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Research Article

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Abstract

The study is concerned with identifying flow based corporate insolvency symptoms that are critically catalyzing corporate failures in developing economies. Its other focus is to ascertain among the identified critical symptoms, those that are significant across industrial sectors. A sample of a thousand, two hundred financial statements from six hundred corporate bodies with inherent corporate insolvency indicators was investigated. All the investigated companies are Nigerian based corporate bodies. Technique of data analysis employed is Logit. The Log linear analysis was conducted at 5% significant level using SPSS software version 16. Five out of the twelve identified flow-based corporate insolvency indicators are found to be critically significant catalyzing business failures in developing economies. It is also found that certain insolvency symptoms are more manifest in catalyzing corporate failures across industrial sectors than others.

Key Words: Flow-based Indicators, Insolvency Indicators, Corporate failures, Developing Economy, Nigeria.

1. INTRODUCTION

1.1 Background to the Study

The recent global economic meltdown has woken researchers of economic, financial and other management sciences from sleep. There is a cancerous vermin called Insolvency which is destroying corporate bodies with a devastating effect on Cash Economies. According to Heaton (2007), insolvency is like cancer. The cancer is harmful because it will prevent the creditor from being paid according to its terms. When the cancer (indicators of insolvency) is diagnosed, the creditor wants the firm to get treatment. The type of treatment to administer depends on the nature of the cancer and biochemistry of the patient. A lot had been studied about Corporate Insolvency, symptoms, and predictions but there is no known investigation as to which of these symptoms predominantly drives corporate bodies into liquidation in a developing Economy. Cash Economies are akin to Developing Economies in all aspects. Nigeria is a study case of Cash and Developing Economy.

1.2 Statement of the Problem and Research Objective

There exist data base studies on causes of corporate insolvency (Ibiyemi 1999,ASIC. 2007 and NetMBA.com 2007). Indicators of Corporate insolvency have been documented by (Kugel 2008, Worrels 2009 and Crawler 2006) but there exist relatively few studies on indicators of Corporate Insolvency that is/are significantly critical in driving corporate bodies into bankruptcy, mainly in a developing economy. It is this identified gap that this research tends to fulfill. The specific objectives are to:

- i. Identify flow-based indicators of Corporate Insolvency,
- ii. Ascertain which of these indicators significantly drives corporate bodies operating in a developing economy into liquidation,
- iii. Identify critical significant Corporate Insolvency symptoms inherent in each industrial sectors of developing economies.

1.3 Research Hypotheses

In a bid to achieve the stated objectives, the following null hypotheses are formulated:

Ho₁: None of the Indicators of Corporate Insolvency is critically significant catalyzing corporate failures in a developing economy.

Ho₂: Across industrial sectors there is no insolvency symptom that is critically significant catalyzing business failures in Cash/developing economy.

1.4 Significance of Present Research

The significance of present research is to find among the asserted indicators of corporate insolvency, which of them or the combination of them that crystallizes and catalyzes a corporate body to corporate failure mainly in a Cash Economy. The outcome of the study will have both practical and managerial implications. It will be an added corporate, financial and managerial tool of business analysis and reporting especially for developing economies.

2. LITERATURE REVIEW

2.1 Conceptual Issues on Corporate Insolvency

A person or firm who cannot pay his/her debts as and when it falls due is said to be insolvent. Adetona (2000) wrote that for a business to be insolvent, is when it is unable to pay its debts as and when due or when the business assets are worth less than its liabilities. This definition highlights two concepts of insolvency namely; 'liquidity concept' and 'adequacy of assets' concept. Adegoke (2007) citing the work of Copeland (1979) defined Liquidity as ability of the firm to meet up with her maturing debt obligations. Professionally, it is measured by the ratio of what Current Assets bears to Current liabilities. A firm's immediate liquidity stand is measured by the ratio of what Current Assets less inventories bears to Current liabilities. Worrels (2009) opined that an insolvency manifestation is a gradual process and at times during this process there is no definite answer on whether a company is heading towards failure or not. Availability or non-availability of data for perceiving these events and trends are "indicators" of insolvency. In a cash economy, working capital is very vital. Brigham & Houston (2008) agreed to this assertion when they wrote that working capital represents the amount of money that the firm must obtain from non-free sources to carry its current operating. In a situation where the said company is unable to weather the financial storm/insolvency, liquidation sets in but where the company overcomes the financial storm, she is said to have suffered insolvency. According to Ojo (2008) quoting Section 409 of Nigerian Company and Allied Matters Act (as amended) provides that a company shall be deemed to be unable to pay its debts i.e. insolvent if:

- i. The Creditor, by assignment or order, to whom the company is indebted in a sum exceeding N2,000 (two thousand naira) when due has been served on the company, by leaving it as its registered office or head office, a demand under his hand requiring the company to pay the sum due and the company has for a period of three weeks thereafter neglected to pay the sum or to secure or to compound for it to the reasonable satisfaction of the creditor or;
- ii. Execution or other process issued on a judgment, decree or order of any court in favor of a creditor of the company is returned unsatisfied in whole or in part or;
- iii. The court, after taking into account any contingent or prospective liability of the company is satisfied that the company is unable to pay its debts.

2.2 Corporate Solvency Tests & Types of Corporate Insolvency

These tests deal on how and when to determine/predict that a corporate body is insolvent under different conceptions. Heaton (2007) identified common solvency tests that reduce most of the confusions in the diagnoses and determination of solvency or insolvency. These tests are best classified under the following:

Ability to Pay Solvency Test: In the words of Heaton (2007), the ability to pay solvency test asks if the firm can reasonably expect to pay its debts as they fall due. The ability to pay test is also called 'Cash flow solvency test'. Ability to pay solvency requires that the firm be able to match cash in a particular period with the amount of debt maturing in that period.

The Balance Sheet Solvency Test: The balance sheet solvency test seeks to affirm whether the firm's assets are greater than its liabilities as at a given date. If the answer is yes, then the firm is solvent, but if the answer is negative, the firm is insolvent. This test concerns with valuation of the firm. In applying balance sheet solvency test, one has to consider whether the firm is valued on-going-concern basis or on liquidation basis.

The Capital Adequacy Solvency Test: In this test practitioners are concerned with the effect of a 'transaction' on the 'capital' of the firm. If the effect leaves the firm with small capital, the firm is declared insolvent but if the said transaction has little or no reduction effect on the firm's capital, the firm is assumed solvent. Agarwal & Taffler, (2007) went a step further in agreement with Heaton (2007) tests by classifying insolvency into groups of;

- i. temporary vs. permanent/prolonged insolvency
- ii. net-worth vs. cash flow
- iii. institutional vs. general
- iv. balance sheet vs. off-balance sheet
- v. legal vs. technical and
- vi. stock-based vs. flow based.

i. Temporary vs. permanent/prolonged insolvency: Temporary Corporate insolvency manifests when a firm is experiencing cash squeeze for a very short period of time but possesses capacity to contain the shortage for that period of time. It is pro-longed corporate insolvency that may lead to liquidation.

ii. Net-Worth vs. Cash Flow: According to (Needles & Power 2008; Dambolena & Shulman 1988), Net worth represents what is left after all liabilities had been paid. It is sometimes said to be equal to 'Net Assets'. On this basis, a firm is said to be insolvent when the firm's liabilities exceeds its assets. Alternatively Cash flow stimulated insolvency; on the other hand represents the ability of a firm to meet up with her short obligations from existing current assets. In a situation where a firm's current liabilities exceed her current assets, the firm is said to be insolvent. According to Liao & Chen (2004) solvency ratio is a good computation of cash-flow solvency measurement. Solvency ratio is defined as the ratio of a firm's disposable cash to its net payment obligations in a period. They went further to state that when a firm's solvency ratio is less than one, it will fail to fulfill its payment obligation and will enter into a situation of corporate failure.

iii. Balance sheet vs. off-balance sheet: George (2008) opined that Balance sheet insolvency is created when the debtor's liabilities exceed its assets, while off-balance sheet inspired insolvency are macroeconomic events that impacts negatively on the activities of firm which though material are not recorded inside the balance sheet as a result of their nature.

iv. Institutional vs. general: Institutional insolvency refers to adjudicating a firm to be insolvent because it did not meet up with institutional or industrial solvency requirements. General insolvency criterion is based on all available solvency requirements.

v. Legal vs. technical: When the actions and events of corporate body can be adjudicated by court of law before it can be declared insolvent, then it is called legal insolvency. On the other hand, where a corporate body's financial statements shows that it cannot pay her current liabilities but there is no pending litigations to that effect, this type of insolvency is called technical insolvency.

vi. Stock-based vs. flow based: A firm is confirmed distressed, i.e. insolvent if the firm's stock price loses 95% of its market value within two years (Beneda2007). Parners (2009) in developing a model for prediction of corporate bankruptcy asserted that Economic downturn increase the likelihood of a levered firm being unable to service its debt. Firms that are sensitive to market-wide input are more likely to experience an intense impact from global economic depression. Flow-based insolvency is not related to effects of stock prices on the firm but on availability of funds to offset the firm's immediate maturing liability. Flow-based insolvency occurs when operating cash flow is insufficient to meet current obligations. This means that Flow-based insolvency refers to the inability to pay one's debts.

2.3 Macroeconomic Indicators of Insolvency

Kloster and Jacobsen (2005) carried out a research on what influences the number of bankruptcies in Norwegian enterprises. Their study concentrated on external influence (macroeconomic variables) that influences bankruptcies or prevents firms from becoming bankrupt. The cut-off period of the research is 1991 to 2004. They came out with the following macroeconomic indicators of insolvency;

- a. An enterprise would be bankrupt if the Firm's price of manufactured goods is such that the sum of the enterprise's profit and equity in that period was negative. Conversely, higher demand will generally boost an enterprise's earnings through increased sales and/or higher pricing of sales goods.
- b. Higher interest rates will raise the enterprise's debt servicing costs. At the same time, higher interest rates reduce the value enterprise through a lower present value of future earnings. Higher interest rates will therefore result in a higher probability of bankruptcy and increases in debt, increases the probability of bankruptcy.
- c. Decline in foreign demand. The probability of bankruptcy will increase if foreign demand for the home country's products declines.
- d. Firms operating in internationally exposed markets have a higher probability of becoming bankrupt, if their competitiveness in relation to foreign companies is low. A number of factors influence enterprise's competitiveness such as domestic factor price, rate of exchange and labor costs.
- e. Use of collaterals. Where it is the practice for enterprise to use commercial property as collateral for loans then such loans will normally be extended at a lower interest rates than other loans with weaker or no collaterals.
- f. Changes in inflation. There is higher propensity to experience reduction in earnings when there is increasing inflation as increases in sales may not match up with increasing cost of production inputs. This, apart from inflation, induces deterioration in value of fixed assets of a firm with increasing costs of replacements and reduced collateral value for loans.

Worrels (2012) in addition to the above listed many other internal indicators of corporate insolvency. An author in theadvicepot.com (2012), differed with Worells (2012) in the areas of classifications of indicators of corporate insolvency, as propounded that indicators of insolvency are better categorized into 'internal and external' depending on what caused the manifestations of insolvency in the affairs of the Corporate firm. Continuing, the author in theadvicepot.com (2012) asserted that external causes of insolvency arise outside the business itself and may be due to general economic conditions, industry-wide factors, exchange rates fluctuations, obsolescence, changes to the law, terrorists' acts and natural threats. Internal causes of insolvency are within the control of management.

2.4 Flow Based Indicators of Corporate Insolvency

The causes of Corporate Insolvency are many and varied. Those indicators that are apparent from published financial statements of corporate bodies are referred to as 'flow-based' indicators of Corporate Insolvency. Altman (1968) came out with two forms of insolvency namely; Stock-based insolvency and Flow-based insolvency. The stock-based insolvency occurs when a firm has negative net worth. In this case, the firm's assets are less than the value of its debts while Flow-based insolvency occurs when operating cash flow is insufficient to meet current obligations. This means that Flow-based insolvency refers to the inability to pay one's debts whether there is sufficient assets or not. Flow-based insolvency occurs when operating cash flow is insufficient to meet current obligations. This means that Flow-based insolvency refers to the inability to pay one's debts as inferred from the variables of the enterprise's financial statements. Flow-based indicators will include measurement of;

- Current ratio
- Quick ratio
- Cash flow to Total Debt ratio
- Earnings before interest and Taxes bears to Total assets
- Net working capital bears to Total Assets
- Sales to Total Assets
- Market Value of Equity to Book Value of debt
- Accumulated retained earnings to Total assets.

The assertions of Kloster and Jacobsen (2005) and Worrels (2012) notwithstanding, causes of corporate insolvency had also been written extensively by Ibiyemi (1999) and NetMBA.Com (2007).

2.5 Review of Critical Insolvency Symptoms in Cash Economy

Indicators of business failures may differ from economy, Level of economy and Country to another. Ahmad and Seet (2009) is of the view that there exist significant reasons why causes of business failure were given more emphasis in one country than the other. There also exist differences of conceptualization of Corporate Insolvency, Bankruptcy and Liquidation from one country to another. Carter (2011) did a brief exploratory study on the differences between 'Insolvency' and 'Bankruptcy'. According to him insolvency might just be a temporary situation but bankruptcy is final state of a going concern going off into oblivion. Peterson (2012) while agreeing with Carter (2011) went further to add that the concepts of insolvency, bankruptcy and liquidation are used both for financial and legal fields. In certain countries (Britain and Nigeria), bankruptcy is applied to individual and insolvency to businesses but in US the term bankruptcy applies to both individuals and corporate entities. Apart from application of these terms in different countries, their conceptualizations also differ. The research works of (Shultz 1995 and Franks et al.1996) highlighted these differences. According to them, countries such as the US the insolvency laws are debtor oriented. Corporate bankruptcy in the US procedures encourages companies in financial difficulty to continue as going concerns. Therefore it is possible for companies that file for bankruptcy to reorganize and emerge from bankruptcy, or to merge with another entity as a going concern. In a debtor oriented bankruptcy concept, it is the Company (debtor) that acknowledges insolvency and files for adjudication of such from a competent court of law. It is a protective measure taken by the debtor entity against further use of her resources aimed at ensuring that her creditors are paid according to available resources or in full after a successful reorganization. This is in contrast to the insolvency procedures in creditors' oriented countries such as the UK, Germany, Australia and Nigeria. In addition to the above facts, Nigeria is different because it operates a cash economy.

Olaniyi (2006) examined bankruptcy prediction through financial strength analysis, a case study of Trade Bank Plc and asserted that apart from profitability ratios, performance evaluation ratios, and liquidity ratios, the outcomes of Z-Score prediction is a good indicator of bankruptcy region useful for adjudging the financial healthiness of a corporate body. The relevance of this study is that it was not only conducted in Nigerian Cash Economy but it also added to the repository of knowledge by asserting that Z-Score prediction is a good indicator of the state of financial health of the bank, three years before it failed.

Enyi (2005) conducted a research in order to pin-point probable hidden deficiencies in the existing working capital management tools vis-à-vis the current, liquidity, capital adequacy and capital gearing ratios, which have so far culminated in their seeming failure to foresee financial problem spots of an enterprise. The study particularly focused on the need to develop and proffer a lasting solution or remedy. It is also undertaken among others, to investigate into what causes insolvency and business failure generally and to establish whether there is a relationship between organizational capital and the life span of a business enterprise.

Arati (2011) conducted an empirical study on the causes of business failure in Iran. The research's conclusion affirmed that most entrepreneurship studies of business failure causes have been carried out in western countries (developed countries).

3 RESEARCH METHODS

3.1. Study Area and sources of data

This study is focused on corporate bodies operating in Nigeria, an example of countries that operate 'cash' economy. Nigeria is ranked as Developing Economy by the World Trade Organization. The data for this study were drawn from secondary sources. Published financial statements of corporate bodies over a twenty year period ending 31st December 2010 were analyzed.

3.2 Sampling frame

The study adopted stratified sampling method. Evidence from records at the Nigerian Corporate Affairs showed that from 1990 to 2010, Fifty- nine (59,000) thousand companies were liquidated, delisted and/or are under administration. List of these corporate bodies were obtained from Corporate Affairs Commission and the Nigerian Stock Exchange. As at 31st December 2010, the number of going concern companies stood at; 837,095 (eight hundred and thirty seven thousand, and ninety-five). Both liquidated and going concern companies were stratified by names ranging from A to Z. Randomly fifty companies were generated from each class of alphabet giving total of one thousand and eight hundred (1,800) entities as the study theoretical population (i.e. a population, the study would like to generalize to). Out of the theoretical population, it was found that nine hundred and thirty companies (930) have

one or combination of corporate insolvency symptoms, hence research accessible population (i.e. population available to the study). These insolvency indicators are;

- i. Negative Working Capital
- ii. Negative Net Worth
- iii. Negative Retained Earnings
- iv. Z-Score Confirmation results
- v. Negative Operating Cash flow results
- vi. Negative Earnings before Interest and Tax
- vii. Current Ratio below 2:1
- viii. Acid Test Ratio below 1
- ix. Acid Test Ratio below 1
- x. Divestments and closures of part or section of the Firm's operations
- xi. Under administration, refinancing and/or restructuring
- xii. Companies that have recently metamorphosed from Public Limited Company to Private Liability Company.

The manifestation of any of the above symptoms is not final and conclusive of corporate failure. The manifestation of any symptom does not exclude the manifestation of any other listed indicator in any financial statement.

3.3 Sample Size Determination

Having identified the research assessable population to be made up of 930, Banking and Financial industry was excluded for information sensitivity and ongoing consolidation exercise in the sector. Other industries excluded as a result of capital adequacy and other special requirements are Mining, Shipping, Oil Explorations and Ammunitions. The industries we concentrated on for simplicity of financial statements and lack of capital adequacy requirements were:

- i. Agriculture
- ii. Service Industry
- iii. Transport and Aviation (Nigerian based)
- iv. Oil Services
- v. Merchandising and
- vi. Manufacturing

The use of jackknife exclusions resulted into generating concerned population to 906 (nine hundred and six

corporate bodies). Applying Cochran (1963) equation;

$$n = \frac{n_0}{1 + \frac{n_0 - 1}{N}}$$

Where;

n = required sample size

n_0 = concerned (valid) sample size

N = Population size.

Substituting, the study determined a sample size thus; $n = \frac{906}{1 + \frac{906 - 1}{1800}} = 600$

Hence six hundred (600) corporate bodies were selected. Two consecutive years' financial statements from each of the companies were selected for analyses. Two consecutive years were selected in order to give ample time for investigative ascertainment of whether sampled companies failed or survived after manifestations of corporate insolvency symptoms knowing that insolvency management takes more than a year from date of detection to date of strategic decision of restructuring or liquidation. This in effect increased the sample size to one thousand two hundred (1,200) in terms of financial statements sampled. Out of this sample, 780 financial statements were of those that had been liquidated and 420 were from those still in operation.

3.4 Techniques of Data Analysis and Validation

SPSS statistical based software is used. All results are measured at 5% significant level. Logit Analysis was employed in testing of the hypotheses. In order to make apparent the effect of all the symptoms on each of the

sectors, dummies were created for both symptoms and sectors. These dummies are necessary requirement with loglinear analyses of Parameter Estimates. The use of percentages was employed for further analysis.

4. DATA PRESENTATION, ANALYSIS AND DISCUSSIONS OF RESULTS

4.1 Presentation of Data

Table 4.1: Insolvency symptoms and volatility of corporate failures

Symptoms	Frequency and Effect of the symptom on Status of Company	
	Failed	Going Concern
Negative Working Capital	570	410
Negative Net Worth	180	166
Negative Retained Earnings	508	174
Z-Score Confirmation results	620	390
Negative Operating Cash flow results	634	406
Negative Earnings before Interest and Tax	532	317
Current Ratio below 2:1	412	388
Acid Test Ratio below 1	326	379
Nil Sales and Redundancy	27	17
Divestments and closures of part or section of the Firm's operations	20	130
Under administration, refinancing and/or restructuring	42	16
Companies that have recently metamorphosed from Public Limited Company to Private Liability Company.	16	25

Sources: Analyses of 600 sampled companies.

Table 4.2: Effects of Insolvency symptoms on Industrial Sectors

Symptoms	Sectors	Frequency and Effect of the symptom on Status of Company	
		Failed Number	Going Concern Number
Negative Working Capital	Agriculture	50	114
	General Services	71	97
	Transport & Aviation	60	11
	Oil Services	111	31
	Merchandising	189	107
	Manufacturing	89	50
Negative Net Worth	Agriculture	15	18
	General Services	12	35
	Transport & Aviation	51	45
	Oil Services	42	12
	Merchandising	21	36
	Manufacturing	39	20
Negative Retained Earnings	Agriculture	76	32
	General Services	12	42
	Transport & Aviation	24	19
	Oil Services	162	26
	Merchandising	43	34
	Manufacturing	191	21

Table 4.2 continues

Z-Score Confirmation results	Agriculture	126	38
	General Services	36	56
	Transport & Aviation	44	61
	Oil Services	97	46
	Merchandising	49	82
Negative Operating Cash flow results	Manufacturing	268	107
	Agriculture	60	122
	General Services	161	32
	Transport & Aviation	107	16
	Oil Services	145	52
	Merchandising	112	44
Negative Earnings before Interest and Tax	Manufacturing	49	140
	Agriculture	91	87
	General Services	131	43
	Transport & Aviation	48	67
	Oil Services	41	53
	Merchandising	177	45
Current Ratio below 2:1	Manufacturing	44	22
	Agriculture	56	51
	General Services	59	62
	Transport & Aviation	71	74
	Oil Services	52	56
	Merchandising	81	87
Acid Test Ratio below 1	Manufacturing	93	58
	Agriculture	24	50
	General Services	61	60
	Transport & Aviation	63	72
	Oil Services	49	54
	Merchandising	70	85
Nil Sales and Redundancy	Manufacturing	59	58
	Agriculture	5	1
	General Services	2	6
	Transport & Aviation	5	1
	Oil Services	3	2
	Merchandising	8	6
Divestments and closures of part or section of the Firm' operations	Manufacturing	4	2
	Agriculture	2	10
	General Services	1	11
	Transport & Aviation	4	15
	Oil Services	3	21
	Merchandising	5	16
Under administration, refinancing and/or restructuring	Manufacturing	5	57
	Agriculture	1	3
	General Services	3	1
	Transport & Aviation	7	1
	Oil Services	11	2
	Merchandising	9	2
Companies that have recently metamorphosed from Public Limited Company to Private Liability Company.	Manufacturing	11	7
	Agriculture	2	4
	General Services	3	5
	Transport & Aviation	2	1
	Oil Services	4	3
	Merchandising	2	3
	Manufacturing	3	9

Sources: Industrial analysis of sampled 600 companies.

4.2 Test of hypothesis one

Hypothesis one (HO₁): States that none of the indicators of Corporate Insolvency is critically significant in catalyzing business failures in developing economy. To test this hypothesis, the data in table 4.1 is employed and analyzed with loglinear statistics. The relevant aspect of the results is the Parameter Estimates which identifies the significance level of each insolvency symptoms on corporate failures. The result of the analysis is shown in table 4.3.

Table 4.3: Parameter Estimates of insolvency symptoms on corporate failures.

Parameter	Estimate	Std. Error	Z	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
[Effect = 0=Failure]	-3.090E-17	.199	.000	1.000	-.390	.390
[Effect = 1=Going Concern]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 1]	.329	.209	1.573	.116	-.081	.739
[Effect = 0] * [Symptoms = 2]	.081	.226	.357	.721	-.363	.524
[Effect = 0] * [Symptoms = 3]	1.070	.217	4.918	.000	.643	1.496
[Effect = 0] * [Symptoms = 4]	.463	.209	2.213	.027	.053	.873
[Effect = 0] * [Symptoms = 5]	.445	.209	2.131	.033	.036	.855
[Effect = 0] * [Symptoms = 6]	.517	.211	2.448	.014	.103	.931
[Effect = 0] * [Symptoms = 7]	.060	.211	.284	.777	-.354	.474
[Effect = 0] * [Symptoms = 8]	-.150	.213	-.707	.480	-.568	.267
[Effect = 0] * [Symptoms = 9]	.452	.365	1.239	.215	-.263	1.167
[Effect = 0] * [Symptoms = 10]	-1.851	.310	-5.973	.000	-2.458	-1.244
[Effect = 0] * [Symptoms = 11]	.946	.352	2.690	.007	.257	1.636
[Effect = 0] * [Symptoms = 12]	-.435	.373	-1.166	.244	-1.167	.297
[Effect = 0] * [Symptoms = 13]	0 ^b	.	.	.	.	.

a. Constants are not parameters under the multinomial assumption. Therefore, their standard errors are not calculated.

b. This parameter is set to zero because it is redundant.

4.3 Analysis and Discussion of Hypothesis one Result

Having taken significance level as 0.05, the result as shown by table 4.3 indicates the order of level of significance of the depicted symptoms on corporate failures, putting into consideration their Z-values. Positive Z-Values means that their level of significance is induced by Failed Status while negative Z-Values means that the stated level of significance is induced by Going Concern frequency. In conclusion, the results from table 4.3 showed the following symptoms as being critically significant symptoms catalyzing corporate failures in developing economies;

1. Negative Retained Earnings (Z-value = 4.918), significance level 0.0001
2. Under administration, Refinancing and/or Restructuring (Z-value = 2.690), significance level 0.007
3. Negative Retained Earnings before Interest and Tax (Z-value = 2.448), significance level 0.014
4. Z-Score Confirmation Results (Z-value = 2.213), significance level 0.027
5. Negative Operating Cash Flow (Z-value = 2.131), significance level 0.033

The analyses of the result of hypothesis one test thus leads to the rejection of the hypothesis which states that none of the indicators of Corporate Insolvency is critically significant, catalyzing business failures in developing economy. A further analysis of the outcome using percentages as shown in table 4.4 clearly indicates that Negative Retained Earnings ranked first symptom that is critically catalyzing corporate failures in developing economies. The result showed that 74.5% of the sampled companies that had this symptom failed though it contributed to a total failure of 16% of all the sampled companies. Indicator of corporate insolvency of 'Under administration, Refinancing and/or

Restructuring, although contributed to a total failure of 1.1% because of the number sampled but it ranked second of symptoms that are critically catalyzing corporate failures as it had 72.4% of the sampled corporate bodies resulting into failure. The third and fourth symptoms are Negative Earnings before Interest and Tax, and Z-Score Confirmation results with 62.7% and 61.4% respectively. The least significant symptom which is Negative Operating Cash Flow results showed that 61% of the sampled companies where it exists failed.

Table 4.4: Symptoms of Insolvency * Effect of Symptom Cross-tabulation

			Effect of Symptom		Total
			Failed	Going Concern	
Symptoms of Insolvency	Negative Working Capital	Count	570	410	980
		% within Symptoms of Insolvency	58.2%	41.8%	100.0%
		% within Effect of Symptom	14.7%	14.5%	14.6%
	Negative Net Worth	Count	180	166	346
		% within Symptoms of Insolvency	52.0%	48.0%	100.0%
		% within Effect of Symptom	4.6%	5.9%	5.2%
	Negative Retained Earnings	Count	508	174	682
		% within Symptoms of Insolvency	74.5%	25.5%	100.0%
		% within Effect of Symptom	13.1%	6.2%	10.2%
	Z-Score Confirmation results	Count	620	390	1010
		% within Symptoms of Insolvency	61.4%	38.6%	100.0%
		% within Effect of Symptom	16.0%	13.8%	15.1%
	Negative Operating Cash flow results	Count	634	406	1040
		% within Symptoms of Insolvency	61.0%	39.0%	100.0%
		% within Effect of Symptom	16.3%	14.4%	15.5%
	Negative Earnings before Interest and Tax	Count	532	317	849
		% within Symptoms of Insolvency	62.7%	37.3%	100.0%
		% within Effect of Symptom	13.7%	11.2%	12.7%
	Current Ratio below 2:1	Count	412	388	800
		% within Symptoms of Insolvency	51.5%	48.5%	100.0%
		% within Effect of Symptom	10.6%	13.8%	11.9%

Table 4.4 continues

Acid Test Ratio below 1	Count	326	379	705
	% within Symptoms of Insolvency	46.2%	53.8%	100.0%
	% within Effect of Symptom	8.4%	13.4%	10.5%
Nil Sales and Redundancy	Count	27	17	44
	% within Symptoms of Insolvency	61.4%	38.6%	100.0%
	% within Effect of Symptom	.7%	.6%	.7%
Divestments and closures of part or section of the Firm's operations	Count	20	130	150
	% within Symptoms of Insolvency	13.3%	86.7%	100.0%
	% within Effect of Symptom	.5%	4.6%	2.2%
Under administration, refinancing and/or restructuring	Count	42	16	58
	% within Symptoms of Insolvency	72.4%	27.6%	100.0%
	% within Effect of Symptom	1.1%	.6%	.9%
Companies that have recently metamorphosed from Public Limited Company to Private Liability Company.	Count	16	25	41
	% within Symptoms of Insolvency	39.0%	61.0%	100.0%
	% within Effect of Symptom	.4%	.9%	.6%
Total	Count	3887	2818	6705
	% within Symptoms of Insolvency	58.0%	42.0%	100.0%
	% within Effect of Symptom	100.0%	100.0%	100.0%

4.4 Test of hypothesis Two

Hypothesis two states that across industrial sectors, there is no insolvency symptom that is critically significant catalyzing business failures in Cash/developing Economy. To test this hypothesis, using Logit the data from table 4.2 is employed. The Failure effect is depicted 0 while Going Concern effect is depicted 1. The symptoms and Sectors are numbered in the order of their appearance as seen in table 4.2. The result of the analysis is as seen in table 4.5.

Table 4.5: Parameter Estimates of Symptoms and its effect on Industrial Sectors

Parameter	Estimate	Std. Error	Z	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
[Effect = 0] * [Symptoms = 1] * [Sector = 1]	-.819	.384	-2.133	.033	-1.571	-.066
[Effect = 0] * [Symptoms = 1] * [Sector = 2]	-.310	.378	-.820	.412	-1.051	.431
[Effect = 0] * [Symptoms = 1] * [Sector = 3]	1.660	.471	3.521	.000	.736	2.584
[Effect = 0] * [Symptoms = 1] * [Sector = 4]	1.264	.399	3.165	.002	.481	2.047
[Effect = 0] * [Symptoms = 1] * [Sector = 5]	.567	.365	1.552	.121	-.149	1.283
[Effect = 0] * [Symptoms = 1] * [Sector = 6]	.572	.387	1.479	.139	-.186	1.331
[Effect = 0] * [Symptoms = 1] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 2] * [Sector = 1]	-.177	.487	-.363	.716	-1.132	.778
[Effect = 0] * [Symptoms = 2] * [Sector = 2]	-1.044	.476	-2.191	.028	-1.978	-.110
[Effect = 0] * [Symptoms = 2] * [Sector = 3]	.124	.400	.309	.757	-.661	.908
[Effect = 0] * [Symptoms = 2] * [Sector = 4]	1.224	.472	2.595	.009	.300	2.148
[Effect = 0] * [Symptoms = 2] * [Sector = 5]	-.529	.439	-1.206	.228	-1.390	.331
[Effect = 0] * [Symptoms = 2] * [Sector = 6]	.656	.439	1.493	.135	-.205	1.517
[Effect = 0] * [Symptoms = 2] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 3] * [Sector = 1]	.856	.403	2.123	.034	.066	1.647
[Effect = 0] * [Symptoms = 3] * [Sector = 2]	-1.224	.472	-2.595	.009	-2.148	-.300
[Effect = 0] * [Symptoms = 3] * [Sector = 3]	.228	.459	.497	.619	-.672	1.128
[Effect = 0] * [Symptoms = 3] * [Sector = 4]	1.814	.403	4.496	.000	1.023	2.604
[Effect = 0] * [Symptoms = 3] * [Sector = 5]	.232	.413	.561	.575	-.578	1.042
[Effect = 0] * [Symptoms = 3] * [Sector = 6]	2.187	.413	5.295	.000	1.377	2.996
[Effect = 0] * [Symptoms = 3] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 4] * [Sector = 1]	1.190	.391	3.044	.002	.424	1.955
[Effect = 0] * [Symptoms = 4] * [Sector = 2]	-.437	.405	-1.079	.280	-1.230	.357
[Effect = 0] * [Symptoms = 4] * [Sector = 3]	-.324	.397	-.815	.415	-1.101	.454
[Effect = 0] * [Symptoms = 4] * [Sector = 4]	.740	.388	1.908	.056	-.020	1.501
[Effect = 0] * [Symptoms = 4] * [Sector = 5]	-.511	.389	-1.314	.189	-1.273	.251
[Effect = 0] * [Symptoms = 4] * [Sector = 6]	.915	.363	2.521	.012	.204	1.627
[Effect = 0] * [Symptoms = 4] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 5] * [Sector = 1]	-.705	.379	-1.862	.063	-1.448	.037
[Effect = 0] * [Symptoms = 5] * [Sector = 2]	1.603	.395	4.062	.000	.830	2.377
[Effect = 0] * [Symptoms = 5] * [Sector = 3]	1.874	.434	4.314	.000	1.023	2.726
[Effect = 0] * [Symptoms = 5] * [Sector = 4]	1.019	.380	2.679	.007	.274	1.765
[Effect = 0] * [Symptoms = 5] * [Sector = 5]	.927	.388	2.393	.017	.168	1.687
[Effect = 0] * [Symptoms = 5] * [Sector = 6]	-1.043	.382	-2.729	.006	-1.792	-.294
[Effect = 0] * [Symptoms = 5] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 6] * [Sector = 1]	.045	.376	.119	.905	-.692	.781
[Effect = 0] * [Symptoms = 6] * [Sector = 2]	1.106	.387	2.862	.004	.349	1.864
[Effect = 0] * [Symptoms = 6] * [Sector = 3]	-.331	.393	-.842	.400	-1.100	.439
[Effect = 0] * [Symptoms = 6] * [Sector = 4]	-.254	.402	-.632	.528	-1.042	.534
[Effect = 0] * [Symptoms = 6] * [Sector = 5]	1.361	.383	3.557	.000	.611	2.111
[Effect = 0] * [Symptoms = 6] * [Sector = 6]	.682	.431	1.582	.114	-.163	1.527

Table 4.5 continues

[Effect = 0] * [Symptoms = 6] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 7] * [Sector = 1]	.093	.395	.235	.814	-.681	.867
[Effect = 0] * [Symptoms = 7] * [Sector = 2]	-.049	.389	-.126	.899	-.812	.714
[Effect = 0] * [Symptoms = 7] * [Sector = 3]	-.041	.382	-.107	.914	-.791	.708
[Effect = 0] * [Symptoms = 7] * [Sector = 4]	-.073	.394	-.186	.852	-.846	.700
[Effect = 0] * [Symptoms = 7] * [Sector = 5]	-.071	.378	-.188	.851	-.811	.669
[Effect = 0] * [Symptoms = 7] * [Sector = 6]	.469	.383	1.225	.221	-.282	1.219
[Effect = 0] * [Symptoms = 7] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 8] * [Sector = 1]	-.723	.424	-1.708	.088	-1.554	.107
[Effect = 0] * [Symptoms = 8] * [Sector = 2]	.016	.389	.042	.966	-.747	.780
[Effect = 0] * [Symptoms = 8] * [Sector = 3]	-.133	.385	-.344	.731	-.887	.622
[Effect = 0] * [Symptoms = 8] * [Sector = 4]	-.096	.397	-.243	.808	-.874	.681
[Effect = 0] * [Symptoms = 8] * [Sector = 5]	-.193	.380	-.507	.612	-.938	.553
[Effect = 0] * [Symptoms = 8] * [Sector = 6]	.017	.391	.043	.965	-.749	.783
[Effect = 0] * [Symptoms = 8] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 9] * [Sector = 1]	1.299	.984	1.321	.186	-.628	3.227
[Effect = 0] * [Symptoms = 9] * [Sector = 2]	-.956	.820	-1.165	.244	-2.563	.652
[Effect = 0] * [Symptoms = 9] * [Sector = 3]	1.299	.984	1.321	.186	-.628	3.227
[Effect = 0] * [Symptoms = 9] * [Sector = 4]	.336	.897	.375	.708	-1.422	2.094
[Effect = 0] * [Symptoms = 9] * [Sector = 5]	.268	.625	.429	.668	-.956	1.493
[Effect = 0] * [Symptoms = 9] * [Sector = 6]	.588	.861	.683	.495	-1.099	2.275
[Effect = 0] * [Symptoms = 9] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 10] * [Sector = 1]	-1.435	.784	-1.831	.067	-2.971	.101
[Effect = 0] * [Symptoms = 10] * [Sector = 2]	-2.037	.934	-2.181	.029	-3.868	-.206
[Effect = 0] * [Symptoms = 10] * [Sector = 3]	-1.237	.637	-1.942	.052	-2.485	.011
[Effect = 0] * [Symptoms = 10] * [Sector = 4]	-1.815	.672	-2.703	.007	-3.132	-.499
[Effect = 0] * [Symptoms = 10] * [Sector = 5]	-1.099	.601	-1.828	.068	-2.277	.079
[Effect = 0] * [Symptoms = 10] * [Sector = 6]	-2.347	.564	-4.162	.000	-3.452	-1.242
[Effect = 0] * [Symptoms = 10] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 11] * [Sector = 1]	-.847	1.035	-.819	.413	-2.876	1.181
[Effect = 0] * [Symptoms = 11] * [Sector = 2]	.847	1.035	.819	.413	-1.181	2.876
[Effect = 0] * [Symptoms = 11] * [Sector = 3]	1.609	.959	1.679	.093	-.269	3.488
[Effect = 0] * [Symptoms = 11] * [Sector = 4]	1.526	.778	1.961	.050	.001	3.052
[Effect = 0] * [Symptoms = 11] * [Sector = 5]	1.335	.790	1.690	.091	-.213	2.883
[Effect = 0] * [Symptoms = 11] * [Sector = 6]	.427	.582	.734	.463	-.714	1.569
[Effect = 0] * [Symptoms = 11] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 0] * [Symptoms = 12] * [Sector = 1]	-5.203	1.649	-3.154	.002	-8.436	-1.970
[Effect = 0] * [Symptoms = 12] * [Sector = 2]	-5.067	1.602	-3.163	.002	-8.207	-1.927
[Effect = 0] * [Symptoms = 12] * [Sector = 3]	-4.104	1.779	-2.307	.021	-7.591	-.617
[Effect = 0] * [Symptoms = 12] * [Sector = 4]	-4.364	1.614	-2.703	.007	-7.528	-1.200
[Effect = 0] * [Symptoms = 12] * [Sector = 5]	-4.952	1.669	-2.968	.003	-8.222	-1.681
[Effect = 0] * [Symptoms = 12] * [Sector = 6]	-5.614	1.578	-3.558	.000	-8.706	-2.521
[Effect = 0] * [Symptoms = 12] * [Sector = 7]	0 ^b	.	.	.	.	.
[Effect = 1] * [Symptoms =] * [Sectors]	0 ^b	.	.	.	.	.

- a. Constants are not parameters under the multinomial assumption. Therefore, their standard errors are not calculated.
- b. This parameter is set to zero because it is redundant.

4.5 Analysis and Discussion of Hypothesis two Result

The results as shown in table 4.5 captured the following symptoms as being significant at the under mentioned levels and for stated sectors as follows:

i. **Negative Working Capital is significant symptom catalyzing corporate failures in developing economies for the following Industrial Sectors;**

- a. Transport & Aviation (Z-value of 3.521) at 0.0001 significant levels.
- b. Oil Services (Z- value of 3.165) at 0.002 significant levels.

ii. **Negative Net Worth symptom**

- a. Oil Services (Z-value of 2.595) at 0.009 significant levels.

iii. **Negative Retained Earnings**

- a. Agriculture (Z-value of 2.123) at 0.034 significant levels.
- b. Oil Services (Z-value of 4.496) at 0.0001 significant levels.
- c. Manufacturing (Z-value of 5.295) at 0.0001 significant levels.

iv. **Z-Score Confirmation Results**

- a. Agriculture (Z-value of 3.044) at 0.002 significant levels.
- b. Manufacturing (Z-value of 2.521) at 0.012 significant levels.

v. **Negative Operating Cash Flow Results**

- a. General Services (Z-value of 4.062) at 0.0001 significant levels.
- b. Transport & Aviation (Z-value of 4.314) at 0.0001 significant levels.
- c. Oil Services (Z-value of 2.679) at 0.007 significant levels.
- d. Merchandising (Z-value of 2.393) at 0.017 significant levels.

vi. **Negative Earnings before Interest and Tax**

- a. General Services (Z-Value of 2.886) at 0.004 significant levels.
- b. Merchandising (Z-Value of 3.557) at 0.0001 significant levels.

vii. **Under Administration, Refinancing and/or Restructuring**

- a. Oil Services (Z-value of 1.961) at 0.05 significant levels.

The outcome of the result of test of null hypothesis which states that across industrial sectors, there is no insolvency symptom that is critically significant catalyzing business failures in cash/developing economy is hereby rejected.

5. FINDINGS

Corporate Insolvency symptoms catalyzing corporate failures in developing economics that are critically significant as found by the study are;

- i. Negative Retained Earnings
- ii. Under administration, refinancing and/or restructuring.
- iii. Negative Retained Earnings before Interest and Tax
- iv. Z-Score confirmation results and
- v. Negative Operating Cash Flow.

The following symptoms were found to be none critically significant insolvency symptom catalyzing corporate failures in developing economies individually and across industrial sectors;

- a. Current ratio below 2:1

- b. Acid Test Ratio below 1:1
- c. Nil Sales and Redundancy
- d. Divestments and Closures of part or section of Firm's Operations
- e. Companies that recently metamorphosed from Public Limited Companies to Private Limited Companies.

It was also found that certain insolvency symptoms are more manifest in catalyzing corporate failures in some Industrial Sectors than others. Negative Operating Cash flow results was found to be a critical symptom catalyzing corporate failures in developing economies in four out of the sampled six industrial sectors, followed by Negative Retained Earnings which was found significant in three out of the sampled six sectors. The third most critical significant insolvency symptom catalyzing corporate failures were Z-Score confirmation results, Negative Working Capital and Negative Earnings before Interest and Tax.

Oil Services industrial sector was found to be the most susceptible to flow-based corporate insolvency symptoms. It is apparently found to be present in five out of the six significant corporate insolvency symptoms catalyzing corporate failures in developing economies.

6. CONCLUSION AND RECOMMENDATION

There exist many corporate insolvency symptoms globally that is affecting business entities. This study concentrated on flow-based insolvency symptoms. This type of symptoms is found in the financial statements of corporate bodies. Out of twelve sampled flow-based insolvency symptoms, five were found to be critically significant catalyzing corporate failures in developing economies. Across industrial sectors, Negative Operating Cash which was least among the five significant indicators of insolvency was found critically significant catalyzing corporate failures in developing economies in four sectors.

It is recommended that acclaimed insolvency indicator called Z-score be used in analyzing corporate insolvency in developing economies for Agricultural and Manufacturing sectors; Operating Cash- Flow model is recommended for use in the industrial sectors of General Services, Transport & Aviation, Oil Services and Merchandising.

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