

Performance Evaluation of Selected Ceramic Companies of Bangladesh

*Abdullah Al Masum*¹, *Fatema-Tuz-Johora*²

¹ Faculty of Business, ASA University Bangladesh

² Faculty of Business, East West University Bangladesh

ABSTRACT

This paper applies performance evaluation of ceramic industry of Bangladesh and to test its financial soundness. The main aim is achieved through ratio analysis of four selected ceramic (Fu Wang, Monno, Shinepukur and Standard) companies in Bangladesh. Measurement of financial performance by ratio analysis helps identify organizational strengths and weaknesses by detecting financial anomalies and focusing attention on issues of organizational importance. The financial performance of this industry is measured in terms of profitability, solvency, efficiency and liquidity analysis and to test the financial soundness, Multivariate Discriminate Analysis (MDA) is used, which was developed by Prof. Altman. The study covers four public sector ceramic companies listed on Dhaka Stock Exchange. The study has been undertaken for the period of five years from 2006-7 to 2010-2011 and the necessary data has been obtained from the audited annual report of the selected companies. The liquidity position was very weak in all the cases of the selected companies and thereby reflecting the difficulties in paying short-term obligation on due date. Financial stability of the selected companies has shown an upward trend. This study will help investors to identify the nature of financial performance of the ceramic industry of Bangladesh and will also help to take investment decision.

Keywords : Ratio Analysis, Financial Distress, Altman Z Score, MDA, Bankruptcy.

JEL Classification Code: M00; M13

1 INTRODUCTION

CERAMIC industry of Bangladesh is a booming sector and the growth potential of both domestic and foreign market indicates it may become one of the big foreign currency earners for the country. Now it's time to measure and analyze the performance of this industry. But such kind analysis has not been done on this ceramic sector before. So, in this gap of analysis we have tried to evaluate and interpret the performance of the selected four ceramic companies for the period of 2006-7 to 2010-2011. Performance evaluation of a company is usually related to how well a company can use its assets, share holder equity and liability, revenue and expenses. Financial ratio analysis is one of the best tools of performance evaluation of any company. In order to determine the financial position of the ceramic company's and to make a judgment of how well the ceramic company's efficiency, its operation and management and how well the company has been able to utilize its assets and earn profit. We used ratio analysis for easily measurement of liquidity position, asset management condition, profitability and market value and debt coverage situation of the ceramic company's for performance evaluation. It analysis the company use of its assets and control of its expenses. It determines the greater the coverage of liquid assets to short-term liabilities and it also compute ability to pay ceramic companies short-term and long-term payments obligation from the cash generate. It determines of share market condition of ceramic companies. It also used to analysis the ceramic company's past financial performance and to establish the future trend of

financial position. Moreover, Multivariate Discriminate Analysis (MDA) is used which is developed by Prof. Altman to examine the financial distress of a company. Financial distress is a condition when a company cannot meet, or has difficulty to pay off, its financial obligation to its creditors. The chance of financial distress increases when a firm has high fixed costs, liquid assets, or revenues that are sensitive to economic downturns. Sometimes financial distress can lead to bankruptcy. Finally, to measure and evaluate the overall financial performance and financial soundness of the selected four companies (Fu Wang, Monno, Shinepukur and Standard) some statistical tools like mean, standard deviation and co-efficient of variance are also used.

2 OBJECTIVE OF THE STUDY

The study is designed to achieve the following objectives:

- i. To assess the financial performance of the selected ceramic companies
- ii. To assess the probability of bankruptcy of the selected ceramic companies
- iii. To compare individual performance with the industry performance

3 METHODOLOGY OF THE STUDY

We used quantitative approach for our paper because the majority of data collection from the quantitative approach. Data has been taken from a sample of four ce-

ramic companies in Dhaka Stock Exchange. We used the model to analysis the financial performance and financial soundness of the selected ceramic companies. First step of the model we did a selection of financial report. The annual financial reports present the financial data of a company's position, operating performance and fund flow for an accounting period. The study covers a five year period from 2006-07 to 2010-11. In the second step of model data has been collected from the identified balance sheet, income statement, cash flow statement and statement of shareholders equity. Finally we identified suitable ratio for performance evaluation and to analyze the financial soundness of the ceramic industry. Basically all the collected data have been analyzed and interpreted with the help of different financial ratios, Multivariate Discriminate Analysis (MDA) and statistical tools like mean, standard deviation (SD) and coefficient of variance (CV), etc. However, there are some limitations of this paper. First of all it works with the data from the year 2006-07 to 2010-2011, considering the fact data are petty small. Predictions based on this data may not be entirely true. Moreover, Shinepukur's 2006 and 2007 data were collected from their prospectus issued for IPO.

4 LITERATURE REVIEW

Financial analysis is the process of identifying the financial strength and weaknesses of the firm by properly establishing relationship between the items of the balance sheet and the profit and loss account (Pandey, 1979). Analysis of financial statements is of interest to lenders, security analysts, managers and others (Prasanna, 1995). Trade creditors are interested in the firm's ability to meet their claims. Their analysis will therefore, confine to the evaluation of the firm's liquidity position. The suppliers are concerned with the firm's solvency and survival. They analyze the firm's profitability over time. Long term creditors place more emphasis on the firm's solvency and profitability. The investors are more concerned about the firm's earnings. So they concentrate on the analysis of the firm's present and future profitability as well all earning ability and risk (Abu Sinha, 1998). Financial ratios are the simplest tools for evaluating the financial performance of the firm (Wen-Cheng LIN, 2005). One can employ financial ratios to determine a firm's liquidity, profitability, solvency, and capital structure and assets turnover. Hannan and Shaheed (1979) used financial ratios to show the financial position and performance analysis of Bangladesh Shilpa Bank. They showed that techniques of financial analysis can be used in the evaluation of financial position and performance of financial institution as well as non financial institutions even Development Financial Institutions (DFI). Saleh Jahur and Mohi Uddin (1995) used financial ratios to measure operational performance of limited company. They used profitability, liquidity, activity and capital structure to measure operational performance. Altman (1968) used financial ratios to predict corporate bankruptcy. He found that the bankruptcy model has an accuracy rate of 93% and is very

successful in predicting failed and non-failed firms. Beaver's univariate analysis led the way to a multivariate analysis by Edward Altman, who used multiple discriminate analysis (MDA) in his effort to find a bankruptcy model. He selected 33 publicly traded manufacturing bankrupt companies between 1946 to 1965 and matched them to 33 firms on a random basis for a stratified sample (assets and industry). The results of the MDA exercise yielded an equation; he called the Z-Score that correctly classified 94% of the bankrupt companies and 97% of the non-bankrupt companies one year prior to bankruptcy. These percentages dropped when trying to predict bankruptcy two or more years before it occurred (Chuvakhin & Gertmenian, 2003). Krishan Chaitanya (2005) used Z model to measure the financial distress of IDBI and conclude that IDBI is likely to become insolvent in the years to come. Sina and Arshed Ali (1998) used financial ratios to test the financial strengths and weaknesses of Khulna Newsprint Mills Ltd. they found that due to lack of planning and control of working capital, operational inefficiency, obsolete store, ineffective credit policy, increased cost of raw materials, labour and overhead, the position of the company was not good. Saleh Jahur and Parveen (1996) used Altman's MDA model to conclude the bankruptcy position of Chittagong Steel Mills Ltd. They found that absences of realistic goals, strict govt. regulations are the main reasons for the lowest level of bankruptcy. Ohlson (1980) employed financial ratios to predict a firm's crisis. He found that there are four factors affecting a firm's vulnerability. These factors are the firm's scale, financial structure, performance and liquidity. In the article "The Assessment of Financial and Operating Performance of the Cement Industry: A Case Study of Confidence Cement Limited", Dutta and Bhattacharjee (2001) found that the investment in cement was fairly profitable. Salauddin (2001) examined the profitability of the Pharmaceutical Companies of Bangladesh. By using ratio analysis, mean, standard deviation and co-efficient of variation he found that the profitability of the Pharmaceuticals sector was very satisfactory in terms of the standard norms of return on investment. Hye & Rahman (1997) conducted a research to assess the performance of the selected private sector general insurance companies in Bangladesh. The study revealed that the private sector insurance companies had made substantial progress. The study found that the insurance companies were keeping their surplus funds in the form of fixed deposits with different commercial banks due to absence of suitable avenues for investment. Salim and Kabir (1996) examined the financial performance of Bangladesh Shipping Corporation. They found that conversion of long term debt to equity may improve the financial performance of Bangladesh Shipping Corporation to a greater extent. From the above review, the researcher identifies the research gap which could be dealt in this study. It also found that the ratio analysis and MDA are the good method to evaluating and diagnosing overall financial performance, as well as the variability of turnaround or restructuring efforts. In summery, ratio analysis and Z score is timely

models that can be applied for analyzing the financial performance and financial distress of selected four ceramic companies (Fu Wang, Monno, Shinepukur and Standard).

5 FINANCIAL RATIOS: THEORETICAL DISCUSSION

Financial analysis offers a system of appraisal and evaluation of a firm's performance and operations; it is the analysis of the financial statement of an enterprise. The analysis of financial statement can be best done by various yardsticks of which, the important is known as ratio or percentage analysis. Ratio is a numerical or an arithmetical relation between two figures. It is expressed when one figure is divided by another. Accounting ratios show inter-relationship which exist among various accounting data. Accounting ratio can be expressed in various ways such as, a pure ratio, a rate or a percentage. Ratio analysis is certainly a very admirable device because it is simple and it has a predictive value. Managements and other users thus, rely substantially on the financial ratios based on accounting data for making assessments and predictions of past performance, present position and probable future potentials. One important way for diagnosing the financial health is to measure the profitability, liquidity, activity and solvency and the level of the bankruptcy of enterprise.

5.1 Profitability Ratios

Profitability ratios measure a company's ability to generate earnings relative to sales, assets and equity. These ratios assess the ability of a company to generate earnings, profits and cash flows relative to relative to some metric, often the amount of money invested. They highlight how effectively the profitability of a company is being managed. Different profitability ratios provide different useful insights into the financial health and performance of a company. For example, gross profit and net profit ratios tell how well the company is managing its expenses. Return on capital employed (ROCE) tells how well the company is using capital employed to generate returns. Return on investment tells whether the company is generating enough profits for its shareholders.

5.2 Solvency (Debt) Ratios

Financial leverage ratios (debt ratios) indicate the ability of a company to repay principal amount of its debts, pay interest on its borrowings, and to meet its other financial obligations. They also give insights into the mix of equity and debt a company is using. They give indications about the financial health of a company. Companies need to carefully manage their financial leverage ratios to keep their financial risk at acceptable level. Careful management of financial leverage ratios is also important when seeking loans from banks and financial institutions. Favourable ratios can help the company to negotiate a favourable interest rate. The long-term solvency of a com-

pany can be measured by the use of solvency ratios named debt to total assets, the times interest earned and fixed charge coverage ratio.

5.3 Activity Ratios

Asset management (Activity) ratios compare the assets of a company to its sales revenue. Analysis of asset management ratios tells how efficiently and effectively a company is using its assets in the generation of revenues. They indicate the ability of a company to translate its assets into the sales. Asset management ratios are computed for different assets. Common examples of asset turnover ratios include fixed asset turnover, inventory turnover, accounts payable turnover ratio, accounts receivable turnover ratio, and cash conversion cycle. The higher the asset turnover ratios, the more sales the company is generating from its assets. Low asset turnover ratios mean that the company is not managing its assets wisely. They may also indicate that the assets are obsolete. Companies with low asset turnover ratios are likely to be operating below their full capacity.

5.4 Liquidity Ratios

Liquidity ratios are the ratios that measure the ability of a company to meet its short term debt obligations. Liquidity is a pre-requisite for the very survival of an enterprise. They show the number of times the short term debt obligations are covered by the cash and liquid assets. If the value is greater than 1, it means the short term obligations are fully covered. Generally, the higher the liquidity ratios are, the higher the margin of safety that the company possesses to meet its current liabilities. Most common examples of liquidity ratios include current ratio, acid test ratio (also known as quick ratio), cash ratio, cash flow from operation ratio and working capital ratio.

6 ANALYSIS AND FINDINGS

6.1 Profitability Ratios

Profitability ratios measure a company's ability to generate earnings relative to sales, assets and equity. These ratios assess the ability of a company to generate earnings, profits and cash flows relative to relative to some metric, often the amount of money invested. They highlight how effectively the profitability of a company is being managed. The gross profit margin, operating profit margin, net profit margin, return on assets (ROA) and return on equity (ROE) ratios are calculated to measure the profitability of an enterprise. The table (1, 2, 3, 4 and 5) depict various financial ratios covering profitability of the selected ceramics for the periods of 2006-7 to 2010-11.

6.1.1 Gross Profit Margin

Gross profit margin (gross margin) is the ratio of gross profit (gross sales less cost of sales) to sales revenue. It is the percentage by which gross profits exceed production costs. Gross margins reveal how much a company earns taking into consideration the costs that it incurs for producing its products or services. Gross margin measures a

company's manufacturing and distribution efficiency during the production process. Some author considers that a profit margin ratio ranging from 20% to 30% has been considered as the standard norm for any industrial enterprise. The table - 01 shows the gross profit margin of the selected ceramic companies. The industry average is 23.8%, which is within the standard norm. The average gross profit margin range from 33.4% in Shinepukur to 16.8% in Standard. In view of standard, the gross profit margin of Shinepukur (33.4%) and Fu Wang (24.4%) was within the standard norm and shows an increasing trend. The average gross profit margin of Monno (20.5%) and Standard (16.8%) are below the industry average and also the standard norm, but they also shown an increasing trend. The above calculation indicates that the selected ceramic companies, like Fu Wang and Shinepukur seems to be in advantage position among two other, because they are earning highest return on sale after covering the sales related cost. The co-efficient of variation of gross profit ratios of the samples reveals that the variation of gross profit over the year is negligible except Fu Wang and Standard.

6.1.2 Operating Profit Margin

This ratio is widely used to evaluate an entity's operating performance. It indicates how much profit an entity makes after paying for variable costs of production such as wages, raw materials, etc. (but before interest and tax). An increasing operating profit margin indicates the company is becoming more efficient, while a decreasing ratio could signal looming financial troubles. Though, in some instances, a low return on sales can be offset by increased sales. It is also known as "return on sale (ROS)" or "operating margin". The table- 02 shows the average operating profit ratio of the sample four ceramic companies ranges from highest 27.8% in Shinepukur to lowest 0.50% in Standard. The industry average operating profit margin is 11.3% and Fu Wang (4.1%) and Standard (0.50%) are below the industry average, but after facing negative return on two consecutive two year (2007-08 & 2008-09) their performance is showing an increasing trend in next years. The average operating profit margin of Shinepukur (27.8%) is continuing over the study years. As to variation of operating profit over the years, it is revealed by the coefficient of variance that the variation ranges from 3.97% in Shinepukur to 976.11 % in Standard. The negligible variation of 3.97% in Shinepukur and 7.43% in Monno indicates desirable stability position.

6.1.3 Net Profit Margin

Net profit margin is displayed as a percentage. It shows the amount of each sales dollar left over after all expenses have been paid. Net profit margin is a key ratio of profitability. It is very useful when comparing companies in similar industries. A higher net profit margin means that a company is more efficient at converting sales into actual profit. It also indicates management efficiency in manufacturing, administrating and selling of the prod-

ucts. The table- 03 shows that the net profit ratios range from highest 11% in Shinepukur to lowest 0.2% (negative) in Standard. Shinepukur earned the highest average net profit margin (11%) and the industry average is 4.1%. the average net profit margin of Fu Wang (4.8%) and Shinepukur (11%) are above the industry average but their performance shows that a decreasing trend. The average net profit margin of Monno (0.9%) is very below the industry average. The co-efficient of variation of net profit ratios of the samples reveals that the variation of gross profit over the year is significant except Shinepukur which speaks about the stability of net income of this company.

6.1.4 Return On Assets (ROA)

Return on assets (ROA) is a financial ratio that shows the percentage of profit that a company earns in relation to its overall resources (total assets). Return on assets is a key profitability ratio which measures the amount of profit made by a company per dollar of its assets. ROA gives an idea as to how efficiently management use company assets to generate profit, but is usually of less interest to shareholders than some other financial ratios such as ROE. The table- 04 shows that the average returns on total assets range from highest 3.90% in Shinepukur to lowest 0.3% in Standard. It is seen from the table that the average return on total assets is 1.70% which is very low of standard norm (10%-12%) and this cannot be considered as satisfactory and acceptable. Though the above calculation shows that the Fu Wang and Monno have an increasing trend in their performance but rest of two Shinpukhur and Standard performance is decreasing. So, on a nutshell it can be concluded that the selected companies are not utilizing their assets properly. The co-efficient of variation of return of assets of the samples reveals that the variation of ROA over the year is significant except Shinepukur which speaks about the stability of return on assets of this company.

6.1.5 Return On Equity (ROE)

Return on equity (ROE) is the amount of net income returned as a percentage of shareholders equity. It reveals how much profit a company earned in comparison to the total amount of shareholder equity found on the balance sheet. It is often said to be the ultimate ratio or the 'mother of all ratios' that can be obtained from a company's financial statement. It measures how profitable a company is for the owner of the investment, and how profitably a company employs its equity. The table- 05 shows that the average returns on total equity range from highest 10.30% in Monno to lowest 0.6% in Standard. It appears from the table that the industry average return on equity is 4.5%. it is seen from the table that only Shinepukur has a high ratio (10.3%) as compared to the industry average and other three companies. It appears from the table that Standard has the highest variation (816.9%) and Monno has the second highest variation (151.8%) as indicated by the co-efficient of variation which indicates extremely

instability in their earnings. The variation of this ratio for Standard is (41.48%) should be considered satisfactory. The lower ratios conclude that management should be more efficient in using the long term fund of owners and creditors.

6.2 Solvency Ratios

Debt-to-Total Assets and Times Interest Earned ratios are commonly calculated to measure the company's solvency. The table (6 and 7) depict the above mentioned two ratios of selected ceramic companies for the period under study.

6.2.1 Debt to Total Assets Ratio

Debt to Total Asset Ratio is the ratio that represents the financial position of the company and the company's ability to meet all its financial requirements. It shows the percentage of a company's assets that are financed with loans and other financial obligations that last over a year. As this ratio is calculated yearly, decrease in the ratio would denote that the company is faring well, and is fewer dependants on debts for their business needs. The higher the level of long term debt, the more important it is for a company to have positive revenue and steady cash flow. The table - 6 shows the debt to total assets ratio for the selected ceramic companies for the period of 2006 to 2010. It is observed from the table that the industry average debt to assets ratio is 7.31%. It is also observed from the table that the average ratio range from 0.75% (Fu Wang) to 18.13% (Shinepukur). The average ratio of Fu Wang (0.75%) and Standard (1.34%) are very low, due to Fu Wang have long term loan only in year 2007-2008 and 2008-2009 and Standard also reduced their debt after year 2008-2009. Such a lower ratio of debt to total assets of Fu Wang and Standard indicates that they are less dependent on debt and capable of financing their projects through their own fund. Among them only Shinepukur have a large amount of debt, that also they have reduced each year. From the co-efficient of variation it is clear that the variation over time is very insignificant for all the ceramic companies.

6.2.2 Times Interest Earned Ratio

This ratio also called Interest Coverage Ratio (ICR). It measures a company's ability to meet its interest payments. Basically it measures the number of times a company could make the interest payments on its debt with its EBIT. It determines how easily a company can pay interest expenses on outstanding debt. Times Interest Earned Ratio is also known as interest coverage ratio, debt service ratio or debt service coverage ratio. The table - 7 shows the times interest earned ratio for the selected ceramic companies for the study period is revealed from the table that the industry average times interest earned is 2.3 times. The times interest earned ratio range from 1.1 times in Monno to 4.6 times. The average ratio of Monno (1.1 times) and Standard (1.5 times) are below the industry average, but Monno's average was increased

each year and Standard's also increased, due to negative EBIT in year 2007-2008 the average is lower than industry. Fu Wang's ratio is leading the industry average due to their good performance in year 2010-2011. The co-efficient of variation of times interest earned of the samples reveals that the variation over the year is insignificant except Fu Wang which speaks about the unstable of earning to meet it interest expense.

6.3 Activity Ratios

Activity ratios show the intensity with which the firm uses its assets in generation sales. The ratios indicate whether the firm's investments in current and long-term assets are too small or too large. The objective is to have enough assets but not too many. The table (8 - 12) depict various activity ratios of the selected ceramics for the period under study (2006-7; 2010-11).

6.3.1 Inventory Turnover Ratio

Inventory turnover is a measure of the number of times inventory is sold or used in a given time period such as one year. It is a good indicator of inventory quality (whether the inventory is obsolete or not), efficient buying practices, and inventory management. This ratio is important because gross profit is earned each time inventory is turned over. Also called stock turnover. Table - 08 shows that the industry average inventory turnover is 1.60 times. The average it is seen from the table that the average inventory turnover ratio range from 1.31 times in Shinepukur to 1.87 times in Monno. There is no general norm for the inventory turnover ratio; it should be compared against industry averages. The average inventory turnover ratio of Monno (1.87) and Standard (1.66) are above the industry average. The average inventory ratio of Fu Wang (1.55) and Shinepukur is (1.31) is below industry average. The calculated ratios indicate that the sales management of the selected ceramics can be said to be efficient to sell its product. As to variation of inventory turnover over the years, it is revealed by the coefficient of variance that the coefficient of variance is satisfactory stable.

6.3.2 Receivable Turnover Ratio

The receivable turnover ratio (debtors turnover ratio, accounts receivable turnover ratio) indicates the velocity of a company's debt collection, the number of times average receivables are turned over during a year. This ratio determines how quickly a company collects outstanding cash balances from its customers during an accounting period. Table - 09 shows that the industry average receivable turnover is 9 times (Standard's mean was not included). The average it is seen from the table that the average receivable turnover ratio range from 4.57 times in Shinepukur to 11.44 times in Fu Wang. There is no general norm for the inventory turnover ratio; it should be compared against industry averages. The average receivable turnover ratio of Monno (10.98 times) and Fu Wang (11.44 times) are above the industry average. The

average ratio of Shinepukur is (4.57 times) is below industry average. The average of Standard is 187 times which is very good turnover, but this was happened due to they don't sale on credit in the years of 2007 to 2010. The calculated ratios indicate that the credit sales management of the selected ceramics can be said to be very much efficient to sell its product. As to variation of receivable turnover over the years, it is revealed by the coefficient of variance that the coefficient of variance is satisfactory stable except Standard.

6.3.3 Accounts Payable Turnover Ratio

Accounts payable turnover ratio is an accounting liquidity metric that evaluates how fast a company pays off its creditors (suppliers). The ratio shows how many times in a given period (typically 1 year) a company pays its average accounts payable. Accounts payables turnover trends can help a company assess its cash situation. Just as accounts receivable ratios can be used to judge a company's incoming cash situation, this figure can demonstrate how a business handles its outgoing payments. Table - 10 reveals that the industry average accounts payable turnover ratio is 6.96 times. The average accounts payable turnover ratio ranges from 2.63 times in Monno to 11.27 times in Standard. Average ratio of Monno (2.63 times) is below industry average and the average of Fu Wang (8.63 times), Shinepukur (7.26 times) and Standard (11.26 times) are above the industry average. The co-efficient of variation of accounts payable turnover of the samples reveals that the variation over the year is insignificant which speaks about the stable of cash flow to meet the short term liabilities.

6.3.4 Fixed Assets Turnover Ratio

Fixed asset turnover ratio compares the sales revenue of a company to its fixed assets. This ratio tells us how effectively and efficiently a company is using its fixed assets to generate revenues. There is no standard guideline about the best level of asset turnover ratio. Therefore, it is important to compare the asset turnover ratio over the years for the same company. An increasing trend in fixed assets turnover ratio is desirable because it means that the company has less money tied up in fixed assets for each unit of sales. A declining trend in fixed asset turnover may mean that the company is over investing in the property, plant and equipment. Some authors consider that an ideal fixed assets turnover ratio for an enterprise like ceramic should be 3 times of the fixed assets. Table - 11 shows the fixed assets turnover ratios for the selected ceramic for the study period. From the calculated ratios it is seen that the industry average fixed assets turnover is 0.93 times. The average ratio ranges from 0.59 times in Shinepukur to 2.43 Monno. The average ratio of Fu Wang (0.71) and Shinepukur (0.59) are lower than the industry average and as well as very lower than the standard. The average of Standard (1.35) and Monno (2.43) are above the industry average and Monno is very near to standard average also. Decreasing trend in Fu Wang and Shinepuk-

kur indicates the poor level of sale in terms of fixed assets. From the co-efficient of variation it is clear that the variations are very insignificant.

6.3.5 Total Assets Turnover Ratio

It measures the extent of sales generated by utilizing the total assets. Standard total assets turnover is 2 time (200%). Table - 12 reveals that the industry average total assets turnover ratio is 0.54 times which is below the standard norm. The average total assets turnover ratio ranges from 0.36 times in Shinepukur to 0.87 times in Monno. Average ratio of Shinepukur (0.36) and Fu Wang (0.44) are below industry average and the average of Monno (0.87 times) and Standard (0.67 times) are above the industry average but all the company's average is below the standard norm. Such a low level of total assets turnover ratio of all the companies indicates that the selected ceramic companies generate lower taka of sales per take of tangible assets, this is the indication of poor management of total assets. From the co-efficient of variation it is seen that the variation over time is stable.

6.4 Liquidity Ratios

The current ratio, quick ration, cash ratio and cash flow from operation ratio are used to assess liquidity position of an enterprise. The table (13, 14, 15 and 16) depict various financial ratios covering liquidity of the selected ceramics for the periods of 2006-7 to 2010-11.

6.4.1 Current Ratio

The current ratio indicates a company's ability to meet short-term debt obligations. The current ratio measures whether or not a firm has enough resources to pay its debts over the next 12 months. If the current ratio is too low, the firm may have difficulty in meeting short run commitment as they measure. Is the ratio is too high the firm may have an excessive investment in current assets or to be under utilizing short term credit. Some authors indicate consider 2:1 as standard norm for current ratio. Table - 13 shows that the industry average is 0.99:1 which indicates that the industry is not able to meet its current obligation from its current assets. The average current ratio range from 0.92:1 in Standard to 1.12:1 in Fu Wang. The average current ratio of Standard (0.92:1) and Monno (0.94:1) are below the industry average as well as below the standard norm. The average current ratio of Shinepukur (0.99:1) is at industry average. The average current ratio of Fu Wang (1.12:1) is above industry average but below standard norm. It is seen from the table that all these ratios are far from standard norm. Therefore it can be said that the liquidity in terms on current ratio had been quite inadequate in all the years under study for all the ceramics. The downward trend in current ratio of Shinepukur and Standard indicates the inefficient liquidity management, the financial position is very unsatisfactory and the company's short-term solvency in threatened. From the coefficient of variation it is clear that the variation of current ratio over time is negligible.

6.4.2 Quick Ratio

The quick ratio is a measure of a company's ability to meet its short-term obligations using its most liquid assets (near cash or quick assets). Quick assets include those current assets that presumably can be quickly converted to cash at close to their book values. Table - 14, shows that the industry average of quick ratio is 0.20:1 which is very lower than the standard (1:1) ratio. The table reveals that the average liquid ratio range from 0.03:1 in Standard to 0.30:1 in Fu Wang. The average quick ratio of Standard (0.03:1) and Monno (0.18:1) are below the industry average as well as below the standard norm. The average current ratios of Fu Wang (0.30:1) and Shinepukur (0.29:1) are above industry average but below standard norm. It indicates that all ceramics are financially weak and have no ability to pay its most immediate liabilities. It also observed that this position is increasing for most of them and it is the good signal for the companies. In the context of variation of this ratio over the years, it is found that the variation is almost stable, except Fu Wang. In the context of variation of this ratio over years, it is found that the variation is almost stable.

6.4.3 Cash Ratio

Cash ratio is the ratio of a company's cash and cash equivalent assets to its total liabilities. Cash ratio is a refinement of quick ratio and indicates the extent to which readily available funds can pay off current liabilities. Cash ratio is the most stringent and conservative of the three liquidity ratios (current, quick and cash ratio). It only looks at the company's most liquid short-term assets - cash and cash equivalents - which can be most easily used to pay off current obligations. Table - 15, shows that the industry average of cash ratio is 0.09:1 which is very lower than the standard (0.20:1) ratio. The average cash ratio range from 0.01:1 in Shinepukur to 0.29:1 in Fu Wang. The average cash ratios of Standard (0.03:1); Monno (0.04:1) and Shinepukur (0.01:1) are below the industry average as well as below the standard norm. The average cash ratio of Fu Wang (0.29:1) is above industry average and also above standard norm. From the table, we can reveal that, by considering only the actual cash and securities easily convertible to cash, Fu Wang is maintaining good position compare to other companies. It indicates that all ceramics except Fu Wang are financially weak and have no ability to pay its most immediate liabilities. From the coefficient of variation it is clear that the variation of cash ratio over time is very insignificant for Monno and Shinepukur and significant for Fu Wang. From the co-efficient of variation it is seen that the variation of cash ratio is insignificant.

6.4.4 Cash Flow from Operation Ratio

The cash flow from operations ratio measures liquidity by comparing actual cash flows, instead of current and potential cash resources with current liabilities. This ratio avoids the issues of actual convertibility to cash, turnover, and the need for minimum levels of working capital (cash) to maintain operations. Table - 16, shows that the industry average of cash flow from operation ratio is 0.11:1. The table reveals that the average cash flow from

operation ratio of Monno (0.06:1); Fu Wang (0.07:1) and Standard (0.10:1) are lower than the industry average and Shinepukur (0.20:1) is higher than the industry average. From the calculated ratios it is clearly seen that the cash flow from operation ratios are very small for Monno and Fu Wang. Such state of affairs indicates the inability and inadequacy of cash flow from operation to cover the immediate liabilities of the above mentioned firms. From the coefficient of variation it is seen that the variation of cash flow from operation is very significant.

7 TESTING THE FINANCIAL SOUNDNESS OF SELECTED CERAMICS COMPANIES

After examining profitability, liquidity, activity and solvency of selected ceramics companies, now it is necessary to examine the overall financial soundness of these companies during the study period. In this context Multivariate Discriminate Analysis (MDA) model as developed by Prof. Altman may be considered worth while. This is one of the most commonly used statistical ratio models for predicting business collapse. This model has proven to be a reliable tool for bankruptcy forecasting in a wide variety of contexts and markets. The said model can give some rough idea about the financial soundness of an enterprise. The Z-Score bankruptcy predictor combines five common business ratios, using a weighting system calculated by Altman to determine the likelihood of a company going bankruptcy. The given formula applicable for publicly traded manufacturing firm.

$$Z\text{-score} = 1.2T1 + 1.47T2 + 3.37T3 + 0.6T4 + 0.99T5$$

Where,

T1	=	Working Capital / Total Assets
T2	=	Retained Earnings / Total Assets
T3	=	Earnings Before Interest and Taxes / Total Assets
T4	=	Equity / Total Liabilities
T5	=	Sales / Total Assets

If score is 3.0 or above - bankruptcy is not likely

If score is 1.8 or less - bankruptcy is likely

If score between 1.8 and 3.0 is the gray area.

Probabilities of bankruptcy within the above ranges are 95% for one year and 70% within two years. A high score is desirable.

In order to test the overall financial soundness of the selected ceramics, it needs to calculate the ratio of working capital to total assets, retained earnings to total assets, earnings before interest and taxes to total assets, equity to book value of total debt and sales to total assets.

The table- 17, 18, 19, 20 & 21 depicts the year wise as well as average position of the ratios of working capital to total assets, retained earnings to total assets, earnings before interest and taxes to total assets, equity to book value of total debt and sales to total assets.

It is seen from the table - 17 that the average position of the working capital to total assets are (0.03), (0.03), (0.01) & (0.01) times, from table - 18, the retained earnings to total assets ratios are 0.047, 0.013, 0.066 & 0.066 times, from table - 19, the earnings before interest and taxes to

total assets are 0.061, 0.217, 0.149 & 0.027 times, from table – 21, the sales to total assets are 0.435, 0.868, 0.360 & 0.671 times for Fu Wang, Monno, Shinepukur and Standard respectively. Such lower position of these ratios indicates very unsatisfactory position. On the other hand, from table – 20, the average equity to total debt are 5.61, 1.09, 2.3 & 3.5 times for Fu Wang, Monno, Shinepukur and Standard respectively which indicate unsatisfactory position of financial performance of the sample industry. From coefficient of variance it is clear that the variance over time is very insignificant for all the ceramics. From co-efficient of variance it is clear that the variance over time is very significant for all the companies.

The table – 22 shows the year wise as well as average position of Z's score of the sample ceramics during the study period. After putting the respective average values of T1, T2, T3, T4 and T5, in the aforesaid equation as developed by Prof. Altman, Z score was estimated. The average Z score range from 2.223 in Monno to 4.027 in Fu Wang and industry average Z score is 2.862. The average Z score of Monno (2.223) and Shinepukur (2.335) are below the industry average and Standard (2.862) at industry average. Among the four companies Fu Wang has good score (4.027) which is out of bankruptcy zone. Comparing with Prof. Altman's conclusion that firms with Z score 3.0 or above were solvent while those below Z score of 1.8 were bankrupt. So it can be concluded that the overall financial soundness of the selected ceramic industry during the study period had been in the gray zone and

8 CONCLUSIONS

In the preceding analysis, it has been observed that the financial position and operational performance of the selected ceramic companies in terms of profitability and efficiency is good and shown an increasing trend. Due to inefficiency in liquidity management and not to utilize the debt financing as suggested, the industry shown very low performance. By calculating the Z score it is seen that the overall financial health of the selected companies was at the medium level of bankruptcy.

REFERENCES

- [1] Altman, E.I. (1968). 'Financial Ratios, Discriminate Analysis an the Prediction of Corporate Bankruptcy', *The Journal of Finance*, Vol.4, pp. 589-609
- [2] Beaver, W. H. (1966). 'Financial ratios as predictors of failure'. *Journal of Accounting Research (Supplement)*, 4(3):71-111
- [3] Chandra, Prasanna (1995). *The Investment Game*, New Delhi, Mc Graw Hill Publishing Co. Ltd. pp.172
- [4] Chuvakin, N., & Gertenian, I. W. (2003). Predicting Bankruptcy in the Worldcom Age. *Journal of Contemporary Business Practice*, 6(1). Accessed November 1, 2003.
- [5] Clausen, James (2009), 'Accounting 101 – Income Statement: Financial Reporting and Analysis of Profit and Loss'. *Journal of income statement*.
- [6] Deakin, E. (1972). 'A discriminate analysis of predictors of business failure'. *Journal of Accounting Research*, Spring:167-179
- [7] Dutta, D. D. Kanti & Bhattacharjee, D. M. Kumar (2001). 'The assessment of financial and operating performance of the cement industry: A case study of confidence cement ltd.' *The Chitagong University Journal of Commerce*, Vol.16, pp.1-16
- [8] Edminster, R. (1972). 'An empirical test of financial ratio analysis for small business failure prediction. *Journal of Financial and Quantitative Analysis* 2, 7:1477-1493.
- [9] Hye, D.M.A. & Rahman, M.A. (1997). 'Performance of Selected Private Sector General Insurance Companies in Bangladesh', *Chittagong University Studies (Commerce)*, Vol.13, pp.137-160
- [10] Jahur, Mohammad Saleh & Parveen, Jannat Ara. (1996). 'An analysis of financial performance of public enterprises- A case study of Chittagong Steel Mills Ltd.', *Chittagong University Studies (Commerce)*, vol.12, pp.173-184
- [11] Jahur, Mohammad Saleh & Uddin, Mohammad Mohi (1995). 'Measurement of operational performance through ratio analysis – A case study of Usmania Glass Sheet Factory Ltd. Chittagong', *Chittagong University Studies (Commerce)*, vol.XI, pp.245-255
- [12] Keasey, K., McGuinness, P., and Short, H. (1990). 'Multilogit approach to predicting corporate failure: Further analysis and the issue of signal consistency'. *Omega*, 18(1):85-94.
- [13] Krishna Chaitanya V, (2005). 'Measuring Financial Distress of IDBI using Altman Z-Score Model', *Icfai University Journal of Bank Management*, Icfai Press, vol. 0(3), pp7-17, August.
- [14] Kumar, K. and Ganesalingam, S. (2001). Detection of financial distress via multivariate statistical analysis. *Detection and Prediction of Financial Distress*, 27(4):45-55
- [15] Laitien, E. K. and Luoma, M. (1991). 'Survival analysis as a tool for company failure prediction'. *Omega*, 19(6):673-678. *International Research Journal of Finance and Economics – Issue 16 (2008)* 30
- [16] LIN, Wen-Cheng, LIU, Chin-Feng, CHU, Ching-Wu (2005). 'Performance efficiency evaluation of the Taiwan's Shipping Industry: An Application of DEA', *Proceeding of the Transportation Studies*, Vol.5, pp.467-476
- [17] Ohlson, J. A. (1980). 'Financial Ratios and the Probabilistic Prediction of Bankruptcy', *Journal of Accounting Research*, Vol.19, No.1, pp.61-80
- [18] Pandey, I. M. (1979). *Financial Management*, Vikas Publishing House Pvt. Ltd, New Delhi, pp.109-116
- [19] Philosophov, (2002). 'Corporate Bankruptcy Prognosis: An attempt at a combined prediction of the bankruptcy event and time interval of its occurrence'. *International Review of Financial Analysis*. 375-406
- [20] Salauddin, A. (2001). 'Profitability of Pharmaceutical Companies of Bangladesh'. *The Chitagong University Journal of Commerce*, Vol.16, pp.54-64
- [21] Sheikh, Dr. Md. Abdul Hannan & Shaheed, Miah, Muhammad Abdus (1979). 'Financial Position and Performance analysis of Bangladesh Shilpa Bank'. *Islamic University Studies (Part C)*, Vol.1. No. 2, December, pp.207-255
- [22] Shumway, T. (2001). 'Forecasting bankruptcy more accurately: A simple hazard model'. *The Journal of Business*, 74(1):101-124.
- [23] Sina, Md. Abu & Matubber, Md. Arshed Ali (1998). 'Financial Statement Analysis of Khulna Newsprint Mills Ltd.', *Islamic University Studies (part C)*, Vol.1, No.2, December, pp. 179-189
- [24] Zain, Maria. (2008). 'How to use profitability Ratios: Different types of calculations that determine of firm's profits', *Journal of profitability ratio analysis*.

PROFITABILITY RATIOS**Table 01: Gross Profit Margin (in percentage)**

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	23.7	22.1	21.9	25.1	29	24.4	23.8	3	11.95
Monno	21.2	18.2	20.8	20.9	21.5	20.5	23.8	1	6.37
Shinepukur	32.9	32.6	33	34.2	34.4	33.4	23.8	1	2.42
Standard	18.1	14.3	11.9	19.5	20.0	16.8	23.8	4	21.08

Table 02: Operating Profit Margin (in percentage)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	4.0	-4.0	-0.40	6.8	14.2	4.1	11.3	7	168.6
Monno	14.1	12.1	13.3	11.7	12.5	12.8	11.3	1	7.43
Shinepukur	27.1	26.70	27.80	29.60	28	27.8	11.3	1	3.97
Standard	4.0	-6.40	-2.20	3.20	3.80	0.50	11.3	5	976.11

Table 03: Net Profit Margin (in percentage)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	2.4	-2.5	0.8	7.8	15.3	4.8	4.1	7	146.4
Monno	-0.4	0.6	0.1	0.5	3.7	0.9	4.1	2	179.8
Shinepukur	12.5	0.7	14.7	15.8	11.3	11	4.1	6	54.83
Standard	2.70	-6.40	-2.20	3.00	2.00	-0.2	4.1	4	-2289.4

Table 04: Return on Asset (ROA) (in percentage)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	1.00	-0.90	0.30	2.80	6.10	1.90	1.70	3	145.76
Monno	-0.30	0.60	0.10	0.40	3.00	0.80	1.70	1	171.25
Shinepukur	4.30	4.00	3.70	4.90	2.40	3.90	1.70	1	24.68
Standard	2.2	-3.2	-1.2	2.1	1.7	0.3	1.70	2	779.50

Table 05: Return on Equity (ROE) (in percentage)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	2.7	-1.6	0.8	7.3	10.2	3.9	4.5	5	124.5
Monno	-0.4	2.2	0.5	1.7	10.9	3.0	4.5	5	151.8
Shinepukur	16.7	8.9	10.1	11.2	4.8	10.3	4.5	4	41.48
Standard	4.0	-6.80	-3.10	5.20	3.90	0.60	4.5	5	816.9

SOLVENCY RATIOS:**Table 6: Debt to Asset (in percentage)**

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	0.0	2.61	1.14	0.0	0.0	0.75	7.31	1.00	153.5
Monno	13.02	10.75	8.56	8.15	4.60	9.01	7.31	3.00	34.86
Shinepukur	28.67	16.22	13.99	17.85	13.91	18.13	7.31	6.00	33.75
Standard	0.20	2.60	2.61	1.20	0.08	1.34	7.31	1.00	92.35

Table 7: Times Interest Earned (in times)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	1.4	0.7	1.0	2.4	10.6	4.6	2.3	4.17	0.90
Monno	0.94	1.01	0.97	1.06	1.53	1.1	2.3	0.24	0.21
Shinepukur	1.85	2.17	2.25	2.28	1.74	2.1	2.3	0.25	0.12
Standard	2.70	-0.62	0.21	2.08	3.00	1.5	2.3	1.60	1.08

ACTIVITY RATIOS:**Table 8: Inventory Turnover (in times)**

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	1.41	1.22	1.34	1.66	2.13	1.55	1.60	0.36	0.23
Monno	1.81	2.67	1.93	1.96	1.00	1.87	1.60	0.59	0.32
Shinepukur	1.10	1.21	1.32	1.50	1.40	1.31	1.60	0.15	0.12
Standard	2.37	1.27	0.96	1.50	2.22	1.66	1.60	0.61	0.36

Table 9: Receivables Turnover (in times)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	0.00	23.76	8.64	10.01	14.81	11.44	9.00	8.71	0.76
Monno	11.74	12.15	9.67	10.83	10.51	10.98	9.00	0.98	0.09
Shinepukur	4.71	6.17	4.69	4.04	3.23	4.57	9.00	1.08	0.23
Standard	935.0	0.00	0.00	0.00	0.00	187.0	9.00	418.1	2.23

Table 10: Accounts Payable Turnover (in times)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	5.28	5.55	11.91	10.16	10.25	8.63	6.96	3.02	0.35
Monno	2.90	1.81	2.89	3.83	1.96	2.63	6.96	0.82	0.31
Shinepukur	10.97	8.75	8.43	5.08	3.06	7.26	6.96	3.15	0.43
Standard	8.28	11.10	12.79	11.62	12.58	11.27	6.96	1.81	0.16

Table 11: Fixed Assets Turnover (in times)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	0.61	0.51	0.54	0.77	1.16	0.71	0.93	0.23	0.33
Monno	1.93	2.63	2.33	2.67	2.61	2.43	0.93	0.31	0.12
Shinepukur	0.77	0.51	0.59	0.67	0.42	0.59	0.93	0.13	0.23
Standard	1.42	0.96	1.04	1.51	1.80	1.35	0.93	0.35	0.26

Table 12: Total Assets Turnover (in times)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	0.42	0.35	0.36	0.49	0.55	0.44	0.54	0.08	0.19
Monno	0.79	1.01	0.84	0.88	0.82	0.87	0.54	0.08	0.09
Shinepukur	0.45	0.34	0.37	0.38	0.27	0.36	0.54	0.06	0.18
Standard	0.80	0.49	0.46	0.70	0.91	0.67	0.54	0.19	0.29

LIQUIDITY RATIOS:**Table 13: Current Ratio**

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	0.81:1	0.67:1	0.69:1	0.76:1	2.69:1	1.12:1	0.99:1	0.87	0.77
Monno	0.94:1	0.94:1	0.93:1	0.96:1	0.95:1	0.94:1	0.99:1	0.01	0.01
Shinepukur	1.11:1	0.89:1	0.88:1	1.12:1	0.98:1	0.99:1	0.99:1	0.11	0.11
Standard	0.90:1	0.94:1	0.95:1	0.89:1	0.90:1	0.92:1	0.99:1	0.03	0.03

Table 14: Quick Ratio

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	0.03:1	0.05:1	0.10:1	0.12:1	1.18:1	0.30:1	0.20:1	0.49	1.69
Monno	0.14:1	0.18:1	0.18:1	0.20:1	0.18:1	0.18:1	0.20:1	0.01	0.11
Shinepukur	0.26:1	0.19:1	0.25:1	0.35:1	0.37:1	0.29:1	0.20:1	0.07	0.26
Standard	0.01:1	0.01:1	0.01:1	0.07:1	0.06:1	0.03:1	0.20:1	0.03	0.90

Table 15: Cash Ratio

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	0.03:1	0.01:1	0.02:1	0.01:1	0.98:1	0.29:1	0.09:1	0.42	2.03
Monno	0.02:1	0.03:1	0.03:1	0.06:1	0.06:1	0.04:1	0.09:1	0.01	0.45
Shinepukur	0.01:1	0.01:1	0.01:1	0.02:1	0.02:1	0.01:1	0.09:1	0.01	0.63
Standard	0.01:1	0.01:1	0.01:1	0.07:1	0.06:1	0.03:1	0.09:1	0.03	0.91

Table 16: Cash Flow from Operation Ratio

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	-0.06:1	-0.05:1	-0.02:1	0.10:1	0.39:1	0.07:1	0.11:1	0.20	2.79
Monno	0.03:1	0.17:1	-0.00:1	-0.02:1	0.13:1	0.06:1	0.11:1	0.08	1.37
Shinepukur	0.22:1	0.29:1	0.14:1	0.08:1	0.26:1	0.20:1	0.11:1	0.08	0.42
Standard	0.11:1	0.03:1	0.02:1	0.16:1	0.19:1	0.10:1	0.11:1	0.07	0.74

Z - TEST RATIOS:**Table 17: Working Capital to Total Assets (in times)**

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	S.D	C.V
Fu Wang	-0.07	-0.14	-0.15	-0.11	0.30	-0.03	0.19	5.25
Monno	-0.03	-0.03	-0.04	-0.02	-0.03	-0.03	0.01	0.20
Shinepukur	0.04	-0.03	-0.04	0.03	-0.00	-0.00	0.03	48.58
Standard	-0.04	-0.03	-0.03	-0.06	-0.05	-0.01	0.01	0.336

Table 18: Retained Earnings to Total Assets (in times)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	S.D	C.V
Fu Wang	0.054	0.301	0.032	0.043	0.076	0.047	0.02	0.402
Monno	0.001	0.014	0.014	0.004	0.033	0.013	0.01	0.962
Shinepukur	0.060	0.072	0.061	0.080	0.061	0.066	0.01	0.136
Standard	0.001	0.000	0.000	0.013	0.017	0.006	0.01	1.313

Table 19: Earning before Interest and Tex (EBIT) to Total Assets (in times)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	S.D	C.V
Fu Wang	0.059	0.046	0.042	0.065	0.096	0.061	0.021	0.346
Monno	0.236	0.248	0.231	0.201	0.169	0.217	0.032	0.147
Shinepukur	0.189	0.134	0.146	0.159	0.117	0.149	0.027	0.182
Standard	0.051	-0.01	0.004	0.040	0.052	0.027	0.029	1.086

Table 20: Equity to Total Liabilities (in times)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	S.D	C.V
Fu Wang	1.044	0.671	1.061	3.255	22.01	5.608	9.23	1.645
Monno	0.495	0.725	1.146	1.234	1.894	1.099	0.54	0.490
Shinepukur	0.371	0.347	3.185	3.120	4.549	2.314	1.87	0.810
Standard	1.520	1.414	2.312	3.779	8.854	3.576	3.10	0.867

Table 21: Sales to Total Assets (in times)

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	S.D	C.V
Fu Wang	0.422	0.352	0.363	0.493	0.548	0.435	0.084	0.193
Monno	0.791	1.009	0.841	0.882	0.816	0.868	0.086	0.099
Shinepukur	0.453	0.343	0.365	0.375	0.265	0.360	0.067	0.186
Standard	0.793	0.488	0.460	0.700	0.914	0.671	0.195	0.291

Table 22: Analysis of Z score

Name of the Ceramics Company	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	Mean	Industry Mean	S.D	C.V
Fu Wang	1.237	0.770	1.003	2.583	14.54	4.027	2.862	5.920	1.47
Monno	1.825	2.241	2.263	2.266	2.519	2.223	2.862	0.250	0.11
Shinepukur	1.431	1.057	2.798	2.927	3.462	2.335	2.862	1.035	0.44
Standard	1.823	1.263	1.823	3.042	6.359	2.862	2.862	2.060	0.72