). B.P. Foster, T. Shastri/Advances in Accounting, incorporating Advances in International Accounting 33 (2016) 68–84 69 little guidance about management's responsibility to evaluate an organization's going concern status or to provide related footnote disclosures (FASB, 2014b). ”FASB Update 2014 –15 (subtopic 205-40)(FASB, 2014c) responds to these concerns “abthe management's responsibility to evaluate whether there is substantial doubt abthe an entity's ability to continue as a going concern and to provide related footnote disclosures (p. 2) ”. Update 2014 –15 requires company management to evaluate whether aggregate conditions or events raise substantial doubt abthe the entity's ability to continue as a going-concern through one year after the date that the financial statements are issued (or are available to be issued). The update also requires disclosures of management's plans to address the going-concern conditions and the probability that the plans will be effectively implemented.

Previously, the going-concern judgment was whether the company would remain a going-concern for one year beyond the financial statement date. The Update (2014b) establishes a new look-forward period,which would require auditors to appropriately extend procedures for a longer look-forward period to verify going concern related matters and to evaluate overall financial statement presentation. Audits involving longer look forward periods could increase

auditors' engagement risk resulting in increased audit effort/fees. The Update (2014b) becomes effective for financial statements for annual periods ending after December 15, 2016, and subsequent interim and annual reporting periods.

As observed earlier, success with standards covering GCO considerations in audits has been somewhat spotty. FASB Update (2014b) and AU-C 9570 illustrate regulators inclination to revise standards relating to going concern disclosures. These standards require auditors to perform necessary procedures to gather sufficient appropriate audit evidence for the increased look-forward period. These standards may improve the quality of financial reporting, and possibly minimize Type I and II errors. Also, the IAASB issued ISA 570 (Revised) on Going Concern (effective for audits of financial statements for periods ending on or after December 15, 2016) incorporating substantive changes in auditor's going concern related report. Consequently, our study is timely and could be beneficial to regulators, researchers, investors, lenders, and others interested in going-concern issues and policies.

2.2. Adverse Impact of Going-Concern Modification

Financial statements of an entity are prepared assuming the entity will continue as a going-concern unless significant contrary evidence exists. Auditors are responsible for gathering and evaluating sufficient appropriate audit evidence to determine the Type of audit report to issue. To assess whether a company is faced with going-concern problems, the auditor would consider whether the company is faced with financial difficulties (such as recurring operating losses, working capital deficiencies, negative cash flows from operating

activities, and adverse key financial ratios) and/or difficulties in other internal and external matters such as, labor difficulties, legal proceedings, and flood damages (AICPA, 2015a, AU 341). Examining the causes of GCOs received by DSEs is important because of potential negative impact on those companies' further development and growth, and the potential information value of the GCO to lenders and investors. As explained earlier, when issuing reports, auditors could make Type I or II errors. Both Type I and II errors have an adverse impact. For example, a Type I error might deter investors and lenders from providing funds, thereby adversely affecting the growth and survival of companies, resulting in self-fulfilling prophecy. Investors standto lose when a Type II error occurs (e.g., as in the case of audit failure of Enron). Further, auditors are potentially exposed to litigation riskand adverse publicity when either Type I or Type II reporting error occurs. Some studies using U.S. data have shown that firms receiving a GCO are more likely to file bankruptcy, but results are mixed (Garsombke & Choi, 1992). As mentioned earlier, Smolarski et al. (2011) find that investors view audited financial statements as valuation tools. Francis (2004) found evidence that a GCO helps investors anticipate bankruptcy because the market response to a bankruptcy announcement is less negative (by 13%) when the auditor has previously issued a going-concern report. Other studies found negative market reactions/returns (observed negative excess returns) when companies received unexpected GCOs (Loudder et al., 1992) concluded that the market changesits valuation procedures in response to a GCO. Prior to the GCO, the market focuses mainly on net income. However, after a company first receives a GCO, the market valuation focus is on balance sheet assets

and liabilities. In that respect, the GCO provides information to the market abthe the company beyond what is publicly available. Similarly, Kausar and Lennox (2011) argue that GCOs alert lenders to potential differences between assets' liquidation values and book values. Collectively these studies indicate that audit reports (GCO or no-GCO) provideuseful information to users (e.g., lenders/ investors) of financial statements. Thus, we consider the going-concern modification decision asimportant to DSEs, managers, potential investors, and auditors.

Due to the importance of small companies (start-up companies, potential high-growth companies) and the potentially negative impact of a going-concern opinion on their growth and survival, we have to investigate Research Question 1. RQ 1 . What factors in fluence why some DSEs receive going-concern audit opinions (GCO), while other DSEs receive no-GCO (unqualified) opinions?

2.3. Audit Fees, GCOs and DSEs

Many DSEs operate under substantial cash constraints. Fees paid to audit firms can be a relatively large expenditure for some DSEs. Consequently, determinants of audit fees charged could be of interest to managers/owners of DSEs. DSEs can possibly take actions to avoid GCOs. However, most potential actions are somewhat costly. Thus, whether audit fees are related to the Type of report (GCO or no-GCO) issued by auditors is likely to be relevant to managers. Also, audit fees may differ depending on the audit firm retained to complete the audit.

Therefore we examine Research Questions 2 and 3 related to audit fees: RQ 2. Do audit fees charged differ between DSEs receiving non-GCO and DSEs receiving GCO? RQ 3. Are audit fees charged to DSEs by Big-4 auditors greater than fees charged by other audit firms?

3. Literature Review

We examined previously published research related to going-concern modifications to identify potential variables that could provide insight regarding RQ1. From the lists the variables included in our modelsfor analyses and the expected sign on coefficients for these variables(and variables for the audit fee explanatory models). The followingsection discusses why we chose to include the particular explanatory variables for our GCO models.

Variable descriptions.

Variable	Description	Coding	Expected sign	
			Gocon	Fees
gocon	Going-concern opinion or not	1 if gocon, 0 otherwise		+
at	Total assets	Total assets in millions $		
log_at	Log (total assets)	log (total assets + 1)	−	−
Big4	Big4	1 if Big4 auditor, 0 otherwise	?	+
Tier2	Tier-2	1 if 2nd Tier auditor, 0 otherwise.	?	+
AudtrChg	Change in auditor	1 if auditor in current year is different from auditor in the prior year, 0 if same auditor as previous year	?	?
lev	Liabilities ÷ total assets	Liabilities total/total assets	+	+
Ni_at	Return on assets	Net income/total assets	−	−
wkgcap_01	Working capital	1 for positive, 0 otherwise	−	?
Audit_Fees	Audit fees in $	Audit fees in $		
Total fees	Total (audit + non-audit) fees in $	Total fees (audit + non-audit) fees in $		
log_AuFees	Log (audit fees + 1)	Log of (audit fees + 1)	+	
log_Tot fees	Log (total fees + 1)	Log of (total fees + 1)	+	
log_NAuFees	Log (nonaudit fees + 1)	Log of (nonaudit fees + 1)	?	?
IIC_Aud	Integrated internal control and financial statement audit	1 auditor performed integrated internal control and financial statement audit, 0 otherwise	?	+
CYE	Busy season audit	1 if 12/31 year end, 0 otherwise	?	+
DlttortIncrp	Increase in market value, long-term debt, or equity	1 if market value, long-term debt on the balance sheet, or common shares outstanding, increased >25% in the next year	+	+
S_10KS_1	Source of information based on SEC filings	1 if Source 10K or S-1, 0 otherwise	+	+
High_lit	In industry with high risk of litigation	1 if company in industries that have a high risk of litigation (as defined by Ali & Kallapur, 2001), 0 otherwise;	+	+
NAICS_MinQOGE	In mining, quarrying, oil, or gas industries or not	1 if in mining, quarrying, oil, or gas industries, 0 otherwise	?	?
NAICS_Man_const	In manufacturing or construction industries or not	1 if in manufacturing or construction industries, 0 otherwise	?	?
SIC_Biotech	In Biotech industry (SIC 2800s) or not	1 if in Biotech industry, 0 otherwise	?	?
Year	Variables for observation fiscal years	1 if fiscal year 20xx, 0 otherwise	?	?
PriYr_gocon	Prior-year opinion-going-concern or not	1 if prior year gocon, 0 otherwise	+	+
invt_rectr01	Has inventory or trade receivables, or not	1 if inventory or trade receivables on balance sheet, 0 otherwise	+	+

3.1. GCO Literature and Independent Variables

The PCAOB-Investor Group (PCAOB_IAG_02) found that between the years 2000 and 2010, the number of audit reports issued each year for public companies

ranged from approximately 15,000 to 19,000, of which GCO reports ranged from approximately 14% to 20%. Carson et al. (2013) provide a good synthesis of research related to going-concern uncertainty. They indicate that smaller companies receive GCOs relatively more frequently than larger companies; 36.70% of companies with less than $75 million market capitalization received going-concern modifications in their audit reports while only 3.66% of companies with market capitalizations between $75 million and $500 million received goingconcern modifications. The GCO frequency drops to 0.33% for companies with market capitalization exceeding $500 million. Company size by total assets is consistently significant in going-concern modification models (Carson et al., 2013). Thus, we include the log of total assets (log_at) as a variable in our analysis. Also, we group the sample observations under four sizes for analyses under each size.

Prior research also led us to examine the impact of audit firm size on going-concern modifications on audit reports for DSEs by using dichotomous variables for auditor size (Big-4 and Tier-2 firms). For example, Geiger and Rama (2006) found that compared to non-Big-4 firms, the Big-4 firms exhibit higher quality reporting by having fewer "GCO-related reporting errors. Also, Ghosh and Tang (2015) find that auditors consider litigation risk, audit risk, and business risk that may impact the company's future financial statements, when deciding to resign from a company's audit engagement. DeFond and Lennox (2011) studied over six hundred auditors with fewer than 100 SEC clients that exited the market following the enactment of the SOX Act. They found that compared to the non-exiting auditors, exiting auditors exhibited lower audit quality and were smaller in

size. Further, clients of exiting auditors received higher quality audits from successor auditors, as indicated by a greater likelihood of receiving going-concern opinions. Consequently, we include an auditor change variable (AudtrChg) in the GCO models.

Previous studies found a significant relationship between companies' financial structure and GCOs (Mutchler, 1985). Consequently, we also include total liabilities divided by total assets, or leverage (lev), as an explanatory variable for the GCO. Likewise, Carson et al. (2013: 358) cite many studies that found going-concern opinions were significantly impacted by variables for recurring operating losses, weak financial position, working capital deficiencies, and difficulty raising capital and/or borrowing money. Accordingly, for data analyses we also include variables for net income divided by total assets (Ni_at), and positive versus negative working capital balance (wkgcap01).

Other variables related to the auditor and auditee could impact the going-concern modification decision. Some research has examined the effects of audit and non-audit fees on audit opinion. DeFond, Raghunandan, and Subramanyam (2002) found no association between going-concern opinions and either audit fees or total (audit + nonaudit) fees. In contrast, while Geiger and Rama (2003) concluded that non-audit fees did not impact auditors' going-concern opinion decisions for financially distressed manufacturers, they found audit fees to be positively related to going-concern modifications. Consequently, we investigate the association of the log of audit fees (log_AuFees) and the log of non-audit fees (log_NAuFees) on going-concern modifications.

PCAOB Auditing Standard No. 5 requires an auditor of a public company to perform an integrated audit, where an auditor issues audit report covering an audit of internal control over financial reporting in conjunction with the audit of related financial statements. However, some small public companies are not required to obtain integrated audits. Goh, Krishnan, and Li (2013) studied the association between the internal control over financial reporting and going-concern audit opinions in integrated audits. They found that, while the existence of material weaknesses increased the auditor's uncertainty about the firm's going-concern, issuing an adverse report on internal control effectiveness led to auditor conservatism in issuing the GCO. An auditor's work-load based on financial statement year end (e.g. , at D ec emb er 31) could also conceivably impact the going-concern evaluation. Auditors generally encounter heavier work-loads and time pressure during 'busy season' because many companies have calendar year ends (December, 31). López and Peters (2012) found that companies with December fiscal year-end dates exhibited larger abnormal accruals and were more likely to achieve earnings targets. They concluded overall that audit quality was lower for companies with December fiscal-year ends. Consequently, we examine whether busy season affects auditors' opinions by including a binary variable for calendar year end (CYE).

The risk of litigation against auditors varies somewhat by client characteristics. Thus, clients' litigation risk perceived by auditors could, in turn, impact GCOs and audit fees. Menon and Williams (2010) observed that a significant number of firms have lending agreements that include covenants specifically requiring that the firm not obtain a GCO. Also, the fact that a client

intends to issue new debt or equity in the coming year could increase an auditor's perceived litigation/liability risk. Consequently, to determine the effects of a substantial increase in the coming year in total liabilities or shares of stock outstanding on the Type of audit report issued, we include a variable 'Dlttort-Incrp'.

Differing filing requirements by the Securities and Exchange Commission (SEC) for different companies could also impact perceived client risk. During the period covered by our sample, companies could file financial and other data with the SEC on more than one Type of form. Forms 10-K and S-1 are the standard forms required by the Securities and Exchange Commission (SEC) for typical filers. However, smaller companies could use Forms 10-KSB and SB-1 which required less detailed information than the 10-K and S-1. Thus, Forms 10-KSB and SB-1 indicated that the DSEs were relatively small. Small auditee size and less information required for Forms 10-KSB and SB-1, could lead auditors to perceive a lower level of engagement risk and to perform less extensive audit tests than for Form 10-K and S-1 filers. Also, the form filed could impact the auditor selected by a client, and clients accepted by an auditor. (A higher percentage of DSE observations whose data source was from Forms 10-K and S-1 were audited by Big-4 firms than for DSE observations from other forms.) We include a dichotomous variable (S_10KS_1) based on the form referenced as thesource of information in the Audit Analytics database. Also include a variable for clients operating in industries with a perceived high litigation (High_lit) risk as defined by Ali and Kallapur (2001). Other certain industries (e.g., Biotech, mining) provide a sizable proportion of our observations.

To control for other possible industry effects, we include variables NAICS_MinQOGE, NAICS_Man_const , and SIC_Biotech, respectively, for observations coming from companies in the mining, oil and gas industry; the manufacturing and construction industry; and the biotech industry. Because bankruptcy rates and the rate of going-concern opinions have varied since Year 2000 (the turn of the century), we also included dichotomous variables for each sample year.

Consequently, based on prior research discussed above and data availability, we conducted logistic regression with go_con as the dependent variable and the following potential independent variables to address Research Question 1 and examine the causes of going-concern modifications for DSEs.

To examine how various variables may in fluence the GCO decisions of different-sized auditors, we also ran Eq. (1) within each audit firm size without the Big-4 and Tier 2 variables. The model was also run within four different subsamples/groups based on DSE size as measured by assets to examine whether the same variables affect GCO decisions for audits of different sized DSEs.

3.2. Audit Fee Literature and Independent Variables

To address Research Questions 2 and 3, we collected the amount of audit fees, non-audit services fees, and total fees paid by DSEs to their respective auditors. To examine the variables that impact the fees charged by auditors, studies in the past have used fees or log-of-fees charged by auditor as dependent variables. For example, some studies (e.g., Simunic, 1980; Gist, Scott, & Shastri, 2013) have used fees charged by audit firms as the dependent variable, whereas several

studies (Menon & Williams, 2001) have used log-of-fees as the dependent variable for data analyses. We use the log of audit fees as the primary dependent variable for analyses of fees charged. Several studies (e.g., Carson et al., 2013; Stanley, 2011; and Hay et al., 2006) have examined what variables impact audit fees charged. Many variables that impact the going-concern modification decision also appear to impact the audit fees charged. (includes a list of potential variables and the expected signs on their coefficients in the audit fee model.) Also, some research has indicated that additional non-audit work may in fluence the audit fees charged (DeFond et al., 2002). When planning and performing an audit, auditors consider potential engagement risk arising out of the overall economy, environment, regulations, and industry in which a client operates (i.e., client's pre-audit observable position). In some audits, the going-concern assumption is not much of an issue. In contrast, in other audits, just considering whether a client is faced with conditions that make the going-concern issue relevant would generally require an audit or to devote more audit effort, and perhaps assume a higher level of litigation risk than otherwise. Under the definition of a DSE by the FASB, one would expect DSEs in general to have a higher probability of ceasing operations in the future than an established company.

In light of litigation and other risk factors, auditors appear to make strategic decisions regarding when to accept a client facing potential going-concern issues, and when to issue or not issue a GCO (Kaplan & Williams, 2013). Risk associated with audits of DSEs would depend on financial, operating and other factors (e.g., litigation and/or regulation), and a higher level of assessed engagement risk is likely to increase the extent of audit tests, increasing the audit fees. For example,

Gist et al. (2013) found that Big-4 audit firms charge significantly more for audits of companies under SEC investigation and appear to apply almost twice the audit effort on those companies compared to companies not under investigation. Further, when determining audit fees of entities receiving GCO, auditors are likely to include a risk-premium for litigation risk.

Thus, we may expect audit fees for DSEs receiving GCO to be higher than those for DSEs receiving no-GC-opinion. In fact, the evidence is somewhat mixed with respect to the relationship between audit fees and the propensity to issue GCO. For example, consistent with the above discussion indicating that DSEs receiving GCOs require more audit effort and result in higher audit fees, Willenborg (1999) found that fees related to IPOs for DSEs that received a going-concern modification were higher than those for DSEs that received an unqualified, unmodified audit opinion. In contrast, DeFond et al. (2002) found no association between going-concern opinions and either total fees or audit fees. DeFond et al. and Willenborg's results relate to the pre-SOX period. More recently (post-SOX period), Goodwin and Wu (2014) found that GCOs significantly impacted audit fees.

Based on prior research, we include a variable for GCOs (**gocon**) as a potential independent variable in our analyses of audit fees to address Research Questions 2 & 3. Also, audit fees are typically estimated before the audit is performed based on tentatively assessed engagement related risk factors, including possible going-concern conditions faced by a client and the prior year audit opinion, which would be known. Consequently, in setting fees, auditors would consider the effects of the prior year's audit opinion on the current year

audit, which could impact the current year's fees. Therefore, we also include PriYr_gocon as a potential independent variable.

We included control variables, like those included in Goodwin and Wu's (2014) and Ferguson, Francis, and Stokes's (2003) audit fee models for: the size of the DSE; extent of net income or loss; capital structure; liquidity; whether the audit occurred during the busy audit season; and industry variables such as mining oil and gas, construction and manufacturing, biotech, or a high litigation industry. We also include variables that could impact audit fees discussed earlier in relation to the going-concern prediction model, such as: Type of SEC filing (Form 10-K, S-1, or other) which differ in required amounts of disclosures and could impact audit work performed; auditor change which could result in either initial low bid pricing or extra substantial first year audit work; internal control audits integrated with the financial statement audit which would require more time than just a financial statement audit; and plans to raise large amounts of debt and/or equity which would raise the risk potential of the audit. Most DSEs do not report inventory or trade receivables on their balance sheets, but verifying inventory and trade receivables may require more audit effort than other balance sheet items. Consequently, we included a control variable for thepresence of inventory or trade receivables on the balance sheet.

4. Methods

4.1. Sample

The DSE designation for U.S. companies was essentially eliminated by FASB Accounting Standards Update, No. 2014-10 (FASB, 2014a). That update simplifies financial reporting requirements for DSEs (e.g., by eliminating the requirement for

DSEs to present inception-todate information) and essentially eliminates differences between reporting for DSEs and other companies. Update 2014-10 is effective for annual and interim reporting periods beginning after December 15, 2014. Our sample comes from reports issued when the DSE reporting requirements were in effect, prior to the adoption of FASB Standards Update (2014a). Companies that qualified for reporting standards as DSEs were likely to engage auditors to enhance credibility of reported information, enabling them to raise necessary funds from external sources. Based on audit evidence, auditors may issue an unqualified opinion withouta modification (non-GCO) or modified for going-concern issues (GCO). In rare situations, auditors may issue a qualified or adverse opinion forGAAP departure. We gathered a sample of DSEs receiving GCOs andnon-GCOs for analyses. We searched through auditor's opinions in the Audit Analytics database for the phrases “development stage ”, “exploratory stage ”,“exploration stage ” and other variations of those phrases. An identified company required three consecutive years of information to be included in our sample. For example, a company in the develop-ment stage in 2006 would need the prior year's auditor's opinion (2005) and the balance sheet (Statement of Financial Positions) amounts from 2007 to allow calculation of changes in working capital, long-term debt, total liabilities, stockholders equity, and shares outstanding. The company could be included if it was in the development stage in the sample year (2006, for example), even if the auditor's opinion did not mention development stage in the preceding year (2005) or the following year (2007). Summary steps to obtain our usable sample. The search identified 17,342 potential observations. Of those, 1432 were duplicate year observations, leaving 15,910 potential observations. Audit Analytics contains only

limited financial statement information including revenues, earnings, and assets. Consequently, we searched the COMPUSTAT data base for these companies' financial statement information. Few DSEs initially meet requirements for inclusion in COMPUSTAT, and many observations that are included in COMPUSTAT do not contain sufficient data to construct our variables.

Thus, most DSE observations identified in Audit Analytics were eliminated from the sample. Of the 15,910 company-year observations, 14,462 did not contain enough information to construct many financial variables, leaving 1448 observations that included information necessary for most variables. Another 423 observations were missing data for only one or two variables. Consequently, the sample used for most of our analyses contained 1025 observations. As discussed in the preceding sections, audit firm size may affect going-concern modification decisions and audit fees charged. The data provides a breakdown of our sample by auditor size (Big-4, 2nd Tier, and Other) and by Type of audit opinion (GCO or no-GCO). Panel B reveals that Big-4 firms audited approximately 36% (370) of the overall sample (n = 1025). In contrast, the smallest auditor size group audited 53% (544) of the DSEs in the sample overall. The breakdown also shows that Big-4 firms issue the lowest proportion of audit reports with going-concern modifications, while small audit firms issue the highest proportion of GCOs.

These breakdowns indicate that DSEs' choice of an audit firm could be influenced by audit firm size, and perhaps the likelihood of obtaining a certain Type of opinion. Also, an audit firm's inclination to accept a DSE as its audit client may be based on factors like assessed risk due togoing-concern conditions. For example, Big-4 firms are perhaps less likely to accept small DSEs and those with going-concern conditions

as clients. The size of DSEs expressed in terms of total assets range from b$1 million to N$50 million. Carson et al. (2013) found evidence that the size of a company generally impacts both the GCO decision and audit fees charged. Because of the large difference in the size of companies included in the sample (n = 1025), we also divided the sample into four groups based on their reported assets as follows: (1) $1 ≤ total assets b $1 million, 242 observations; (2) $1 million ≤ total assets b $10 million, 318 observations; (3) $10 million ≤ total assets b $50 million 283 observations; and (4) total assets ≥ $50 million, 182 observations. The numbers of observations in each of these four asset sizes, by auditors' opinion and auditor size are presented in previous data. This breakdown illustrates how the likelihood of DSEs receiving a GCO is inversely related to size; 96% of DSEs with less than $1 millionin total assets received GCO, while only 8% of DSEs with total assets greater than $50 million received GCO.

5. Statistics

5.1. Descriptive Statistics

The previous analysis consists of eight (A –H) panels that contain descriptive statistics for the full sample, separately for companies audited by the three auditor-size groups, and separately for companies by thefour auditee-size groups. The size and nature of DSEs result in someextreme measures when creating financial variables. Consequently, we Winsorized continuous variables at the 1% lower and upper ranges of observations and report descriptive statistics for the Winsorized data. The panels in the data should be also include the means for the variableswithin the auditor-size and auditee-size groups for DSEs that received a going-concern

modification and those that did not. Differences between the means of variables for different auditor groups are evident.

The means of assets (for the full sample, by audit firm size, and by auditee size) of DSEs receiving non-GCO are higher than those receiving GCO. Because DSEs receiving non-GCO are larger, as expected, the means of audit fees and log_audit fees are higher for DSEs receiving non-GCO than those receiving GCO. In contrast, when audit fees are expressed as a percent or proportion of assets, the means (of audit fees ÷ total assets) of DSEs receiving GCO are much higher than those receiving non-GCO for the full sample and within audit firm sizes. Similarly, within the four auditee size groups, the means of audit fees and log_audit fees are higher for DSEs receiving non-GCO than those receiving GCO, except for the smallest-sized DSEs (with less than $1 million in assets).

In the smallest size group, audit fees and log_audit fees are higher for DSEs receiving GCO than those receiving non-GCO.A correlation matrix of the variables included in Eqs. (1) and (2) (notreported here) indicates that, except for insignificant correlation withDlttortlncrp ($p = 0.06$) and MinQOGE ($p = 0.35$), the correlations between gocon and other variables are significant with the expected sign. Likewise, other than Dlttortlncrp ($p = 0.11$), the correlations between log_aufees and other variables are significant with the expected sign. Many of the potential independent variables are also highly correlated 5.2. Multivariate analysis.

Because of the large number of variables examined and that some observations had missing values for some variables, analyses were conducted in several ways. For our main analysis, we ran the models with continuous variables Winsorized at the 1% maximum and minimum levels with only the 1025 observations that had values for all

variables. As discussed in the Sensitivity analyses section later, we also ran models with the raw (not Winsorized) data for those 1025 observations. The analyses were also conducted (with a Winsorized and a raw data set)for 1448 observations after the missing values of one/two variables of 423 observations were substituted with the means of the values from the other 1025 observations that had values for all variables. Due to significant correlations among the independent variables, the stepwise procedure in SAS was used to select variables to include in the logistic regression models for going-concern opinion and the ordinary least-squares regression models for audit fees. As discussed in the Sensitivity analyses section later, results from the stepwise procedure were then compared to results from full models that included all variables. For convenience and brevity, tables reporting the regression results show only output from the stepwise procedures on the Winsorized data set that included only observations with values for all variables (n = 1025).

5.2.1. Research Question 1 — Going-concern Modification

Presents the results of logistic regression analyses withgo_con as the dependent variable (logistic regression coefficients and Wald chi-square statistics). Many of the potential independent variables are highly correlated. Consequently, results reported are from the stepwise procedure of SAS Proc Logistic (at $p \leq 0.05$) with all independent variables included in Eq. (1) as possible entry variables. Panel A reports the results for the sample (n = 1025) of observations with data for all variables, and within the three different auditor sizes, Big-4 (n = 370), Tier 2 (n = 111), and Other (n = 544). The results shedlight on the answer to our research question of why some DSEs receive going-concern modifications while others do not.

As expected, analysis with the full sample (n = 1025) indicates larger companies (log_at), and those with positive working capital (wkgcap01) are less likely to receive a going-concern modification. Results also indicate that companies operating in BioTech industries are less likely to receive a going-concern modification than other companies. However, a going-concern modification in the prior year (Priyr_gocon) increases the likelihood of receiving a going-concern modification. These results are consistent with those stated in Carson et al. (2013). Nonaudit fees (log_NAudFees) in the current year increase the likelihood of receiving a going-concern modification in the current year for the full sample, apparently driven by companies audited by Other/small auditors. In contrast, other potential independent variables including auditor size (Big-4 & Tier-2), whether the audit is integrated (IIC_Aud), and auditor change (AudtrChg) do not enter as adding significant explanatory power to the model. The analyses using only observations within the three auditor sizes provide similar results as those for full sample group, but with fewer significant variables entering the going-concern predictive models. For the Big-4 auditor sample, log_at, wkgcap01, and Priyr_gocon have the same sign and signi ficance as the full sample analysis. However, log_NAuFees is insignificant, consistent with the findings of DeFond et al. (2002) of whose sample companies, approximately 90% were audited by Big-5 firms (prior to the demise of Arthur Andersen). Companies in the MinQOGE industry are significantly more likely to receive a GCO from Big-4 firms than companies in other industries. Only wkgcap01 and Priyr_gocon are significant (with the expected sign) in the analysis of GCOs for companies audited by 2nd Tier audit firms. For the smaller (Other) audit firms, log_at, wkgcap01, log_NAuFees, and Priyr_gocon have the same sign and significance as for the full sample. Also, filing a Form 10-K or S-1

(S_10KS_1) significantly increases the likelihood of going-concern modifications issued by smaller (Other) audit firms.

5.3. Audited Company Size

Because of the expansive size difference between companies in the sample, we also ran Eq. (1) within each of the four DSE size categories. As can be seen from going-concern modification as a dependentvariable becomes problematic because observations are clustered/bunched in one opinion category in two of the four asset size categories. Of the 242 DSEs with assets between $1 and $1 million, 232 received GCO and only 10 received non-GCO; and of the 182 DSEs with assets N$50 million, only 14 received GCO, while 168 received non-GCO. Consequently, results from the smallest and largest asset size groups should be interpreted cautiously. B.P. Foster, T. Shastri/Advances in Accounting, incorporating Advances in International Accounting 33 (2016) 68–84 79 these additional analyses. Like the results from the full sample, the audit firm size variables, Big-4 and Tier 2 were not significant for any asset size category.

For DSEs with total assets ranging from $1 – $1 million, regression results indicate none of the potential independent variables significantly impacts the current year going-concern modification. As reported in total 232 out of 242 companies in this size range received going concern opinions. Apparently, auditors express GCOs on these small DSEs as a matter of course. Regression results for DSEs with total assets ranging from $1 million-$10 million reveal that the auditor's opinion is in fluenced by positive or negative working capital and the prior-year's going-concern opinion.

For DSEs in the $10 –$50 million asset range, results indicate that many variables impact the going-concern modification decision. Companies with an auditor change from the previous year, lower net income to total assets, negative working capital, or a prior year going-concern modification, are significantly more likely to receive a GCO. Likewise, for this group of companies nonaudit fees paid to the auditor is positively and significantly related to a higher likelihood of receiving a going-concern modified opinion. These results may seem counter intuitive because auditors receiving substantial nonaudit fees from a company could be hesitant to issue a GCO to that client. However, Callaghan et al. (2009) and Defond et al. (2002) found no relationship between nonaudit fees and the issuance of GCOs. Also, Hunt and Lulseged (2007) found that non-Big5 auditors were more likely to issue GCOs to clients when ratios of non-audit fees to total fees were higher. For the largest asset size group, negative working capital is the only significant variable, and increases the likelihood of receiving a going-concern modification.

Big-4 and Tier2 are not significant in any of the client asset size groups indicating no difference in the likelihood of obtaining a GCO based on audit firm size. Overall, our analyses based on Eq. (1) provided little evidence that the size of the audit firm impacts the likelihood of a development stage enterprise receiving a going-concern modification when controlling for other variables. The factors that most distinguish DSEs that receive GCOs from those that receive non-GCOs are: DSE size (log_at), liquidity (wkgcap01), presence of a GCO in the prior-year (Priyrgocon), and non-audit fees (log_NAuFees).

5.3.1. Research Questions 2 and 3 — Log of Audit Fees

To address Research Questions 2 and 3, whether the Type of audit opinion (GCO or non-GCO) or audit firm size influences audit fees, we ran OLS regression Eq. (2) with the log of audit fees charged by theaudit firm as the dependent variable. Because of correlation among the many potential independent variables, we specified the stepwise option within SAS Proc Reg (at $p \leq 0.05$) and included all independent variables in Eq. (2) as possible entry variables. Regression results for total observations with all variables and within audit firm size groups are shown, Panel A. Many independent variables enter the model for the full sample (n = 1025). This model produces an R-square of 0.71, indicating that much of the variation in audit fees is explained by those variables. The full sample results indicate that while audit fees (log_Aufees) are in fluenced by many variables, they are not in fluenced by the going-concern modification decision (RQ2). As expected however, regression results from the full sample indicate that Big-4 firms charge the highest audit fees, Tier 2 auditors charge the second-highest amount, while other firms charge the lowest audit fees (RQ3). We also conducted stepwise regression analyses for companies within each auditor size group to examine what might cause audit fee differences within similar-sized auditors, producing adjusted R-squares ranging from 0.64 to 0.53. Results for each auditor group (also reported previously), indicated that going-concern opinion had no impact on total fees charged. Regression results using log of audit fees as the dependent variable within DSE asset size groups are shown in Table 6, Panel B. The regression analyses within these groups, produce somewhat lower adjusted R-squares than those shown in Panel A. For all asset size groups, going-concern opinion had no impact on total fees

charged, addressing Research Question 2. These results contradict the findings of Willenborg (1999) and Goodwin and Wu (2014), but agree with those of DeFond et al. (2002). Regarding Research Question 3, results indicated that Big-4 firms charge significantly higher fees in the asset size groups where a substantial portion of the companies were audited by a Big-4 firm. Likewise, Tier 2 firms charge significantly higher fees in the $10 million –$50 million asset group. Regarding Research Question 3, we find evidence that DSE's audit fees increase with auditor size from Other, to Tier 2, to Big 4.

5.3.2. Research Questions 2 and 3 — Audit Fees Divided by Total Assets

We also conducted analyses with audit fees divided by total assets as the dependent variable rather than the log of audit fees. GCO is still insignificant (did not enter stepwise models) for the overall sample and all other subsamples. Regression results using audit fees divided by total assets as the dependent variable for the overall sample and within DSE asset size groups are shown in Table 6, Panel C. These regression analyses produce somewhat lower adjusted R-squares than those shown in Panel A for regression with log of audit fees as the dependent variable. For the full sample and all asset size groups, like the results reported in Panel A, going-concern opinion had no impact on audit fees divided by total assets, addressing Research Question 2. (Similar results, not reported, were produced by regressions with observations within each auditor group.) Similar to results reported in Panel B, results reported in Table 6, Panel C indicate that Big-4 firms charge significantly higher fees within the asset size groups where a substantial portion of the companies were audited by a Big-4 firm. Likewise, Tier 2 firms charge significantly

higher fees in the $10 million –$50 million asset group. Thus, the results also provide evidence regarding Research Question 3, that DSE's audit fees increase with auditor size from Other, to Tier 2, to Big-4.

5.4. Sensitivity Analyses

Overall, the previously discussed analyses to address Research Question 1 reported in Table 5, provide evidence that variables (e.g., log_at, wkgcap01, priyr_gocon) significantly in fluenced auditor's decisions whether to issue going-concern opinions. Smaller DSEs (based on asset size), companies with negative working capital, and/or companies receiving GCO in the preceding year are more likely to receive goingconcern opinion modifications. These results are consistent with the findings reported by Carson et al. (2013). Analyses to address Research Question 2, reported in Table 6, provide evidence that while audit fees are driven by factors such as total assets, pro fitability (e.g., Ni_at), and capital structure (lev), the Type of audit opinion (whether GCO or noGCO) does not appear to influence audit fees. Further, the results show that the audit fees charged by Big-4 auditors are relatively higher than those charged by non-Big-4 auditors, addressing Research Question 3.

We repeated the analyses described above using: (1) the data without Winsorizing the extreme values, (2) data for 1448 observations by replacing missing variable values with the mean of the other observations, and (3) models including all variables, despite multi-collinearity. The results from these analyses did not change substantially from those reported in Tables 5 with going concern as the dependent variable. In particular, Big-4 and Tier2 were insignificant in the auditor

opinion models (Eq. (1)). Related to audit fees, Eq. (2), these extra analyses also produced results similar to those reported in Table 6, Panels A and B. We also conducted these additional analyses when audit fees divided by total assets serves as the dependent variable (Table 6, Panel C). Results were similar regarding the impact of audit firm size on audit fees. However, within the largest two auditee asset-size groups ($10 –$50 M and ≥$50 M), going-concern opinion was positive and significant when the data was proceed.

RESULTS

In this section was presented the experiments conducted on the dataset and a comparison of the results with those of the earlier studies. A time series dataset Kubo and Sakai (2011) consisting of seven attributes is considered in the analysis. It was considered five financial ratios namely (i) working capital/total assets (WC_TA), (ii) retained earnings/total assets (RE_TA), (iii) earnings before interest and taxes/total assets (EBIT_TA), (iv) market value of equity/book value ofthe total debit (MVE_BVTD) and (v) sales/total assets (S_TA) for the analysis. Thereare 2,392 bankrupt cases with credit ratings from *B B B* to *CCC* and 1,540 nonbankrupt cases with credit ratings *A* to *AAA*.The dataset consists of the credit ratings belonging to 12 different industries withseven ratings ranging from highest safety (AAA) to very high risk (CCC).

The estimated coefficients of *ZA* and *ZM* are both negative and statically significant at 0.01 % indicating that both measures are useful in predicting bankruptcy risk andlower the score, the higher the risk of bankruptcy. The coefficient of *ZM* is far lowerthan *ZA* indicating the fact that the predictive power

of *ZM* is far better than Altman's *ZA* score and revised Altman's *ZU* score. A hold-the classification between *ZM, ZA, ZU* and bankruptcy index *b* is carried the using MDA and the prediction accuracy of the proposed methodology is found tobe 98.6 % which is higher by 5 % than any of the models proposed by Altman. Thisconfirms that the proposed methodology is universal and serves as a generalized toolthat can improve the estimations of the existing methods/ procedures in vogue and can predict the bankruptcy risk in an effective manner. Discriminate analysis on the data set generated using the new transformation *ZM* hasresulted in an accuracy of 93.7 % in cross validated grouped cases correctly classifiedwhere as Altman's Z-score *ZA* has resulted only in an accuracy of 87.4 %. MDA is carried the on *ZM* score and the credit ratings obtained from P3 and Pareto distributions. The proposed method with P3 distribution resulted in an accuracy 92.2 %whereas the model with the Pareto distribution has resulted in only 80 % accuracy.

To understand the sensitivity on the choice of thresholds for different ratings in predicting bankruptcy, we first construct a classification matrix or accuracy matrix based on the number of agreements and disagreements between the predicted group membership (estimated from the model) and the actual group membership of bankruptcy for the thresholds.The actual group membership is equivalent to the a priori grouping and the predicted group refers to the cases wherein the proposed methodology attempts to classify them correctly. In the variables N_1 , N_2 denotes the correct classifications (Hits) and M_1, M_2 denotes the misclassifications (Misses). N_1 (1966) gives the number of cases of actual bankruptcy correctly classified as bankrupt by the proposed method. M_1 (426) is

the Type-I error that gives the number of cases wherein the actual group membership is bankrupt whereas the proposed model misclassified them as non-bankrupt. For the variable M_2 is the Type-II error, that denotes the number of actual cases belonging to nonbankrupt group misclassified as bankrupt by the proposed model. N_2 (1526) are the number of cases wherein the proposed model correctly labels the actual cases as non-bankrupt.

The accuracy of the proposed methodology is computed as $(N_1 + N_2)/(N_1 + N_2 + M_1 + M_2) = (1966+1526)/(1966+1526+14+426) = 3492/3932 = 0.88 = 88$ %. The Type-I error is the ratio of misclassified cases of actual bankrupt cases declared as non-bankrupt by the model with total bankrupt cases i.e Type-I $= M_1/(N_1 + M_1) = 426/(1966 + 426) = 426/2392 = 0.177 = 17.7$ %. The Type-II error is the ratio of misclassified cases of actual non-bankrupty cases declared as bankrupt by themodel with total non-bankrupty cases i.e Type-II $= M_2/(N_2 + M_2) = 14/(14 + 1526) = 14/1540 = 0.009 = 0.9$ %.The proposed method with thresholds is accurate in classifying 88.8 % of total samples with Type I error to be only 17 % while the Type II error waseven better at 0.9 %. Therefore, there is a positive upward bias which can be addressed by adjusting the thresholds between the credit ratings *A* and *BBB* as the boundaries fall in the grey zone. Keeping the other thresholds unchanged, we updated the thresholdsof *BBB* as $-1.0 < Hi, j \leq 0.25$ and *A* as $0.25 < Hi, j \leq 1.5$ from the classification table, we obtained the Type I error as 4 % and Type II error as 5 % with overall accuracy of 95 %. To see if the sensitivity be further improved we updated the thresholds of *BBB* as $-1.0 < Hi, j \leq 0.5$ and *A* as $0.5 < Hi, j \leq 1.5$ keeping the others unchanged.Was found from the classification table the Type I error as 0.16 % whereas Type IIerror has increased to 21.7 %

with overall accuracy of 91.4 %. Therefore, the choice of thresholds for transition from bankruptcy to non-bankruptcy should be chosen with caution so that both Type I and Type II errors are at minimum.Even though the samples are disproportionate the Algorithm 1 has the-performedthe accuracies obtained using the Altman's Z-score methods.

It was analyzed information from companies previously reporting as DSEs under SFAS 7 and their audit reports. Our overall analyses indicate that the size of aDSE based on total assets, positive versus negative working capital, and prior-year going-concern modifications, consistently influenced auditors' going concern opinions. Smaller DSEs are more likely to be audited by smaller (other) audit firms and more frequently receive going concern opinions. In addition, auditor changes are more likely when smaller (other) audit firms are involved in audits of DSEs with going concern conditions. Managers, auditors, and users of financial statements should, at a minimum consider these variables when making their assessment of the company's future going-concern status.

Prior research indicates that having an audit performed by a Big-4 firm and receiving a clean audit opinion has positive benefits, becauseBig-4 firms are perceived to possess higher credibility and to have deep-pockets. In contrast, DSEs could face potential negative impact after receiving an audit opinion with a going-concern modification. Big-4 auditors are likely selective in the clients they accept, and are less likely to accept a DSE with going concern conditions. However, our results do not indicate that DSEs obtaining an audit through a Big-4 firm exhibited a lower or higher likelihood of obtaining a going-concern

modification. In contrast , DSE s audited by smaller (other) audit firms are more likely to receive an audit report with a going concern modification.

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RANCANGAN BIAYA PENELITIAN

Judul **: Significancy Altman's Z-Score Method as a Predictor for the Going Concern Opinion of a Corporation**

Nama Pengusul: Rene Johannes

Rekapitulasi Biaya

No.	URAIAN/RINCIAN	BIAYA
1	Biaya Operasional (Survei/Pengolahan Data)	12.076.000,00
2	Biaya Bahan Habis Pakai	2.350.000,00
3	Biaya Seminar di UB	4.400.000,00
4	Biaya ATK dan Laporan	1.000.000,00
5	Honor Peneliti	-
	Jumlah Biaya	19.826.000,00

Biaya Operasional

No.	Pelaksanaan Kegiatan	Jml Personel	Jml Jam/mg	Upah (Rp)	Jml Bulan	Total Biaya
1	Pengumpulan Data (Wawancara, dsb.)	3	6	175.000	3	9.450.000
2	Pengolahan Data	2	6	200.000	1	2.400.000
3	Penunjang Operasional					226.000
					Jumlah	12.076.000

Biaya Bahan Habis Pakai

No.	URAIAN/RINCIAN	Volume	Biaya/unit (Rp)	Biaya (Rp)
1	Fotokopi dokumen	500	200,00	100.000,00
2	Cenderamata	15	150.000,00	2.250.000,00
			Jumlah	2.350.000,00

Biaya Alat Tulis Kantor

No.	URAIAN/RINCIAN	Volume	Biaya/unit (Rp)	Biaya (Rp)
1	ATK	1	400.000,00	400.000,00
2	Pembuatan Laporan	3	200.000,00	600.000,00
			Jumlah	1.000.000,00