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財務比率對企業績效及市場評價之解釋力分析－以蒙古國

食品公司為例

The Explaining Ability of the Financial Ratios on Business
Performance and Market Value: Evidence on the Mongolia's

Food Companies

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and Market Value: Evidence on the Mongolia's Food Companies

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MBA recommendation letter

Javzandulam Pagmadulam, a student of NHU Master Program for Business Administration for 1.5 years, has completed all of the courses and theses required for graduation.

1. In terms of studies, Javzandulam Pagmadulam has acquired 36 credits, passed all of the obligatory subjects such as Management science, Research methods etc. (Please refer to transcript.)
2. In terms of theses, Javzandulam Pagmadulam has completed the following:
 - i. Master thesis : The Explaining Ability of the Financial Ratios on Business Performance and Market Value-Evidence on the Mongolia's Food Companies
 - ii. Journal : The Explaining Ability of the Financial Ratios on Business Performance and Market Value-Evidence on the Mongolia's Food Companies

I believe that Javzandulam Pagmadulam has already received full formative education of NHU Master Program for Business Management and is qualified to apply for Master's Degree Examination. Therefore, I hereby recommend her preliminary paper, The Explaining Ability of the Financial Ratios on Business Performance and Market Value-Evidence on the Mongolia's Food Companies, for the oral defense.

Academic Advisor:



Date:

2019/5/29

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南華大學管理學院企業管理學系管理科學碩士班

107 學年度第 2 學期碩士論文摘要

論文題目：財務比率對企業績效及市場評價之解釋力分析—以蒙古國食品公司為例

研究生：嵐朵

指導教師：袁淑芳 博士

論文摘要內容：

財務報表分析為基本面分析的主要分析工具，藉由財務表現分析公司在經營績效的表現，如流動性分析、經營效率及負債比率等以探究公司的真實價值。另一方面，近期研究將重要的財務比率整合成破產指數 (Z-SCORE)，藉此做為分析公司經營風險的指標。本研究目的即在分析不同的財務比率與破產指數之關聯性。以此做為判斷影響破產指數之重要指標。

本研究以蒙古國食品業的 5 家領導廠場進行分析，檢測 5 家廠商在財務績效之差異性分析，並檢測各公司之財務比率與破產指數之關連性的差異。

因此，Atar Urguu LC 財務比率很高。這表明 Atar Urguu 的財務狀況是正確的。根據 Kruskal Wallis 測試，與 Uvs Khuns LC，Darkhan Khuns LC 和 Khuvs gul Khuns LC 相比，Atar-Urguu LC 顯示出有意義的差異。財務比率與 Altman Z-Score 的五個交叉鏈接由五家公司組成，其中應收賬款周轉率，淨利潤率，總資產回報率 (ROA)，股本回報率 (ROE) 非常高，利潤率與市場對賬面比率。這些比率對公司的破產影響最大。檢查每家公司的財務比率和 Altman Z-Score，Talkh Chikher LC 的風險最小。對於其他公司，應收賬款比率，平均收款期和市賬率之比非常高。

這些比率對公司的破產影響最大。

關鍵詞：基本分析、財務比率、破產指數、蒙古國、相關性分析



Title of Thesis: The Explaining Ability of the Financial Ratios on Business Performance and Market Value: Evidence on the Mongolia's Food Companies

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Name of Student: Javzandulam Pagmadulam Advisor: Shu-Fang, Yuan, Ph.D.

Abstract

Fundamental analysis is one of the methods to predict the true value for the listing company, in which analyzing the financial ratio appearing in the financial statement is the most commonly used way. Financial information is trying to explore the business value from different aspects such as liquidity, operating efficiency, solvency, profitability, etc. On the other hand, recent research has integrated important financial ratios into the bankruptcy index (Z-SCORE) as an indicator of the company's operational risk. The purpose of this study is to analyze the correlation between different financial ratios and the bankruptcy index. This is used to analyze the critical ratio impacted in the bankruptcy index.

This study analyzes the five leading manufacturers in the Mongolian food industry, examines the differences in financial performance among these five manufacturers, and examines the differences between the financial ratios of the companies and the bankruptcy index.

As a result, Atar Urguu LC financial ratio was high. This shows that Atar Urguu financial position is correct. According to the Kruskal-Wallis test, Atar Urguu LC shows a meaningful difference compared to that of those between Uvs Khuns LC, Darkhan Khuns LC, and Khuvsgul Khuns LC. The five cross-

linking of the financial ratios and the Altman Z-score were comprised of five companies, which were very high in the Accounts receivable turnover, Net Profit margin, Return on Total Assets (ROA), Return on equity (ROE), Profit Margin ratio and market to book ratio. These ratios have the strongest impact on the company's bankruptcy. Checking the financial ratios and the Altman Z-score at each company, the Talkh Chikher LC had the least risk. For other companies, the ratio of accounts receivable ratio, average collection period and market to book ratio is very high. These ratios have the strongest impact on the company's bankruptcy.

Keywords: Fundamental Analysis, Financial Ratio, Altman Z-score, Mongolian, Correlation Analysis

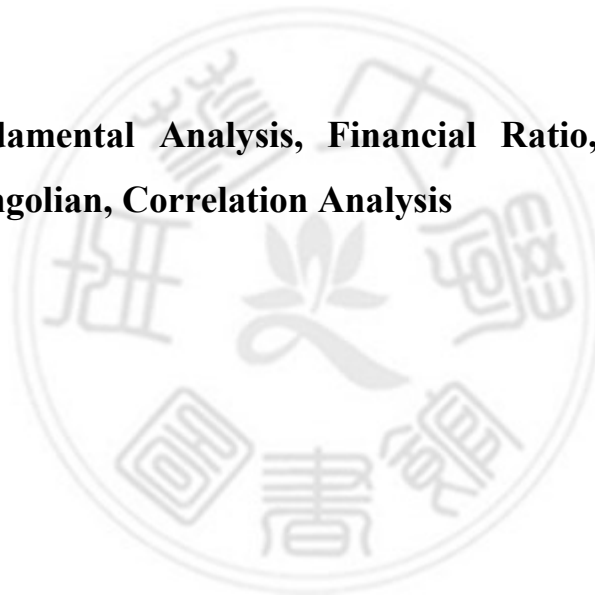


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CHAPTER ONE

INTRODUCTION

1.1 Research Background and Research Motivation

1. Research Background:

Mongolia is a newly emerging country in Asia. Though its economic performance is relatively volatile, its high growth rate is still impressive. According to the statistic report, Mongolia has seen strong economic growth in 2011 and 2012, but economic growth has slowed in the past two years. In 2014, economic growth slowed down and economic imbalances began to stabilize. According to the report provided by Mongolian statistical information service the real GDP growth was down by 12.8% compared to the same period of the previous year. Furthermore National statistical office of Mongolian reported poverty has declined over the past decade. Last year, it dropped from 38.7 percent in 2010 to 27.4 percent in 2012. Its improvement in economics has contributed to the Trade liberalization, particularly to the food industry which is improved availability and stability of food supplies.

Food production is the main industry in Mongolia. According to official data, the food industry is the largest producer of GDP. Wheat, meat, milk and vegetable supplies are enough. In recent years, the average consumption of per capita food increases and meat and dairy products are higher than regional standards. There has been considerable progress in addressing the Millennium Development Goals (MDGs) at the national level, but regional disparities are dominant. According to the report provided by food and agriculture organization of the United Nations, Agriculture is a traditional Mongolian sector that produces about 15% of GDP based on the population's food supply and domestic raw materials.

According to official statistical data, the domestic supply to nation demand is quite high for Mongolia, for example Mongolia supplies meat to its people, 75-80 percent of the total flour, 20 percent of milk and dairy products, 27.5-66.7 percent potato and vegetables, rice and sugar, vegetable and butter. products are supplied only from external sources. According to the national average, meat and flour are dominated by food consumption. The total production of the food sector reaches one trillion MNT in 2015, accounting for 4.3% of GDP and 10% increase compared to the previous year. Food products exports decreased by 36% compared with 2014 and imports down 14%.

As of 2015, there are 1914 food and factories registered in Mongolia as of 2008. 236 processing of milk and dairy products such as yogurt, curd, ice cream etc., industrial production by smelting, sausage, ham, dumplings, 314 meat products, flour, bakery, sliced flour, flour and bakery products, 916 bakery products and 243 factories and fermentation products. Manufacture of beverages by industry 43.9%, flour 19.1%, bread, pastry and other food products 16.1%, raw material availability and experience of meat processing 13.4%, milk and dairy production 5.5% respectively. Ministry of food, agriculture and light industry, the production of major food products dramatically declined in 1996-2000 compared to the 1991-1995 average because of (give a reason), After 2001, its production has been growing . The following section is devoted to state comprehensively the food industry condition in Mongolia.

(1) Flour factory: The Mongolian economy was primarily based on the development of livestock in the Mongolian economy until 1959, and it was necessary to address many factors such as meeting the growing demands of the population, reducing imports, and increasing wheat, potato, and vegetable production. Capacity building of mainland soil and pastoral livelihoods. The

Government of Mongolia has announced the third campaign of 2008 to improve the cultivation of virgin land, the second campaign in 1976 and the flourishing of flour, potatoes, and vegetables in 2008.

For instance, 355.1 thousand tons of wheat was harvested in 2010, 167.9 thousand tons of potatoes and 82.2 thousand tons of vegetables were harvested and grain decreased by 9.3 percent compared to the previous year, potatoes 11.1 percent, vegetables increased by 5%. In connection with wheat reserves, average annual yields of 54.0 thousand tons flour in 2000-2008 were imported, and they supplied 100 thousand tons. According to statistical data, in 2010, 72 large and small enterprises with the capacity to process 532.8 thousand tons of grain per year were operated in 15 aimags and UB.

The private sector crop production sector has grown rapidly, reaching 700 thousand hectares, providing a complete supply of wheat and potatoes and growing vegetables by 54%. Nowadays, 1190 enterprises, over 65 thousand producers of 34 and 5 thousand households, and agricultural producers work 706.0 thousand hectares of agricultural land. In crop production, vegetables, wheat, barley, oats, rye, soybeans, maize, cola, potatoes and about 30 types of vegetables are grown.

(2) Bread and bakery industry: According to the 2010 Ministry of Food and Industry, there are 551 factories and small and medium sized enterprises in bakery production. The production of bread was up to 25.8 thousand in 2008 and 1.1 times more in 2009 and it declined by 1.9 times in 2010. Various pastry production increased 1.5 times more than in 2005, but is 3 times less than the 1990 level. The reduction in bake production allows According to the report provided by Mongolian statistical information service, Mongolia's market share of similar products, while the production of low-pastry in rural areas is due to the fact that transporting large-scale Ulaanbaatar products to individuals leads to negative impacts on local production.

Research Motivation: Fundamental analysis is one of the methods predict the true value for the listing company, in which analyzing the financial ratio appearing in the financial statement is the most commonly used way. Financial information is trying to explore the business value from different aspects such as its liquidity, operating efficiency, solvency, profitability, etc. The effect of the ratio on business value is varying from different market and industry.

An analysis of the company's financial statements shows that the information presented in the financial statements shows the strengths and weaknesses. Whether it has sufficient funds to finance its operations and to fulfill its short-term obligations, if there is an effective and efficient management policy for the investment, it is profitable to have a competitive advantage over the industry and have long-term debt financing. It defines the firm's long-term survival and helps determine the return on the relevant risks.

A financial statement analyst may obtain appropriate information for company managers in recent trends and instances that may affect future planning and implementation of management policies. Such decisions can be updated to ensure that shareholders' accountability remains accountable.

Secondly, recent research has integrated important financial ratios into the bankruptcy index (Z-SCORE) as an indicator of the company's operational risk. Z-score is the comprehensive data to represent the company performance in finance. The purpose of this study is to analyze the correlation between different financial ratios and the bankruptcy index. This is used to analysis the critical ratio impacted in the bankruptcy index.

In brief, this study aims to compare the financial performances and business performance for these sample companies. Secondly, we are going to compare the Z-score for each sample company and try to find out the critical

financial ratio impact on the Z-score. Finally, it is going to compare the difference of each company Z-scores.

1.2 Research Objective

This study employs 5 companies of food industry, which are regarded as the sophistication of flour industry for Mongolian, to be the example to investigate whether their financial performances including the stability of solvency, financial stability, the ability to pay the liabilities, the company's profitability and the bankruptcy rate would impact on the business performance. Therefore, this study aims to make a comparison for the financial performance of these 5 sample companies, furthermore the business performances are also to be compared as well. Secondly, this study is trying to explore the effect of financial ratio on the Z-score and make a comparison of the Z-scores for sample companies.

1.3 Subject and Research Scope

Mongolians flour industry especially, bakery products of the companies. Here:

- Atar Urguu LC financial statement of 2012-2018
- Talkh Chikher LC financial statement of 2012-2018
- Darkhan Khuns LC financial statement of 2012-2018
- Uvs Khuns LC financial statement of 2012-2018
- Khuvs gul Khuns LC financial statement of 2012-2018

All data is collected from the qualified Mongolian stock exchange.

The theme focuses to the explaining ability of the financial ratios on business performance and market value-evidence on the Mongolia's food companies.

This study employs the Kruskal-Wallis test to compare the financial performance of sample companies. Secondly, there are five aspects of

financial performance are employed as the explaining variables to the business performance, which includes liquidity ratio, asset management ratio, profitability ratio, debt coverage ratio, market value ratio, and evaluation and the Z-score formula for predicting bankruptcy. Thirdly, analysis the correlated relationship between the Z-score and the financial ratios.

1.4 The Procedure and Research Structure

The study examines the role of over commitment ratios of financial ratio of the Mongolian flour industry companies. First, the framework offers theoretical backgrounds in financial ratio and business performance. Then point out the research model, using quantitative research method to financial ratios and Z score, collect data to draw final conclusions. The research process is describing in Figure 1.1 as below:

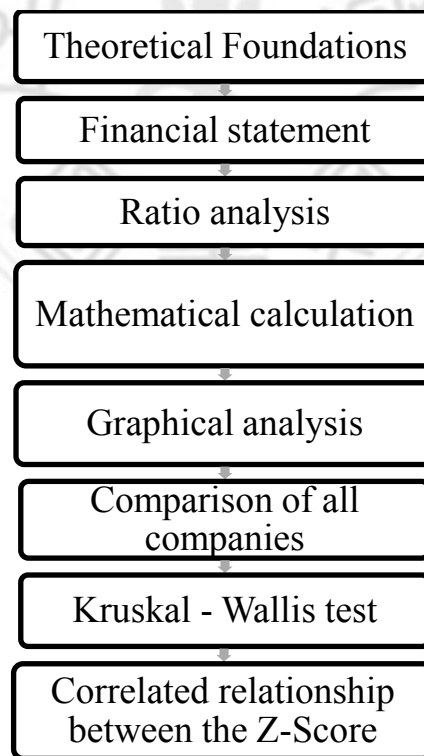


Figure 1.1 Research Process

Source: Original Study

CHAPTER TWO

LITERATURE REVIEW

Financial ratio analysis is used to analyse the business performance from the different aspects of financial performance appearing in Financial statement. It includes liquidity, solvency, operating efficiency, and profitability, etc. This section aims to demonstrate the related study to explore the relationship between financial ratio and business performance.

2.1 Financial Ratio

The financial analysis process was obtained from various sources created by the company. These reports can be prepared generally annually, but accounting reports are quarterly or bi-annual. An open, simplest, financial document is an annual report. Annual reports include balance sheet, profit and loss statement, cash flow statement, and statement of changes in equity. In most of Europe and around the world, these financial statements are prepared by the International Financial Reporting Standards (IFRS). The interpretation of financial statements has been included in quantitative indicators. The annual report is restricted to the information provided by law. Additional information is usually used only for internal financial analysts.

This analysis has a diagnostic function to evaluate the effectiveness of management and other business decisions taking into account funding, investment, operational activities and benefits.

Financial analysis consists of tools and techniques used to analyze commonly used financial reports such as the balance sheet and income statement to determine the information needed for business decision making. For investment purposes, it's used as an analytical tool for companies to

invest and predictive instruments to calculate how well a business is going to be in the future.

There are 5 dimensions for financial performance including liquidity, efficiency, profitability, market value and capital structure. Let's introduce these 5 dimensions of the researchers.

1. Liquidity ratio: According to the Qasim & Ramiz (2011), which determines the financial obligations that are attributable to the current period, the liquidity is defined as cash in the near future. Liquidity management is critical to paying for your current business responsibilities for each organization that including: short-term operational and financial costs.

According to the Maness (1994), provides liquidity to shareholders, long-term lenders, information about the benefits of certain business security benefits to the borrowers and the ability to repay the loan. Cash inflows as part of a firm's stock, loan, account payments, and cash flows are influenced by the firm's liquidity.

On the other hand, Cooper & Adams (1997), illiquidity, insolvency can become insolvent and business bankruptcy as the businesses liabilities exceed its assets. Shareholders, long-term lenders, assess the risk level and require that the risk of a business asset be reimbursed.

According to the Morris & Shin (1998), liquidity ratio is recommended to understand the ratio of liquidity to calculating short-term liabilities. Ratio analysis is one of the traditional approaches to using financial statements and is to establish a standard for understanding companies and understanding the financial fiscal.

Eugene & Micheal (1999), Receivable receivables are the result of loan sales. The purpose of credit sales is to increase the market share and enable potential sales. If the profit exceeds the credit sales costs, the business performance should be improved and the basic criteria for performance, such

as efficiency, productivity, and return on equity. Because of the impact of cash flows and sales revenues, profits and account receivables, the loan policy and collection policy should be actively managed. Fridson & Alvarez (2002), financial statement analysis: A practitioner's guide, Fourth edition.

The liquidity ratio is an important financial measure used to determine the ability to pay the debt without raising external debt. Liquidity ratios are the ability of the company to safeguard the security of the company through measuring the obligation and liability including current ratio, quick ratio and cash ratio.

A. Quick ratio: The quick ratio is a type of liquidity ratio measures the ability to use cash or cash to suspend a company's current liabilities. Quick assets are comprised of current assets that can be converted into cash. It is a ratio between quick available or liquid assets and liabilities. The normal liquid ratio is 1: 1. A quick ratio of less than 1 in a company can't fully pay off the current debt. This ratio is considered to be a better and more reliable means of assessing the firm's liquidity position.

$$\frac{\text{Cash+Accounts Receivable}}{\text{Current Liabilities}} \quad (1)$$

B. Current ratio: The current ratio is the ratio of current assets and other current liabilities (less financial year less than one year) by comparing current assets with current assets. This ratio demonstrates the company's ability to remain solvent. In general, investors are assuming the current ratio is 2: 1 and the current liabilities are twice as much the working capital. The current ratio of less than one transaction indicates that the company may be difficult to meet its short-term financial obligations. If the ratio is too high, the company may not be able to effectively use working capital or to use short-term financing tools effectively. This ratio is calculated by:

$$\frac{\text{Current Assets}}{\text{Current Liabilities}} \quad (2)$$

C. Cash ratio: This ratio compares to cash and liquidity investments to current liabilities. As such, this is the most conservative ratios of liquidity ratios, and in the short-term, it is useful to pay for current liabilities.

$$\frac{\text{Cash}}{\text{Current liabilities}} \quad (3)$$

2. **Efficiency ratio:** According to the Eljelly (2004), managing liquidity management efficiently includes eliminating the risk of short-term responsibilities planning and monitoring of current assets and liabilities by eliminating the risk of excessive investment in these assets. Examples of stocks in Saudi Arabia include the correlation between profitability and liquidity by using correlation and regression analysis (monetary cycles). The effectiveness ratio is called an operating ratio, and companies measure how their assets are used for earning money. Efficiency ratio requires a company to collect cash or to convert the inventory into cash in other words.

These ratios are used to improve the company and profitability management of foreign investors and lender companies.

A. **Accounts Receivable Turnover Ratio:** The receivable turnover account is the ratio of effectiveness (activity ratio) to measure how many times the business receipts are translated. In other words, the ratio of receivable transactions measures the average amount of receipts in a given year.

$$\frac{\text{sales}}{\left(\frac{\text{Beginning account receivable} + \text{Ending account receivable}}{2} \right)} \quad (4)$$

B. **Average Collection Period ratio:** The average collection period for collection is the time required to receive the payment to the account. The average collection period is the time required to receive the payment to the

account. Average collection period calculates the average account receivable by dividing the net sales of the current period and multiplies by the number of days in the current year. This ratio is calculated by:

$$\frac{365 \text{ days}}{\text{Accounts receivable turnover}} \quad (5)$$

C. Inventory Turnover ratio: Inventory turnover is the ratio of the amount of inventory sold to the company during the period. Then calculate the time required for the sale of the inventory by compiling the turnover of the firm then divide it during the day. Calculating inventory turnover helps entrepreneurs make better decisions about pricing, production, marketing, and purchasing new goods. This ratio is calculated by:

$$\frac{\text{COGS}}{\text{Average inventory}} \quad (6)$$

D. Fixed assets turnover ratio: The fixed assets turnover ratio is an effective ratio for companies to measure their return on investment. Property, plant, and equipment by comparing net sales with fixed assets. In other words, the company considers how efficiently the sales of machinery and equipment.

$$\frac{\text{Sales}}{\text{Fixed asset}} \quad (7)$$

E. Total assets turnover: A measure of a company's efficiency in managing its assets in relation to the revenue generated. The higher the profitability, the more profitable the company will be, the lower the investment required to increase sales revenue. This ratio is calculated by:

$$\frac{\text{Sales}}{\text{Total asset}} \quad (8)$$

3. **Profitability ratio:** Jacques (2003), Profitability creates n profits n written in Greek, which is defined as the difference between total revenue =

total revenue-total cost (TR) and total cost (TC). According to Reilly & Brown (2005), financial statement analysis aims at evaluating management performance in a number of key areas, such as profitability, efficiency, and risk. The ultimate goal of this analysis is to help us define future management performance. In addition, financial ratios should be linked to the rivals of the economy, firm industry, key competitors and firm priorities.

According to Zimmerman (1996), the management team has made significant contributions to the performance of the portfolio, in particular, the concentration of the loan portfolio. Researchers have good performance in quality management with respect to good banking performance. The management quality is monitored and evaluated by senior bank officers and banks policies and performance.

According to the Gitman (2009), management believes that profitability is a key ingredient in planning for business operations, lenders and shareholders can define the return on investment in the business, assess the risk of investment, production structure, and competitive environment. In support of Kakuru (2005), also the difference between the revenue generated by the enterprise and the expenses incurred during the business operation.

According to Brinker (2002), the difference between the reported profit and the difference between the cost of generating the same revenue during a particular accounting period. In order to determine profitability, firms should aim to increase sales revenues and reduce cost.

Westerfield (2000), Profitability is defined as the investment process as an indefinite resource in the investment portfolio and the amount invested it brings in return to the firm in the form of interests. Profitability is determined by the difference between revenue and expense in the accounting period. Profit ratio reinforces the return on inventories and other assets on company returns. These ratios show how companies benefit from their operations.

A. Net profit margin: The net profit margin is the residual income remaining and subsequently, the operating expenses, interest, tax, and dividends on preferred shares (but not dividends on common stock) are deducted from the total income of the company. According to the Pandey (2002), identified using profitability ratios, companies can measure profit levels. According to him, it can be measured after the financial statements have been prepared. He will earn a net profit after deducting operating expenses such as interest, tax, electricity, etc. The net profit margin ratio is measured by profit sharing after sales. In support to Pandey (2002), Kakuru (2005) profitability ratio can easily be measured by the ratio of profits to returns; this yields more emphasis on sales, capital investment, the share of assets, and net profits. This ratio is calculated by:

$$\frac{\text{Net income}}{\text{Sales}} \quad (9)$$

B. Gross margin ratio: Gross profit ratio is the ratio of total sales to net sales. This ratio measures the profitability of a company selling its goods. In other word, the gross margin ratio is the value of the commodity price. It is the net sales of inventories available for operating expenses.

According to NKundabanyanga (2004), defined profitability is the expected return on management in relation to investment. For him, profitability can be measured.

Westerfield (2000), the gap between revenue and gross profit is the number of proceeds from the sale of the entity's products/services as an expense. In other words, profit, interest, and tax before deduction of depreciation.

$$\frac{\text{Gross profit}}{\text{Sales}} \quad (10)$$

C. Return on Equity (ROE) ratio: Return on equity ratio (ROE) is the ratio of the firm's ability to measure profits from a company's invested capital.

In other words, the ratio of equity returns the amount of profit from each of the common shares of the equity holders. According to Horne (2005), the return on the stocks shows the company's shareholders the benefits of all the costs and taxes. Ross (2013), it measures how each dollar in the company measures the post-tax revenue. It measures how much the firm is earning after tax for each dollar invested in the firm. In other word, ROE is the net income of a US dollar property.

$$\frac{\text{Net Income}}{\text{Shareholders equity}} \quad (11)$$

D. Return on assets (ROA) ratio: The return on assets (ROA) shows how profitable the company is for total assets. ROA gives managers the idea of how to manage their capital efficiently in order to generate profit and management of a company, investor, or expert. Return on equity is expressed as a percentage. Horne (2005), Return on assets indicates the profitability of the company after all costs and taxes. Ross, Westerfield & Jaffe (2013), this is a common measure of management profits. It measures how much of the company's invested capital measures the post-tax revenue. Samad & Hassan (2000), it measures net earnings per share of the given assets and, corporations can transform their assets into revenues. This ratio is calculated by:

$$\frac{\text{Net Income}}{\text{Total assets}} \quad (12)$$

E. Profit Margin Ratio: The profit ratio is called the ratio of sales or profit-to-earnings ratio, which refers to the net worth of sales and the net sales of the

company's sales. In other words, the proportion of the difference between the profits is the percentage of sales after completing business expenses.

$$\frac{\text{Income before tax}}{\text{Sales}} \quad (13)$$

4. Market value ratio: According to the Dontoh & Radhakrishnan (2004) In addition, the power of the relationship between the price and book value of shares in the United States (relevance value) is such an influential factor, in other words, an informal business activity. Market value is the price of the market for your assets. Market value is generally applied to the market capitalization of the publicly traded companies and the current shares of the current stock are multiplied by the number of remaining shares. Market prices are easy to define for securities traded in stocks such as stocks and futures. Because market pricing is widespread and easy, it is more difficult to find regular tools such as fixed income securities. However, the most difficult problem in determining markets value may be to use real estate valuation experts and business valuation experts to estimate the value of the real estates, such as the real estates, or business. The most common market ratios are as follows:

A. **Earnings per share:** Earnings per share (EPS) are the portion of a company's profit allocated to each share of common stock. Earnings per share are indicators of the profitability of the company. The EPS, which is set up by extraordinary items and potential dilutive liabilities, is common for companies reporting. This ratio is calculated by:

$$\frac{\text{Net income}}{\text{Number of shares outstanding}} \quad (14)$$

B. **Interest coverage ratio:** The interest coverage ratio is dependent on debt ratios. This is the ratio of profits used to determine how you will pay your

debt. The company's interest coverage ratio can be calculated by dividing the pre-tax income (EBIT) interest over the period over which the company paid interest payments.

$$\frac{\text{EBIT}}{\text{Interest expense}} \quad (15)$$

C. **Book value per share:** The Book value per share is the method to estimate the value of the company's share of the company's equity interests. In the event of a liquidation of the company, the dividends with respect to ordinary shares reflect the dollar value of the common holders after the payment of all the liabilities after the settlement of all assets. This ratio is calculated by:

$$\frac{\text{Shareholders equity}}{\text{Average number of common shares}} \quad (16)$$

D. **Market to book ratio:** Market to book ratio is a comparison of market value to the price of the company's securities. In another word, it shows how much investors are paying for each book's balance sheet. Also known as the price to book value, this ratio attempts to establish a connection between the book value and the fair value of the stock market. In arithmetic, it is the ratio of market value to book value.

$$\frac{\text{Share price}}{\text{Net Book value per share}} \quad (17)$$

5. Capital structure ratio: According to the Zulfiquar & Mustafa (2007), as the asset structure affects the firm's liquidity and profitability, the business and every firm consider the debt to be used to increase the firm's market value using the different levels of equity. The liquidity ratio is a key measure used to measure the ability of an entity to settle the liability and is often used by future business lenders. The liquidity ratio shows whether the company's cash

flows are short-term and long-term debt. The capital structure utilizes a variety of sources to fund general corporate activities and growth. If the liability is a bond or long-term liability, the asset is classified as ordinary shares, preference shares or retained earnings. Short-term debt, such as working capital needs, is part of the capital structure.

A. Debt ratio: The debt ratio is the financial ratio that measures the company's leverage. The debt ratio represents the ratio of total assets to total liabilities by percentages. It can be interpreted as the ratio of a company financed by debt.

$$\frac{\text{Total liabilities}}{\text{Total Assets}} \quad (18)$$

2.2 The Relationship between the Financial Ratios and the Company Performance

Referring to the relative study, most of the study agreed that the financial ratios can proxy the business performance. For business performance, there are a number of corporate performance and profitability measures. According to Chen (2005), Damodaran (2007), the return on investment (ROE) is a stable and popular measure of corporate performance.

Such as, Raheman & Nasr (2007) Based on the average collection period, inventory turnover, average duration of payment, current ratio, debt ratio, firm size, and financial assets as a ratio of total assets, selected independent variables and net profit variables are current ratios and debt ratio, the firm's profitability. There was a strong negative correlation between operations. The research has created negative relationships between liquidity and profitability.

Furthermore, the negative relationship between debt used by the firm and its profits has been identified.

According to Vanitha & Selvam (2011), the liquidity, leverage, and profitability ratio affect the financial performance of the company. In addition, high liquidity shows that the company is in good condition. The high leverage company is a warning sign. However, high risk is to increase the expected returns. In addition, gaining high profits means the company's profitability.

Christopher., Kamalavalli & Talha (2010) the independent variable is the quick ratio, current ratio, inventory turnover ratio, working capital turnover, ratio of current asset to total asset, ratio of current asset to operating income, comprehensive liquidity index, net liquid balance size and leverage and growth while dependent variable (profitability), measured by return on investment ROI. ROI creates a negative relationship between ROI and current ratio, cash flow ratio, and current assets to operating income and leverage. On the other hand, they have a positive relationship with the ROI and the quick ratio, turnover ratio, current assets to total assets and growth rates.

Dong (2010) his study suggests that profitability, conversion cycles, and its related elements and their interrelationships variables suggest that the firm's profitability and liquidity influence managing current assets.

According to Eljelly (2004), quick liquidity management will eliminate the risk of short-term performance by planning and controlling current assets and liabilities. These assets offer a way to eliminate excessive investment. The study found that the money-conversion cycle was more important as a measure of solvency compared to the current ratio of profitability.

Richards & Laughlin (1980) the key management main job is to determine how funds are used to generate revenue, sell money, credit sales, and how much they are invested in net assets, long term inventory is used to spend on businesses before they can be sold or used during production, the purchase of a record of the loan goods, the average duration of the settlement of the creditor. In summary, a large number of surveys can be used to describe

the performance of a very important category, including liquidity ratios, debt ratios, operational efficiency ratio, and debt ratios.

2.3 The Proxy for Business's Bankruptcy-Altman Z-Score

Altman Z-score is a linear combination of different dimensions of financial ratio to proxy the business performance and failure ratio. Unlike the previous models of Beaver (1966), Edward Altman separated the financial ratios, Altman Z-score (Altman, 1968) combines multiple financial ratios as one point, leading to the company's bankruptcy incidence of various types of discrimination analysis (MDA). The model showed high predictive power on companies facing financial distress, as measured by the Z-score.

Altman (1968), analyzed the financial position with the help of ratio analysis and multiple discriminated analyze and discriminated coefficient was determined. The model was formulated to determine the bankruptcy of any company. The first-tier analysis of Altman (1968) is used as a first step and depends on the data of open-ended companies. Subsequently, the extension of the Z-scoring technique proposed by Altman (1983) may be used in other industries, such as the private sector industry. Therefore, the updated Altman Z'-score (1983) is published as a special model for these industries. As a result, the value of the equity valuation was replaced by the market value of X4 showed in equation (19) in order to adjust the original Z-scoring formula to Altman different parameters. This leads to the change of the Classical standard and Z-scores results. Lastly, the Altman Z'-scoring formula is shown below.

$$Z'=0.717(X1)+0.847(X2)+3.107(X3)+0.420(X4)+0.998(X5) \quad (19)$$

Where:

$X1 = \text{Working capital} / \text{Total assets}$

$\text{Working capital} = \text{Current assets} - \text{Current liabilities}$

$X2 = \text{Retained earnings} / \text{Total assets}$

$X3 = \text{Earnings before interest and taxes} / \text{Total assets}$

$X4 = \text{Market Value of Equity} / \text{Book Value of Total Liabilities}$

$\text{Market Value of Equity} = (\text{Market price per share}) \times (\text{Total Number of outstanding shares})$

$X5 = \text{Sales} / \text{Total Assets}$

From this point, the regression coefficient is determined by the appropriate group of firms that have been measured to measure the bankruptcy principles and industries. Equation (19) can be used for private companies.

Altman's research work continued with a new model that was used to predict the company's error. The model of equation (20) is used in non-manufacturing companies and in other industries used in emerging markets. In addition, the Altman Z model excludes X5 variables and sales / total assets, so only 4 independent variables are included. Finally, the sum of "Altman Z" scores is presented as follows Altman. (1983).

$$Z'' = 6.56(X1) + 3.26(X2) + 6.72(X3) + 1.05(X4) \quad (20)$$

The new Z-score model ratios are listed such as:

$X1 = \text{Working capital} / \text{Total assets}$

$\text{Working capital} = \text{Current assets} - \text{Current liabilities}$

$X2 = \text{Retained earnings} / \text{Total assets}$

$X3 = \text{Earnings before interest and taxes} / \text{Total assets}$

$X4 = \text{Book value} / \text{Total liabilities}$

Therefore, the deductions are $Z'' < 1.10$ representing insolvency companies. However, the $Z'' > 2.60$ index is the indicator of healthy firms.

Moreover, companies with "Z" Altman (1983) exist in the gray zone of 1.10 and 2.60.

In the following study, numerous studies investigate the predicting ability of Altman Z-score. According to Wu (2010), Altman Z-score (1968) is the first way to use financial ratios for bankruptcy or prediction. Since then, appraisal and application of financial ratios is an important component of the predicted error. At the same time, Altman's Z-scoring model (1968) is used to assess the insolvency of the company. The model consisting of five linear combinations of business relationships involves a multidisciplinary process and an MDA to measure its business activity or competence. For example, financial ratios can be estimated as company performance criteria; profitability, liquidity, capital structure, and benefits (Altman 1968).

Recently, Sherbo & Smith (2013), the result of the survey The Z-score model is over time and is still in use today. From these advantages, the Altman Z-Score is a measure of financial health. Others like Praveena., Mahendran & Moghana (2012) in their study, Z-score analysis attempted to identify the combined effects of various financial ratios. See also Blum (1974), Deakin (1977), Beynon & Peel (2001), Neophytou & Charitou (2008).

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter explains how data was collected to accomplish its purpose. Also, I will introduce articles, models, and formulas to this form and formulas to our dissertation. I used quantitative research methods to collect large amounts of data from the data. This is explained as follows.

3.1 Data Collection

Main data for our study are using the semiannual financial reports from 2012 to 2018 of 5 bakery products companies on Mongolian which is collected from Mongolian stock exchange (www.mse.mn). This is 5 companies are including Atar Urguu LC, Talkh Chikher LC, Darkhan Khuns LC, Uvs Khuns LC, and Khuvsgul Khuns LC. Since this study infers that the financial performance might be used to predict the business performance, therefore, the financial ratios analysis is employed to investigate the financial performance of these bakery product company by using four main financial statements including balance sheets, an income statement, cash flow statement; statement of shareholder's equity. All financial ratio data is semiannual. This study aims to make a comparison for these 5 sample companies using these financial ratios. Due to these sample companies are leading companies in the industry. Besides that, these study also try to investigate whether the financial performance will truly reflect on the market price of the company for the purpose of studying the market efficiency, the daily data also be employed by this study.

3.2 The Design for the Empirical Works

The empirical works will be demonstrated by this study. The following section will make a comparison for these 5 companies in financial performance.

The first step is the choice of a financial statement to choose for a semi-annual financial report. Annual financial statements present the financial position of a company, its performance and cash flows for the current accounting period. We use the annual reporting of both bakery product companies in 2012 from 2018.

For the second step, this study made a graphic evaluation of the company. The graphic analysis is a cheap learning tool for graphics creation, analysis, printing, and learning. Here we use Microsoft Excel on company charts. We make different types of graphs such as column charts, line graphs, regional graphs, and bar graphs. Most of the graphs are column charts. The continuous graph is two horizontal.

As for the third step, this study analyzed comparisons for liquidity positions, asset management conditions, debt scope and profitability of five companies. Why the company works better than other companies and talks about why those companies are not good compared to other companies.

As for the fourth step, best distributor between five bakery makers. I can easily measure the best ratio. Because we use different ratios, compare results, graphs, and all companies.

Next, because the lengths of available data for financial ratio don't satisfy the requirement of doing regression analysis neither for ANOVA, this study used Kruskal-Wallis test for analyzing whether their financial performances are significantly different or not.

The difference between these five companies shows statistical significant. The Kruskal -Wallis Test is calculated on SPSS 20 software.

Finally, I calculated correlation coefficient. The correlation coefficient is a quantitative measure of some types of correlations and represents the statistical relationship between Altman Z-score and other ratios.

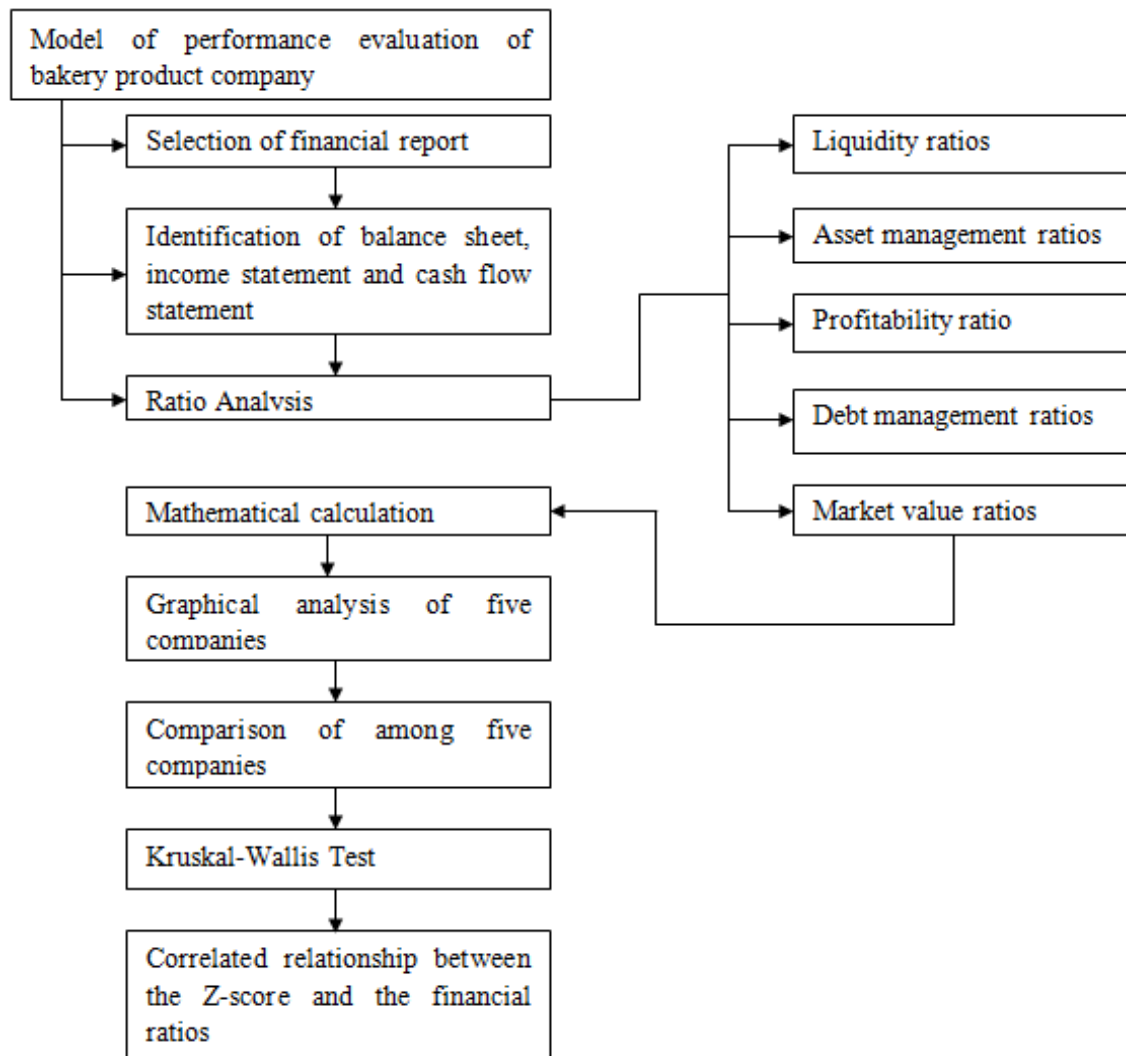


Figure 3.1 Model of Performance Evaluation of the Companies

Source: Original study

3.3 The Definition for Ratio Analysis

We used different formulas to calculate different types of comparisons. We collect some formulas from Kieso, Weygandt, Warfield (2001) from Intermediate Accounting books. We also collect some data from the accounting principles of Weygandt, J. J, Kieso, D. E, & Kell, W. G. (1996).

Therefore, the term formula without formulas cannot be calculated without computation, and we are not a measure of the performance of bakery companies. There are several formulas that reflect the five aspects of performance evaluation, financial conditions, and short-term discussions. These include:

Table 3.1 The Formula Used for the Study

Ratio	Formulation
1. Liquidity ratio	
1.1 Current Ratio	Current assets / Current liabilities
1.2 Quick Ratio	(Cash + Accounts Receivable) / Current Liabilities
1.3 Cash Ratio	= Cash / Current Liabilities
2. Efficiency ratio	
2.1 Accounts receivable turnover	Sales / ((Beginning account receivable + Ending account receivable) / 2)
2.2 Average collection period	365 days / Accounts receivable turnover
2.3 Inventory Turnover Ratio	Cost of Goods Sold / Average Inventory
2.4 Fixed asset turnover	Sales / Fixed asset
2.5 Total asset turnover	Sales / Total asset
3. Profitability Ratio	
3.1 Net Profit margin	Net income / sales
3.2 Gross margin ratio	Gross profit / sales
3.3 Return on equity ratio (ROE)	Net income / Shareholders equity
3.4 Return on Total Assets (ROA)	Net income / Total assets
3.5 Profit Margin ratio	Income before tax / Sales
4. Market value ratio	
4.1 Earnings per share ratio	Net income / Number of shares outstanding
4.2 Interest coverage ratio	EBIT / Interest expense
4.3 Book value per share	Shareholders equity / Average number of common shares
4.4 Market to book ratio	Share price / Net book value per share

Table 3.2 The Formula Used for the Study (Continue)

Ratio	Formulation
5. Capital structure ratio	
5.1 Debt Ratio	Total liabilities/ Total assets
6. Altman's Z-Score model (1968)	
$Z' = 0.717X1+0.847X2+3.107X3+0.420X4+0.998X5$ Where:	
X1= Working Capital/ Total Assets Working Capital = (Current Assets-Current Liabilities)/ Total Assets	
X2= Retained Earnings/ Total Assets	
X3= Earnings Before Interest and Taxes/ Total Assets	
X4= Market Value of Equity/ Book Value of Total Liabilities Market Value of Equity = Market price per share X Total number of outstanding shares	
X5= Sales/ Total Assets	
Z' < 1.23.Distress Zone (High Risk of Bankrupt)	
1.23 < Z' < 2.9.Grey Zone (Uncertain Results)	
Z' > 2.9.Safe Zone (Low Risk Area (Healthy)	

Source: Fridson & Alvarez (2002), Financial Statement Analysis: A Practitioner's Guide, Fourth edition

The Altman Z-author has been revised many times (Altman, 1983, 2002), which may apply only to public companies, but also applies to private companies and service companies. For example, Altman Z'-score (1983) has been used by many researchers as Pravova, 2012, Diakomihalis, 2012, Kumar et al, 2013, Choiasan, Chandra and Gosvami. In this study, the "Altman Z'-score" (1968) methodology has been used as a method of using a financial ratio portfolio depending on the multidimensional dispersion analysis model as shown as equation (19).

Kruskal-Wallis Test

The Kruskal -Wallis Test was developed jointly by Kruskal and Wallis (1952). The Kruskal-Wallis test which is a non-distribution test is used when ANOVA assumptions are not met which assumes that the allocation of each group is normal Kruskal -Wallis H test (sometimes referred to as "Ranked ANOVA") is a ranked grade non-rank parameter. It shows statistically significant differences between two or more distinct statistical significance. The testing statistic of H value is illustrates as follow and follow the Chi-squared distribution:

$$H = \frac{12}{N(N+1)} \sum_{i=1}^k R_i^2 - 3(N+1) \quad (21)$$

Where:

H = Kruskal-Wallis test statistic

N= Total number of observations in all samples

R_i= Sum of the ranks assigned

If the Kruskal-Wallis test value is greater than the significant chi-squared value, it implies that values of testing groups are significantly different.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

At first, I calculated 19 ratios using the balance sheet and income statement of 5 companies. 2012 - 2018 semiannually. 5 companies may be represented by a letter from a to e. Here:

a company represented the letter Atar Urguu LC.

b company represented the letter Talkh Chikher LC.

c company represented the letter Uvs Khuns LC.

d company represented the letter Darkhan Khuns LC.

e company represented the letter Khuvs gul Khuns LC.

Looking at the 19 ratios of each company from the table /Appendix 1/ below:

4.1 Financial Ratios

1. Current Ratio

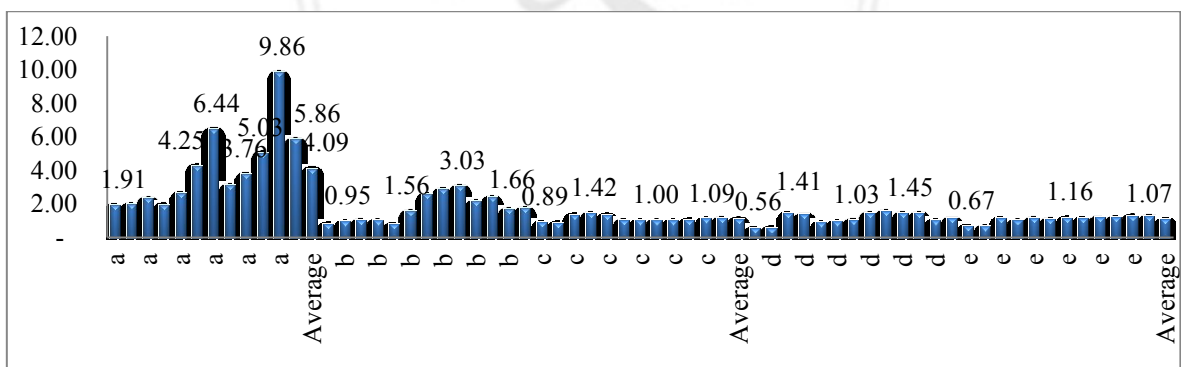


Figure 4.1 Current Ratio

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

As you can see figure 4.1 is all company current ratios, As a result, Only Atar Urguu LC has enough current assets to pay off at mostly 9.86 times of

his current liabilities. This shows that Atar Urguu LC is low leveraged and low risky. Since Atar Urguu LC ratio is so high, it is likely that he will get approved for his loan. However, this company current ratio is unstable.

For Talkh Chikher LC have enough current assets to pay off at mostly 3.03 times of his current liabilities. However, this company current ratio is unstable. For other firms, the ratio of current liabilities to total assets should be at least 1. This shows that is highly leveraged and high risky. However, this company current ratio is stable.

2. Quick Ratio

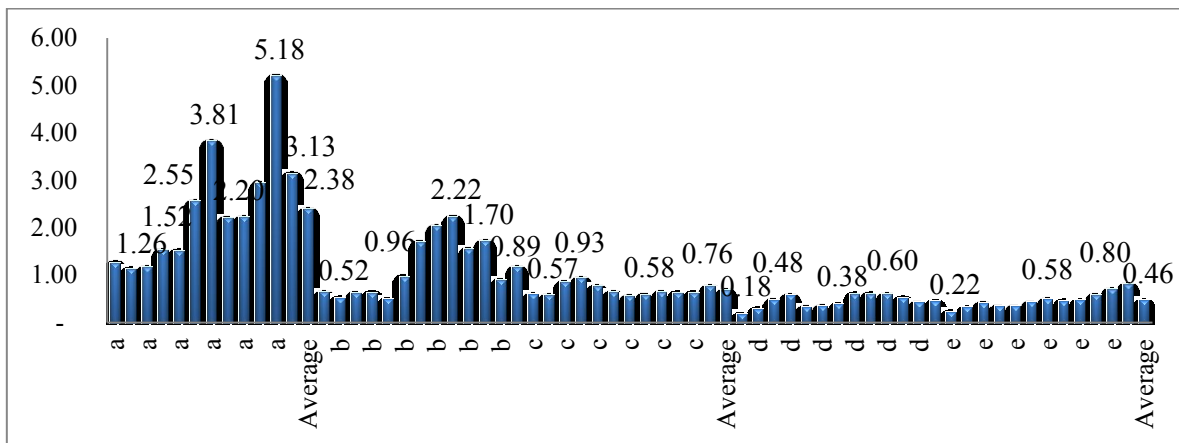


Figure 4.2 Quick Ratio

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

With a quick ratio of higher than 1, Atar Urguu LC has mostly 5.18 times and Talkh Chikher LC has mostly 2.22 times appears to be well positioned to cover its current liabilities and has liquid assets available to cover each dollar of short-term debt. Atar Urguu LC quick ratio is very good. However, Uvs Khuns LC mostly 0.93, Darkhan Khuns mostly 0.60 and Khuvs gul Khuns LC mostly 0.80 the short-term ratio is less than 1, so you can't afford to pay the current debt using a quick deposit.

3. Cash Ratio

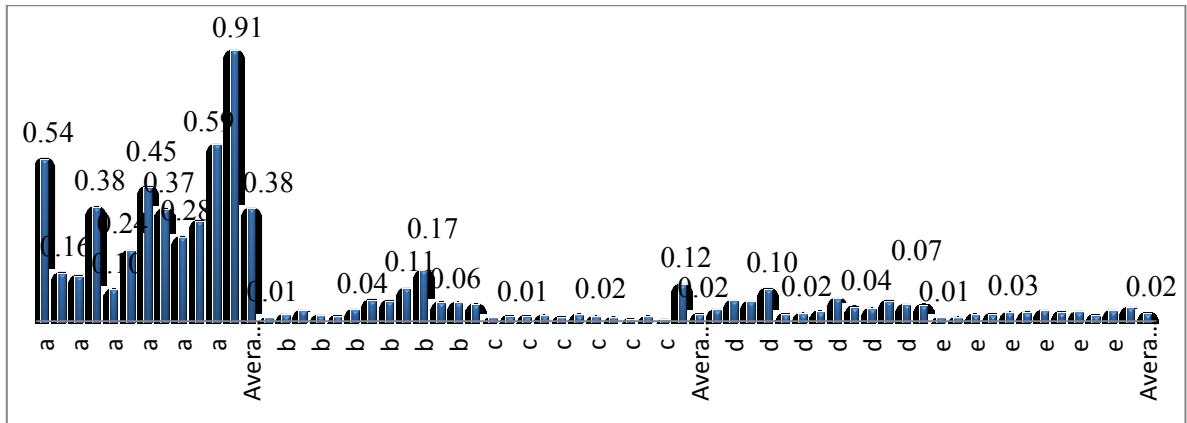


Figure 4.3 Cash Ratio

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

Atar Urguu LC there are sufficient cash and cash equivalent to pay 91 percent of its current liabilities. This is a fair high ratio which means Atar Urguu LC maintains a relatively high cash balance during the year. For other companies are unable to pay their liabilities in cash.

4. Accounts Receivable Turnover

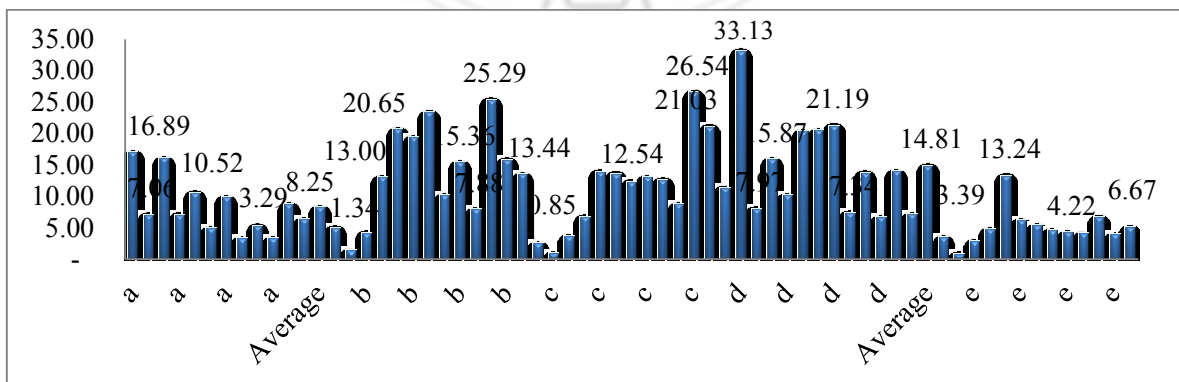


Figure 4.4 Accounts Receivable Turnover

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

We can interpret the ratio to mean that Atar Urguu LC collected its receivables mostly 16.89 times, Talkh Chikher LC collected its receivables mostly 25.29 times, Uvs Khuns LC collected its receivables mostly 26.54 times, Darkhan Khuns LC collected its receivables mostly 33.13 times, Khuvs gul Khuns LC collected its receivables mostly 13.24 times on average that year. In other words, the company converted its receivables to cash Atar Urguu LC 16.89 times, Talkh Chikher LC 25.29 times, Uvs Khuns LC 26.54 times, Darkhan Khuns LC 33.13 times, Khuvs gul Khuns LC 13.24 times that year. A company could compare several years to ascertain whether Atar Urguu LC 16.89 times, Talkh Chikher LC 25.29 times, Uvs Khuns LC 26.54 times, Darkhan Khuns LC 33.13 times, Khuvs gul Khuns LC 13.24 is an improvement or an indication of a slower collection process.

5. Average Collection Period

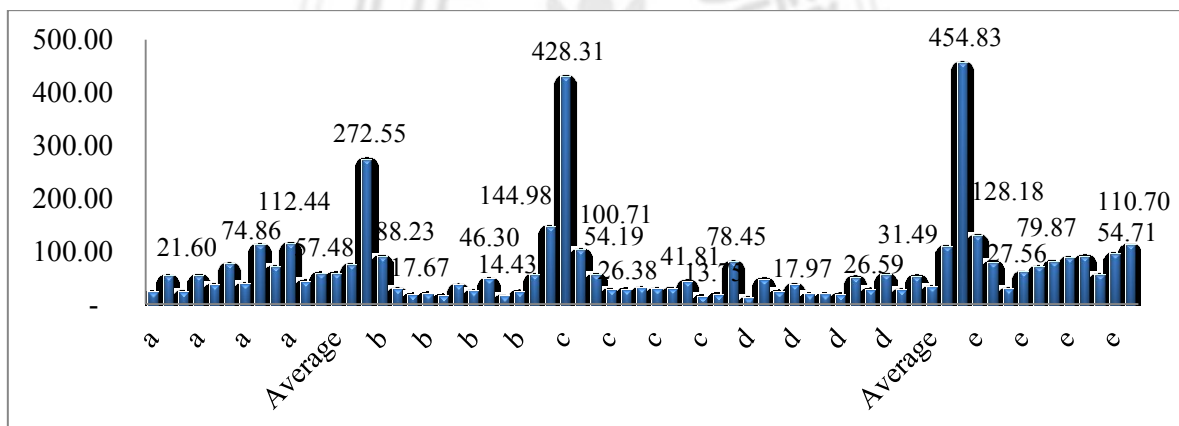


Figure 4.5 Average Collection Period

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

The company defines the average life of the receivable or the time period during which it is collected. In the above example: Atar Urguu LC 16.89 times, Talkh Chikher LC 25.29, Uvs Khuns 26.54 times, Darkhan Khuns LC

33.13 times, Khuvs gul Khuns LC 13.24 times 365 days average. The average accounts receivable turnover in days would be Atar Urguu LC 21.61 days, Talkh Chikher LC 14.43 days, Uvs Khuns LC 13.75 days, Darkhan Khuns LC 11.01 days, Khuvs gul Khuns LC 27.56 days.

For Atar Urguu LC, customers on average take 21.61 days to pay their receivables. For Talkh Chikher LC, customers on average take 14.43 days to pay their receivables. For Uvs Khuns LC, customers on average take 13.75 days to pay their receivables. For Darkhan Khuns LC, customers on average take 11.01 days to pay their receivables. For Khuvs gul Khuns LC, customers on average take 27.56 days to pay their receivable. If the company had a 30-day payment policy for its customers, average account receivables would average one-day payout on average. The company can improve its circulation ratio and make changes to it. The company may discount the customer's early repayment. It is important for companies to get back their receivables because they are directly linked to cash that can pay their short-term debt.

6. Inventory Turnover Ratio

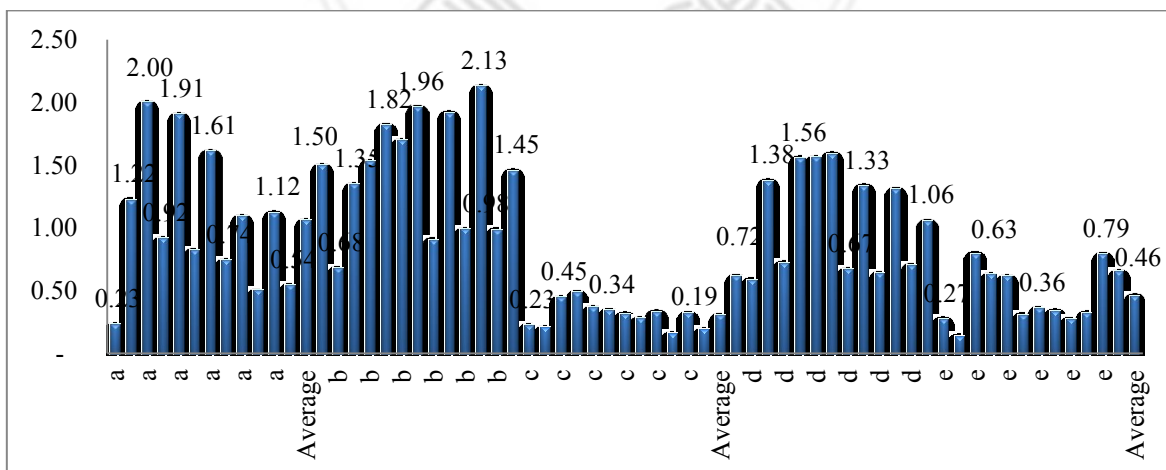


Figure 4.6 Inventory Turnover Ratio

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

As you can see, Atar Urguu LC inventory turnover is mostly 2.00. This indicates that Atar - Urguu LC sells its entire inventory within a 182.5-day period, which is quite impressive for such a small. It also implies that it would take Atar Urguu LC approximately half a year to sell his entire inventory or complete one turn. In other words, Atar Urguu LC does not have very good inventory control.

For Talkh Chikher LC, inventory turnover is mostly 2.13. This indicates that Talkh Chikher LC sells its entire inventory within a 171.3-day period, which is quite impressive for such a small. It also implies that it would take Atar Urguu LC approximately half a year to sell his entire inventory or complete one turn. Other companies require more than 171.3 days. This figure shows that inventory turnover ratio decreasing at Atar Urguu LC, turnover increases with an inventory of Talkh Chikher LC.

7. Fixed Asset Turnover

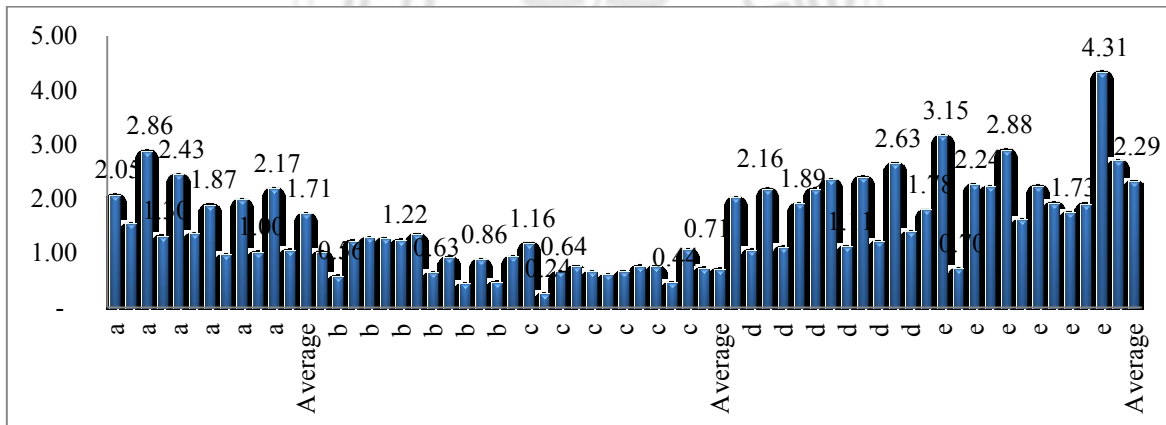


Figure 4.7 Fixed Asset Turnover

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvsgul Khuns LC

Source: Original study

As you can see, Khuvsgul Khuns LC generates mostly 4.31 times more sales than the net book value of his assets. The bank should compare with

other companies similar to Khuvsgul Khuns LC. Atar Urguu LC mostly 2.86, Talkh Chikher LC mostly 1.22, Uvs Khuns LC mostly 1.16, Darkhan Khuns LC mostly 2.63. So, the other company ratios lower than Khuvsgul Khuns LC.

8. Total Asset Turnover

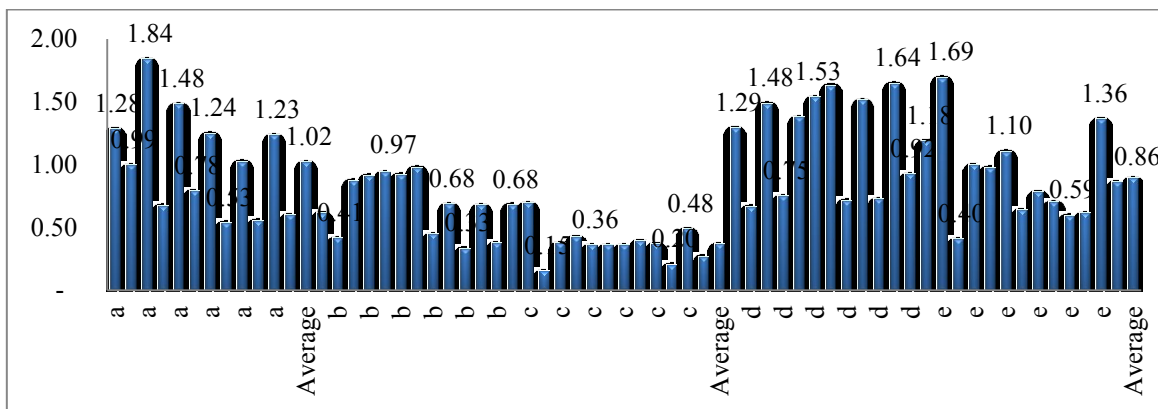


Figure 4.8 Total Asset Turnover

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvsgul Khuns LC

Source: Original study

Atar Urguu LLC declined to 1.28 per year in year 2 for the second year in year 1, indicating that no more sales of the company's assets are needed. In other words, firm 1 sold 1.28 times a year, while in the second year, the amount of the assets increased by 0.99 times. Atar Urguu LC total asset turnover declined annually.

Talkh Chikher LC cuts the total asset turnover to 0.41 in two years, up from 0.87 in the third year to the third quarter, reflecting the potential for more sales of the company's assets. In other words, from the second year, the firm's investments rose 0.41 times, raising its assets by 0.87 times over the three years. Talkh Chikher LC raises the total asset turnover from year to year. In Uvs Khuns LC, capital appreciation rose 0.24 to 0.64 in the second half, reflecting a strong tendency to make sales more profitable than the company's

assets. In other words, the 1st company sold 0.24 times the capital, while in the second year it was invested at 0.64 times. Uvs Khuns LC total asset turnover is relatively stable.

In Darkhan Khuns LC, the total asset turnover is 0.66 per cent over two years to 1.48 per cent over three years, indicating that it can generate more sales than the company's assets. In other words, from the second year, the firm's assets rose 0.66 times and boosted their equity by 1.48 times over the three years. The total asset turnover of Darkhan Khuns LC is increasing year by year. Khuvsgul Khuns LC increased from 0.4 to 0.2 in the second year, reflecting the strong growth of the 3rd capital, indicating that the firm is able to make more sales by its own capital. In other words, in the second year, the firm sold 0.4 times its assets, and 0.99 times in the third year. Khuvsgul Khuns LC total asset turnover is increased year by year.

9. Net Profit Margin

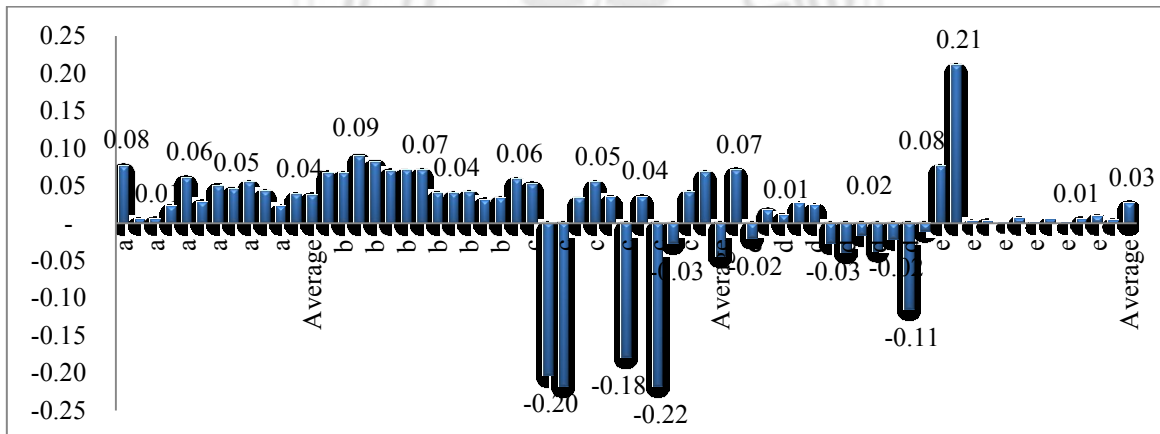


Figure 4.9 Net Profit Margin

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvsgul Khuns LC

Source: Original study

The highest net profit margin company is Khuvsgul Khuns mostly 0.21. And Talkh Chikher LC mostly 0.09, Atar Urguu LC mostly 0.08, Darkhan

Khuns mostly 0.08, Uvs Khuns LC mostly 0.07, But Uvs Khuns LC and Darkhan Khuns LC have been operating at a loss.

10. Gross Margin Ratio

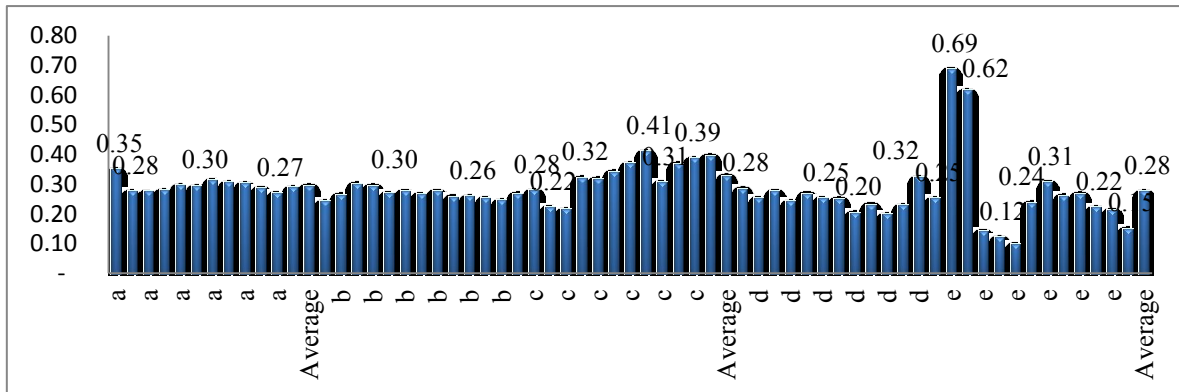


Figure 4.10 Gross Margin Ratio

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

Khuvs gul Khuns LC has a ratio of mostly 69 percent. This is a high ratio in the bakery product. This means that after Khuvs gul Khuns LC pays off his inventory cost, this company still has 69 percentage of sales revenue to cover operating expenses.

Uvs Khuns LC has a ratio of mostly 41 percent. This is a low ratio in the bakery product. This means that after Uvs Khuns LC pays off his inventory cost, this company still has 41 percentage of sales revenue to cover operating expenses.

Atar Urguu LC has a ratio of mostly 35 percent. This is a low ratio in the bakery product. This means that after Atar Urguu LC pays off his inventory, this company still has 35 percentage of sales revenue to cover operating expenses. Darkhan Khuns LC has a ratio of mostly 32 percent. This is a low ratio in the bakery product. This means that after Darkhan Khuns LC pays off

his inventory cost, this company still has 32 percentage of sales revenue to cover operating expenses.

Talkh Chikher LC has a ratio of mostly 30 percent. This is a low ratio in the bakery product. This means that after Talkh Chikher LC pays off his inventory cost, this company still has 30 percentage of sales revenue to cover operating expenses.

11. Return on Total Assets (ROA)

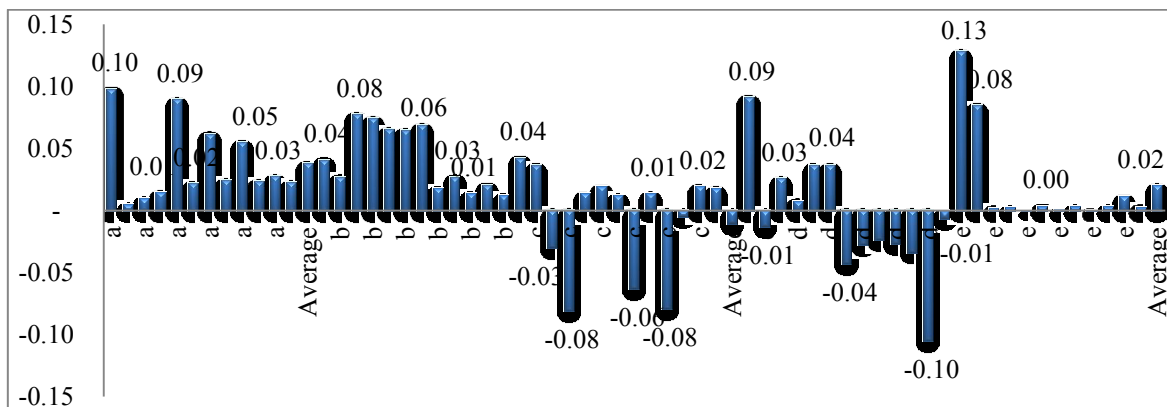


Figure 4.11 Return on Total Assets (ROA)

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

As you can see, Khuvs gul Khuns LC ratio is 0.13 percent. In other words, the dollar invested in equity over the year produced 0.013 percent of net revenues. Depending on the economy, this is a healthy rate of return, regardless of investment. Investors would have to compare Khuvs gul Khuns LC return with other bakery product to get a true understanding of how well Khuvs gul Khuns is managing his assets. However, Uvs Khuns LC, Darkhan Khuns LC return on total assets ratio is negative impact during the every year. This negative impact is mean loss.

12. Return on Common Stock Equity (ROE)

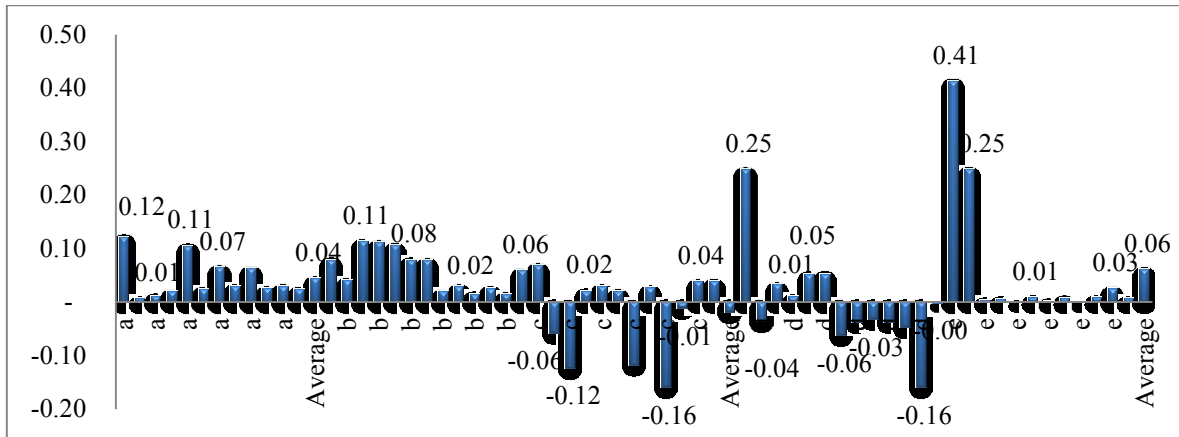


Figure 4.12 Return on Common Stock Equity (ROE)

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvsgul Khuns LC

Source: Original study

As shown above, the yield on ordinary shares of Khuvsgul Khuns LC is 0.41, after the deductible preference is derived from net income. This means that the total shareholders' equity is \$ 0.41 per dollar.

13. Profit Margin Ratio

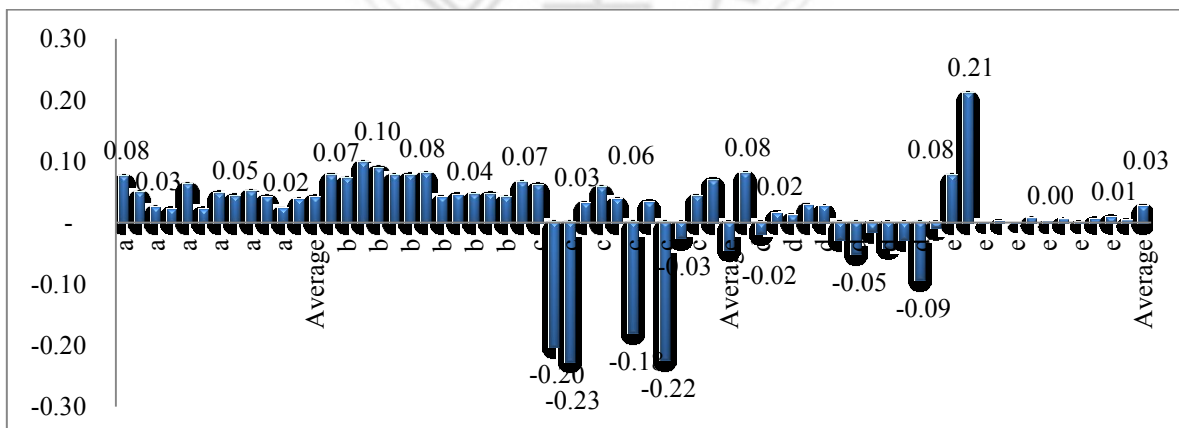


Figure 4.13 Profit Margin Ratio

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvsgul Khuns LC

Source: Original study

As you can see, Khuvs gul Khuns LC operating margin is mostly 0.21. This means that 79 percent of dollar sales revenue is used to pay the variable cost. Only 21 percent is left to cover non-operating costs or fixed costs.

Talkh Chikher LC operating margin is mostly 0.10. This means that 90 percent of dollar sales revenue is used to pay the variable cost. Only 10 percent is left to cover non-operating costs or fixed costs.

Atar Urguu LC and Darkhan Khuns LC operating margin is mostly 0.08. This means that 92 percent of dollar sales revenue is used to pay the variable cost. Only 8 percent is left to cover non-operating costs or fixed costs. However, Darkhan Khuns LC some period is deficit. But, For Uvs Khuns LC has a deficit.

14. Debt Ratio

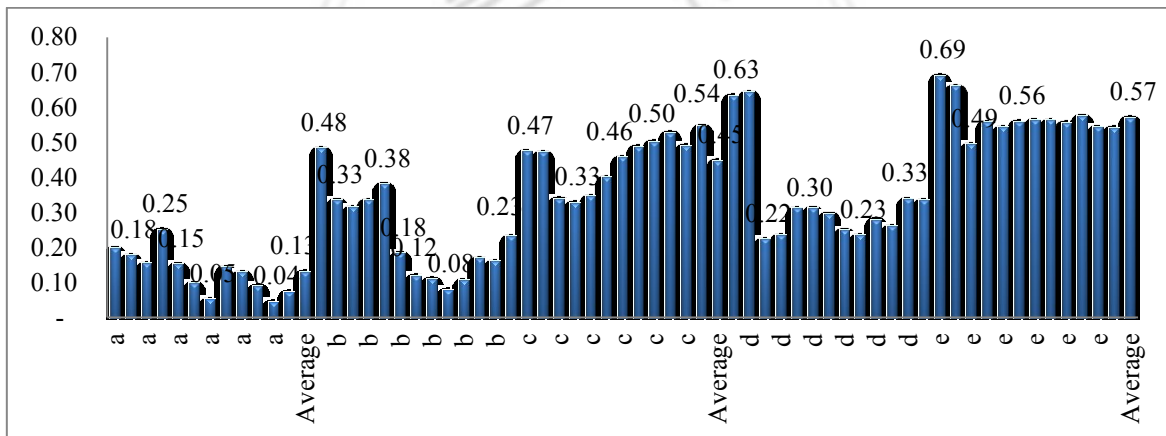


Figure 4.14 Debt Ratio

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

As you can see, Khuvs gul Khuns LC only has a debt ratio of mostly 0.69. In other words, Khuvs gul Khuns LC has 1.45 times as many assets as he has liabilities. This is a relatively high ratio, and Khuvs gul Khuns LC can afford the loan. Khuvs gul Khuns LC should be difficult to borrow.

Darkhan Khuns LC only has a debt ratio of mostly 0.63. In other words, Darkhan Khuns LC has 1.58 times as many assets as he has liabilities. This is a relatively high ratio, and Darkhan Khuns LC can afford the loan. Darkhan Khuns LC should be difficult to borrow. Uvs Khuns LC only has a debt ratio of mostly 0.54. In other words, Uvs Khuns LC has 1.85 times as many assets as he has liabilities.

Talkh Chikher LC only has a debt ratio of 0.48. In other words, Talkh Chikher LC has 2.08 times as many assets as he has liabilities. This is a relatively high ratio, and Talkh Chikher LC can afford the loan. Talkh Chikher LC should be difficult to borrow. Atar Urguu LC only has a debt ratio of 0.25. In other words, Atar Urguu LC has 4 times as many assets as he has liabilities. This is a relatively low comparison and Atar Urguu LC can repay the loan. Atar Urguu LC should not be difficult to borrow.

15. Interest Coverage Ratio

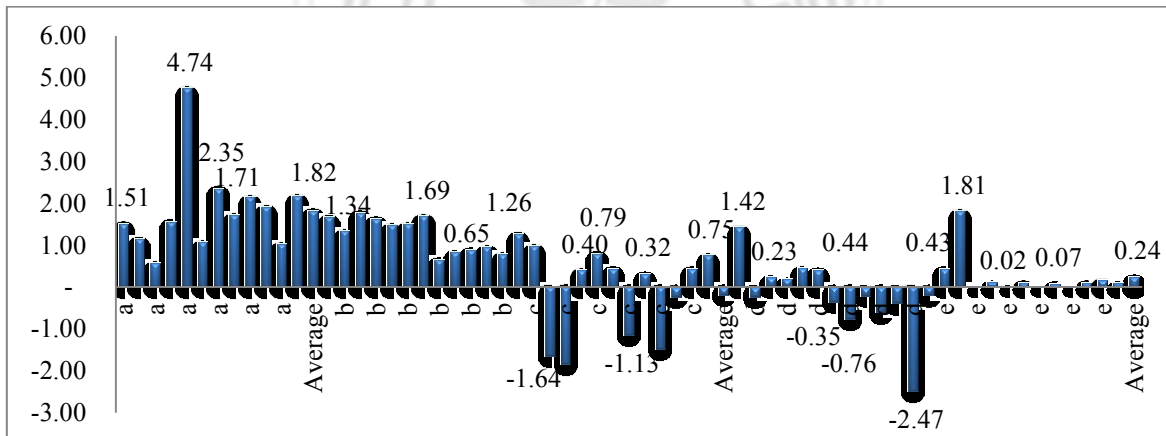


Figure 4.15 Interest Coverage Ratio

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

Atar Urguu LC is almost 4.74. This means that Atar Urguu is 4.74 times more than the annual income. In other words, Atar Urguu LLC may pay

additional interest expense. Atar Urguu LC related business is less risky and banks have no problem receiving loans.

Talkh Chikher LC is almost 1.69. This means that the Talkh Chikher LC revenue is 1.69 times the annual interest expense. In other words, Talkh Chikher LC can pay additional interest expense. In this sense, Talkh Chikher LC has a high level of business risk and is difficult to obtain.

The liabilities of other companies are incapable of paying interest to the principal with the principal payment. Make a statement to compare the ratios among these 5 sample company. Not only for the profitability or operating efficiency, but company C, D, E are not good as company A, and B. The especially, company perform well than other 4 company.

16. Book Value Per Share

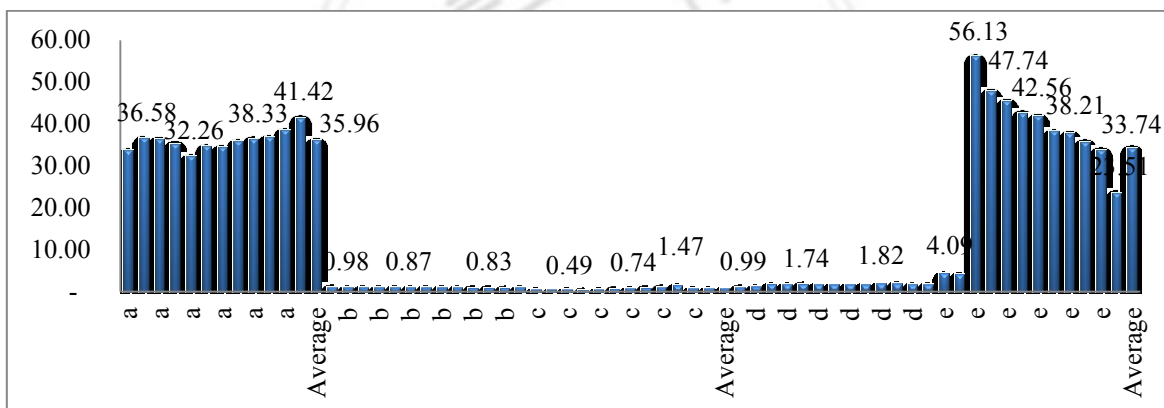


Figure 4.16 Book Value Per Share

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

Atar Urguu LC mostly 41.42, Khuvs gul Khuns LC mostly 47.74 has been rated too high for shares. Therefore, the stock is overvalued. Other 3 company ratio has been rated too low for shares.

17. Earnings Per Share ratio

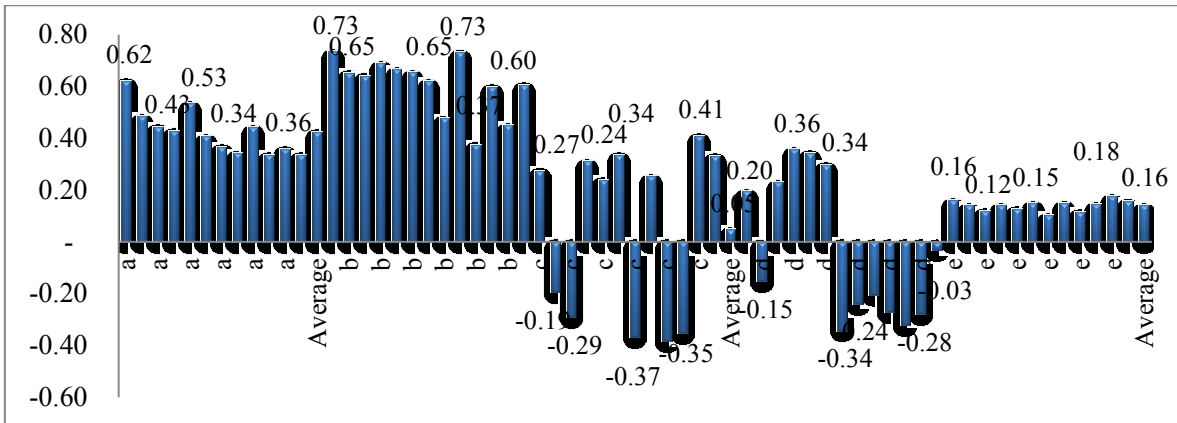


Figure 4.17 Earnings Per Share Ratio

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

As you can see, Atar Urguu LC quality EPS is 0.62 dollars. In other words, if quality distributes dollar revenue to its suppliers means that every individual earns \$ 0.62.

Talkh Chikher LC quality EPS of most of the year is \$ 0.73. In other words, if quality distributes dollar revenues to its shareholders, they will receive \$ 0.73. The EPS quality of Uvs Khuns LC is \$ 0.41. In other words, if quality distributes dollar revenues to its shareholders, it costs \$ 0.41.

The EPS quality of Darkhan Khuns LC is usually \$ 0.36. In other words, if the quality is to distribute dollar revenue to its shareholders, then the shares will get \$ 0.36. The EPS quality of Khuvs gul Khuns LC is usually \$ 0.18. In other words, if the quality is to distribute dollar revenue to its shareholders, then the shares will get \$ 0.18. The following ratios used to compare the sample company performance using the view point of investors.

18. Market to Book Ratio

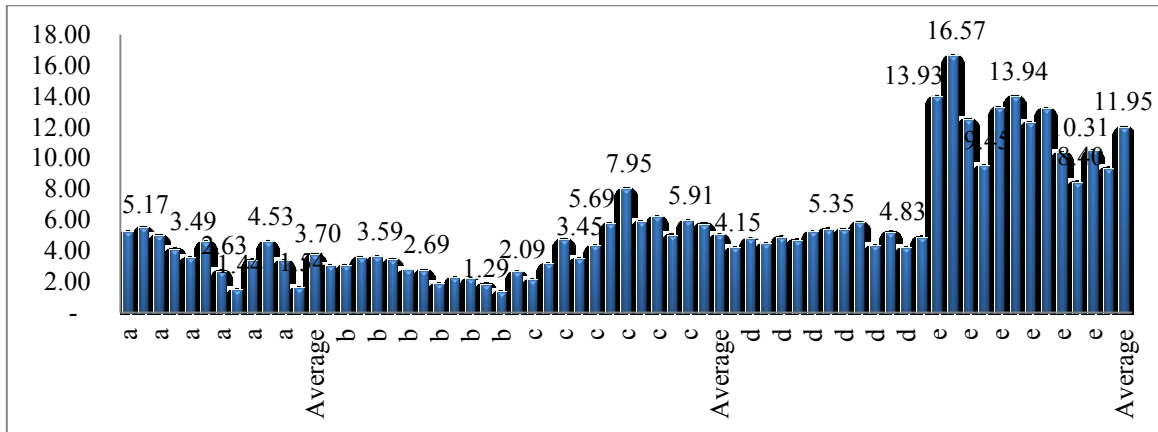


Figure 4.18 Market to Book Ratio

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

Company's market price is twice the value of the book. This means that Khuvs gul Khuns LC is twice as high as the net amount reported on the balance sheet. The company is considered highly over-valued because investors are willing to pay more money than their value.

19. Altman Z-Score Model

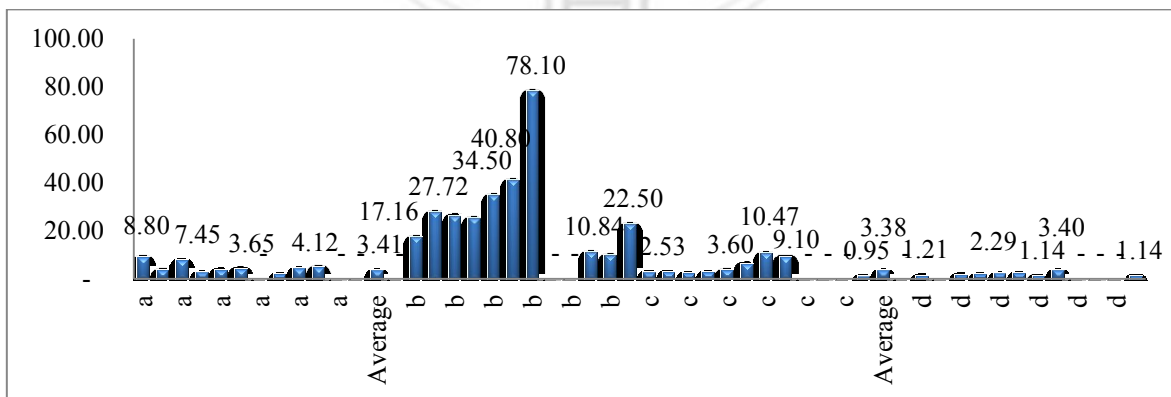


Figure 4.19 Altman Z-Score Model

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

As a result, Atar Urguu LC, Talkh Chikher LC are showing signs of financial stability as a stable bankruptcy, Uvs Khuns LC shows that bankruptcy rates are normal, but they need to focus on their financial performance.

4.2 Kruskal-Wallis Test

Financial statements were analyzed from all 4th quarter of 2012 to the second quarter of 2018. Some 19 financial ratios have been used, and some indicators have been reduced due to the lack of influence on time. Let's look at the comparative study of the five financial companies in the Kruskal - Wallis test.

Table 4.1 Kruskal-Wallis Test Result

Ratio/Company name		a-b	a-c	a-d	a-e	b-c	b-d	b-e	c-d	c-e	d-e
Current ratio	Average value	20.375	31.750	29.083	30.042	11.375	8.708	9.667	-2.667	-1.708	0.958
	T value	2.869	4.470	4.095	4.230	1.602	1.226	1.361	-0.375	-0.241	0.135
	P value	0.041	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Quick Ratio	Average value	9.375	16.625	32.083	32.500	7.250	22.708	22.125	15.458	14.875	-0.583
	T value	1.328	2.355	4.545	4.462	1.027	3.217	3.134	2.190	2.107	-0.803
	P value	1.000	0.185	0.000	0.000	0.019	0.013	0.017	0.285	0.351	1.000
Cash Ratio	Average value	22.292	33.208	23.000	32.25	10.917	0.708	12.958	-10.208	2.042	12.25
	T value	3.520	5.244	3.632	5.567	1.724	0.112	2.046	-1.612	0.322	1.935
	P value	0.004	0.000	0.003	0.000	0.847	1.000	0.407	1.000	1.000	0.530
Accounts receivable turnover	Average value	-16.917	-13.625	-9.833	11.208	3.292	7.083	28.125	3.792	24.833	21.042
	T value	-2.373	-1.911	-1.379	1.572	0.462	0.994	3.945	0.532	3.483	2.952
	P value	1.000	1.000	0.375	1.000	1.000	1.000	0.018	1.000	0.171	0.002
Average collection period	Average value	10.875	5.625	15.000	-11.500	-5.250	4.125	-22.375	9.375	-17.125	-26.500
	T value	1.525	0.789	2.104	-1.613	-0.736	0.579	-3.138	1.315	-2.402	-3.717
	P value	1.000	1.000	0.354	1.000	1.000	1.000	0.017	1.000	1.000	0.002

Table 4.1 Kruskal-Wallis Test Result (Continue)

Ratio/Company name		a-b	a-c	a-d	a-e	b-c	b-d	b-e	c-d	c-e	d-e
Inventory Turnover Ratio	Average value	-10.958	25.917	-1.375	17.875	36.875	9.583	28.833	-27.292	-8.042	19.25
	T value	-1.543	3.649	-0.194	2.517	5.192	1.349	4.059	-3.842	-1.132	2.710
	P value	1.000	0.003	1.000	0.118	0.000	1.000	0.000	0.001	1.000	0.067
Fixed asset turnover	Average value	18.708	26.333	-1.958	-8.083	7.625	-20.667	-26.792	-28.292	-34.417	-6.125
	T value	2.63	3.702	-0.275	-1.136	1.072	-2.906	-3.767	-3.978	-4.839	-0.861
	P value	0.085	0.002	1.000	1.000	1.000	0.037	0.002	0.001	0.000	1.000
Total asset turnover	Average value	13.417	28.583	-5.417	4.250	15.167	-18.833	-9.167	-34.000	-24.333	9.667
	T value	1.894	4.034	-0.764	0.600	2.141	-2.658	-1.294	-4.799	-3.434	1.364
	P value	0.583	0.001	1.000	1.000	0.323	0.079	1.000	0.000	0.006	1.000
Gross margin ratio	Average value	4.083	-4.667	10.208	12.875	-8.75	6.125	8.792	14.875	17.542	2.667
	T value	0.658	-0.752	1.646	2.076	-1.411	0.987	1.417	2.398	2.828	0.430
	P value	1.000	1.000	0.998	0.379	1.000	1.000	1.000	0.165	0.047	1.000
Return on Total Assets (ROA)	Average value	-2.333	15.333	9.000	4.667	17.667	11.333	7.000	-6.333	-10.667	-4.333
	T value	-0.423	2.782	1.633	0.847	3.206	2.056	1.27	-1.149	-1.935	-0.786
	P value	1.000	0.054	1.000	1.000	0.013	0.397	1.000	1.000	0.529	1.000
Return on equity (ROE)	Average value	-4.25	13.625	5.250	2.875	17.875	9.500	7.125	-8.375	-10.750	-2.375
	T value	-0.695	2.228	0.859	0.470	2.923	1.554	1.165	-1.370	-1.758	-0.388
	P value	1.000	0.259	1.000	1.000	0.035	1.000	1.000	1.000	0.788	1.000
Profit Margin ratio	Average value	-8.833	7.667	7.750	1.542	16.500	16.583	10.375	0.083	-6.125	-6.208
	T value	-1.450	1.258	1.272	0.253	2.708	2.722	1.703	0.014	-1.005	-1.019
	P value	1.000	1.000	1.000	1.000	0.068	0.065	0.886	1.000	1.000	1.000
Debt Ratio	Average value	-8.958	-28.208	-17.833	-40.417	-19.25	-8.875	-31.458	10.375	-12.208	-22.583
	T value	-1.278	-4.024	-2.544	-5.766	-2.746	-1.266	-4.488	1.480	-1.742	-3.222
	P value	1.000	0.001	0.110	0.000	0.060	1.000	0.000	1.000	0.816	0.13
Interest coverage ratio	Average value	5.625	29.208	32.917	28.083	23.583	27.292	22.458	3.708	-1.125	-4.833
	T value	0.790	4.102	4.623	3.944	3.312	3.833	3.154	0.521	-0.158	-0.679
	P value	1.000	0.000	0.000	0.001	0.009	0.001	0.016	1.000	1.000	1.000

Table 4.1 Kruskal-Wallis Test Result (Continue)

/Ratio/Company name		a-b	a-c	a-d	a-e	b-c	b-d	b-e	c-d	c-e	d-e
Book value per share	Average value	30.792	38.417	17.042	-2.500	7.625	-13.75	-33.292	-21.375	-40.917	-19.542
	T value	4.326	5.397	2.394	-0.351	1.071	-1.932	-4.677	-3.003	-5.749	-2.746
	P value	0.000	0.000	0.167	1.000	1.000	0.534	0.000	0.027	0.000	0.060
Earnings per share ratio	Average value	-17.000	16.292	20.000	4.042	33.292	37.000	21.042	3.708	-12.25	-15.958
	T value	-2.384	2.285	2.805	0.567	4.669	5.190	2.951	0.520	-1.718	-2.238
	P value	0.171	0.223	0.050	1.000	0.000	0.000	0.032	1.000	0.858	0.252
Market to Book Ratio	Average value	10.750	-12.125	-11.125	-33.125	-22.875	-21.875	-43.875	1.000	-21.000	-22.000
	T value	1.508	-1.701	-1.561	-4.647	-3.209	-3.069	-6.156	0.140	-2.946	-3.087
	P value	1.000	0.889	1.000	0.000	0.013	0.021	0.000	1.000	0.032	0.020
Altman's Z-Score	Average value	-13.111	2.222	10.492		15.333	23.603		8.270		
	T value	-2.794	0.474	2.091		3.267	4.705		1.648		
	P value	0.052	1.000	0.365		0.011	0.000		0.993		

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

1. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between current ratio. Atar Urguu LC is different from the other four companies. When the results from mutual comparisons are reviewed, perception of those between the Atar Urguu LC shows a meaningful difference compared to that of those between Uvs Khuns LC. (T Value= 4.470, P Value = 0.000). Atar Urguu LC shows a meaningful difference compared to that of those between Darkhan Khuns LC. (T Value= 4.095, P Value = 0.000). And Atar Urguu LC shows a meaningful difference compared to that of those between Khuvs gul Khuns LC. (T Value= 4.230, P Value = 0.000).

2. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between quick ratio. When the results from mutual comparisons are reviewed, perception of those between the Darkhan Khuns LC shows a meaningful difference compared to that of those between Atar Urguu LC. (T Value= 4.545, P Value = 0.000). Khuvsgul Khuns LC shows a meaningful difference compared to that of those between Atar Urguu LC. (T Value= 4.462, P Value = 0.000).

3. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between cash ratio. When the results from mutual comparisons are reviewed, perception of those between the Khuvsgul Khuns LC shows a meaningful difference compared to that of those between Atar Urguu LC. (T Value= 5.567, P Value = 0.000). Uvs Khuns LC shows a meaningful difference compared to that of those between Atar Urguu LC. (T Value= 5.244, P Value = 0.000).

4. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between account receivable turnover. When the results from mutual comparisons are reviewed, perception of those between the Talkh Chikher LC shows a meaningful difference compared to that of those between Khuvsgul Khuns LC. (T Value= 3.945, P Value = 0.018). Darkhan Khuns LC shows a meaningful difference compared to that of those between Khuvsgul Khuns LC. (T Value= 2.952, P Value = 0.002).

5. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between average collection period. When the results from mutual comparisons are reviewed, perception of those between the Talkh Chikher LC shows a meaningful difference compared to that of those between Khuvsgul Khuns LC. (T Value= -3.138, P Value = 0.017). Darkhan Khuns LC shows a meaningful difference compared to that of those between Khuvsgul Khuns LC. (T Value= -3.717, P Value = 0.002).

6. According to the results of Kruskal-Wallis test, statistically meaningful difference is found between inventory turnover ratio. When the results from mutual comparisons are reviewed, perception of those between the Talkh Chikher LC shows a meaningful difference compared to that of those between Uvs Khuns LC. (T Value= -5.192, P Value = 0.000). Talkh Chikher LC shows a meaningful difference compared to that of those between Khuvs gul Khuns LC. (T Value= 4.059, P Value = 0.000).
7. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between fixed asset turnover. When the results from mutual comparisons are reviewed, perception of those between the Uvs Khuns LC shows a meaningful difference compared to that of those between Khuvs gul Khuns LC. (T Value= -4.839, P Value = 0.000).
8. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between total asset turnover. When the results from mutual comparisons are reviewed, perception of those between the Uvs Khuns LC shows a meaningful difference compared to that of those between Darkhan Khuns LC. (T Value= -4.799, P Value = 0.000).
9. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between gross margin ratio. When the results from mutual comparisons are reviewed, perception of those between the Uvs Khuns LC shows a meaningful difference compared to that of those between Khuvs gul Khuns LC. (T Value=2.828, P Value = 0.047).
10. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between return on total assets (ROA). When the results from mutual comparisons are reviewed, perception of those between the Talkh Chikher LC shows a meaningful difference compared to that of those between Uvs Khuns LC. (T Value=3.206, P Value = 0.013).

11. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between return on equity (ROE). When the results from mutual comparisons are reviewed, perception of those between the Talkh Chikher LC shows a meaningful difference compared to that of those between Uvs Khuns LC. (T Value=2.923, P Value = 0.035).

12. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between profit margin ratios. When the results from mutual comparisons are reviewed, perception of those between the Talkh Chikher LC shows a meaningful difference compared to that of those between Uvs Khuns LC. (T Value=2.708, P Value = 0.068). Talkh Chikher LC shows a meaningful difference compared to that of those between Darkhan Khuns LC. (T Value= 2.722, P Value = 0.065).

13. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between Debt Ratio. When the results from mutual comparisons are reviewed, perception of those between the Atar Urguu LC shows a meaningful difference compared to that of those between Khuvs gul Khuns LC. (T Value= -5.766, P Value = 0.000). Talkh Chiker LC shows a meaningful difference compared to that of those between Khuvs gul Khuns LC. (T Value= -4.488, P Value = 0.000).

14. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between interest coverage ratio. When the results from mutual comparisons are reviewed, perception of those between the Atar Urguu LC shows a meaningful difference compared to that of those between Uvs Khuns LC. (T Value= 4.102, P Value = 0.000). Atar Urguu LC shows a meaningful difference compared to that of those between Darkhan Khuns LC. (T Value= 4.623, P Value = 0.000).

15. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between book value per share. When the results from

mutual comparisons are reviewed, perception of those between the Atar Urguu LC shows a meaningful difference compared to that of those between Talkh Chikher LC. (T Value= 4.326, P – Value =0.000). Atar Urguu LC shows a meaningful difference compared to that of those between Uvs Khuns LC. (T Value= 5.397, P – Value =0.000). Talkh Chikher LC shows a meaningful difference compared to that of those between Khuvs gul Khuns LC. (T Value= - 4.677, P Value =0.000. And Uvs Khuns LC shows a meaningful difference compared to that of those between Khuvs gul Khuns LC. (T Value= -5.749, P – Value =0.000).

16. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between earnings per share ratio. When the results from mutual comparisons are reviewed, perception of those between the Talkh Chikher LC shows a meaningful difference compared to that of those between Darkhan Khuns LC. (T Value= 5.190, P Value =0.000). Talkh Chikher LC shows a meaningful difference compared to that of those between Uvs Khuns LC. (T Value= 4.669, P Value = 0.000).

17. According to the results of Kruskal -Wallis test, statistically meaningful difference is found between market to book ratio. When the results from mutual comparisons are reviewed, perception of those between the Atar Urguu LC shows a meaningful difference compared to that of those between Khuvs gul Khuns LC. (T Value= -4.647, P Value=0.001). Talkh Chikher LC shows a meaningful difference compared to that of those between Khuvs gul Khuns LC. (T Value= -6.156, P Value=0.001).

18. Altman's Z-Score. When the results from mutual comparisons are reviewed, perception of those between the Talkh Chikher LC shows a meaningful difference compared to that of those between Uvs Khuns LC. (T Value=3.267, P Value = 0.011). And Talkh Chikher LC shows a meaningful

difference compared to that of those between Darkhan Khuns LC. (T Value=4.705, P Value = 0.001).

Table 4.2 Kruskal-Wallis Test in Net Profit Margin

Ratio	Null Hypothesis	T Value	P Value	Decision
Net Profit Margin	The distribution of net profit margin is the same across categories of company	Independent-Samples Kruskal-Wallis test	0.051	Retain the null hypothesis

Adjust experimental statistics. A large number of comparisons do not make significant differences between samples.

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

4.3 The Correlation Analysis

The financial ratio determines the company's bankruptcy rate. Each of the financial ratios defines the company's past and future trends. Altman Z-score is the best way to determine bankruptcy rates. Correlation analysis represents the relationship between the two factors. This correlation analysis shows how each ratio influenced by the company's bankruptcy.

This section is employed to investigate the correlation between the financial ratios and the Altman Z-score. e company has not been able to calculate the Altman Z-score because it is impossible to calculate.

The 2 ways to calculate the correlation:

Way 1: The average value of each financial ratio will be presented to each company. Calculates the correlation coefficient comparing the mean values for each company and calculates the Altman Z-score average. Example:

Calculate the current ratio and Altman Z-Score to calculate the correlation (a, b, c, d) of the four companies' average values and 1 correlation.

Let's look at the way 1:

Table 4.3 Correlation Analysis Results in Way 1

Company	Averages				Correlation
	a	b	c	d	
Current ratio	2.99	1.64	1.11	1.11	-0.01
Quick Ratio	1.50	1.06	0.69	0.44	0.25
Cash Ratio	0.28	0.04	0.03	0.05	-0.28
Accounts receivable turnover	8.24	14.78	9.71	14.44	0.53
Average collection period	61.14	57.17	95.19	30.19	-0.02
Inventory Turnover Ratio	1.05	1.45	0.32	1.15	0.59
Fixed asset turnover	1.71	0.97	0.68	1.72	-0.41
Total asset turnover	1.02	0.72	0.37	1.17	-0.24
Net Profit margin	0.04	0.06	-0.04	-0.01	0.72
Gross margin ratio	0.30	0.27	0.32	0.24	-0.14
ROA	0.04	0.05	-0.01	-0.00	0.71
Return on equity (ROE)	0.05	0.07	-0.01	-0.01	0.77
Profit Margin ratio	0.04	0.07	-0.03	-0.01	0.73
Debt ratio	0.15	0.23	0.43	0.32	-0.30
Interest coverage ratio	1.82	1.31	-0.11	-0.07	0.43
Book value per share	35.27	0.86	0.57	1.55	-0.29
Earnings per share ratio	0.45	0.60	0.10	0.01	0.78
Market to Book ratio	4.10	2.65	4.75	5.12	-0.95
Altman's Z-Score	4.54	30.00	4.50	1.95	1.00

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

1. Current ratio, average collection period, Gross margin ratio and Altman Z-score correlation is 0.01-0.14. It does not affect the bankruptcy of these ratios.

2. Total asset turnover, Quick ratio, Cash ratio, Book value per share, Debt ratio, fixed asset turnover, interest coverage ratio and Altman Z-score correlation is between the 0.24-0.43. This means their 7 ratios affect the company's bankruptcy by 24 - 43 percent. That is the normal percent.

3. Accounts receivable turnover, Inventory turnover, Net Profit margin, Return on Total Assets (ROA), Return on equity (ROE), Profit Margin ratio, Earning per share ratio and market to book ratio and Altman Z-score correlation over the 50%. This means that their 8 ratios affect the company's bankruptcy by 53-95 percent. It's very risky. Companies should monitor their 8 ratios continuously and take measures to reduce this percentage. As a result, it is likely that the bankruptcy soon happens.

Way 2: Compare the financial ratio of each company to Altman Z-score. This approach calculates the correlation coefficient for each firm from the 2012.4 to the 2018.2 season by Altman Z-score. For example, to calculate the correlation between the current ratio and Altman Z-score (a, b, c, d), 4 companies will have 4 correlations.

Table 4.4 Correlation Analysis Results in Way 2

Company	a	b	c	d
Current ratio	-0.19	0.55	-0.34	0.40
Quick Ratio	-0.36	0.58	-0.58	0.24
Cash Ratio	0.24	0.33	-0.41	-0.46
Accounts receivable turnover	0.82	-0.11	0.24	0.49
Average collection period	-0.59	-0.19	-0.32	-0.63
Inventory Turnover Ratio	-0.06	-0.18	0.02	0.65
Fixed asset turnover	0.61	0.06	-0.05	0.86
Total asset turnover	0.64	-0.00	0.00	0.79
Net Profit margin	0.20	0.01	-0.14	0.11
Gross margin ratio	0.45	0.37	0.52	0.10
Return on Total Assets	0.38	0.02	-0.22	-0.10
Return on equity	0.41	-0.05	-0.27	-0.03
Profit Margin ratio	0.33	-0.12	-0.14	0.17

Table 4.4 Correlation Analysis Results in Way 2 (Continue)

Company	a	b	c	d
Debt Ratio	0.03	-0.41	0.13	-0.43
Interest coverage ratio	-0.27	-0.17	-0.12	0.18
Book value per share	-0.13	0.43	0.67	0.32
Earnings per share ratio	0.58	-0.28	-0.25	-0.13
Market to Book Ratio	0.63	-0.06	0.72	0.71
Altman's Z-Score	1.00	1.00	1.00	1.00

a = Atar Urguu LC, b = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvs gul Khuns LC

Source: Original study

1. Atar Urguu LC - Inventory turnover ratio, Debt Ratio, Book value per share and Altman Z-score correlation is 0.03 to -0.13. Talkh Chikher LC - Accounts receivable turnover, Fixed, total asset turnover, Net profit margin, ROA, ROE, Profit margin ratio, Debt ratio, market to book ratio and Altman Z-score correlation is 0.01-0.14. Uvs Khuns LC - inventory turnover ratio, Fixed, total asset turnover, interest coverage ratio, net profit margin and Altman Z-score correlation is 0.01-0.14. Darkhan Khuns LC - Gross margin ratio, net profit margin, ROA, ROE, earning per share ratio and Altman Z-score correlation is 0.03-0.13. It does not affect the bankruptcy of these ratios.
2. Atar Urguu LC - current ratio, quick ratio, cash ratio, net profit margin, gross margin ratio, ROA, ROE, profit margin ratio, interest coverage ratio and Altman Z-score correlation is 0.19-0.45, Talkh Chikher LC - cash ratio, average collection period, inventory turnover ratio, gross margin ratio, debt ratio, interest coverage ratio, book value per share, earning per share ratio and Altman Z-score correlation is 0.17 - 0.43, Uvs Khuns LC - current ratio, cash ratio, accounts receivable turnover, average collection period, ROA, ROE, earning per share ratio and Altman Z-score correlation is 0.22-0.41. This means that these ratios affect the company's bankruptcy by 47-45 percent.

3. Atar Urguu LC - Accounts receivable turnover, Average collection period, Fixed, Total asset turnover, Earnings per share ratio, Market to Book Ratio and Altman Z-score correlation is 0.58-0.82. Uvs Khuns LC - Quick ratio, gross margin ratio, book value per share, market to book ratio and Altman Z-score correlation is 0.52-0.72, Darkhan Khuns LC - Account receivable ratio, average collection period, inventory turnover ratio, fixed, total assets, market to book ratio and Altman Z-score correlation is 0.49-0.86. This means that these ratios affect the company's bankruptcy by 49-86 percent. It's very risky. Companies should monitor their ratios continuously and take measures to reduce this percentage. As a result, it is likely that the bankruptcy soon happens.



CHAPTER FIVE

CONCLUSIONS AND CONTRIBUTION

5.1 Research Conclusions

This study aims to make a comparison for the financial performance of these 5 sample companies, furthermore the business performances are also to be compared as well. This study is trying to explore the effect of a financial ratio on the Z-score and make a comparison of the Z-scores for sample companies. Main data for our study are using the semiannual financial reports from 2012 to 2018 of 5 bakery products companies. This is 5 companies are including Atar Urguu LC, Talkh Chikher LC, Darkhan Khuns LC, Uvs Khuns LC, and Khuvsgul Khuns LC.

The survey was conducted in three major areas.

1. Financial Ratios

A. Liquidity ratio: Atar Urguu LC is low leverage and low risky. Atar Urguu LC ratio is so high, it is likely that he will get approved for his loan. Atar Urguu LC has mostly 5.18 times appears to be well positioned to cover its current liabilities and has liquid assets available to cover each dollar of short-term debt. Atar Urguu LC is a fair high ratio which means maintains a relatively high cash balance during the year.

B. Efficiency ratio: Darkhan Khuns LC 33.13 times an improvement or an indication of a slower collection process. Customers on average take 11.01 days to pay their receivables. Talkh Chikher LC sells its entire inventory within a 171.3-day period, which is quite impressive for such a small.

C. Profitability ratio: ROE the yield on ordinary shares of Khuvsgul Khuns LC after the deductible preference is derived from net income. This means that the total shareholder's equity is \$ 0.41 per dollar. In other words, shareholders saw 41 percent of their investment. Khuvsgul Khuns LC 79

percent of dollar sales revenue is used to pay the variable cost. Only 21 percent is left to cover non-operating costs or fixed costs.

D. Market value ratio: Atar Urguu LC related business is less risky and banks have no problem receiving loans. This is a reflection of the high risk of the company and its activities don't make enough money to pay its fees. Market to book ratio- Khuvsgul Khuns LC is considered highly over-valued because investors are willing to pay more money than their value. Talkh Chikher LC quality distributes dollar revenues to its shareholders, they will receive \$ 0.73.

E. Capital structure ratio: Atar Urguu LC has 4 times as many assets as he has liabilities. This is a relatively low comparison and Atar Urguu LC can repay the loan. Atar Urguu LC shouldn't be difficult to borrow.

F. Altman Z-score: Atar Urguu LC, Talkh Chikher LC are showing signs of financial stable bankruptcy, Uvs Khuns LC shows that bankruptcy rates are normal, but they need to focus on their financial performance, Darkhan Khuns LC has been badly hit, and appears to be at risk of bankruptcy.

2. Kruskal-Wallis Test

The following Table is used to demonstrate the result of the Kruskal - Wallis test.

1. Current ratio, quick ratio, cash ratio, interest coverage ratio and book value per share. When the results from mutual comparisons are reviewed, perception of those between the Atar Urguu LC shows a meaningful difference compared to that of those between Uvs Khuns LC, Darkhan Khuns LC and Khuvsgul Khuns LC.

2. Account receivable turnover, Average collection period, Debt Ratio, Market to book ratio. Khuvsgul Khuns LC shows a meaningful difference compared to that of those between Talkh Chikher LC, Darkhan Khuns LC.

3. Inventory turnover ratio, profit margin ratio, Earning per share ratio, Altman Z-score, ROA, ROE. Talkh Chikher LC shows a meaningful difference compared to that of those between Uvs Khuns LC, Khuvsgul Khuns LC

4. Fixed asset turnover, Gross Margin ratio, total asset turnover. Uvs Khuns LC shows a meaningful difference compared to that of those between Darkhan Khuns LC.

3. The Correlation Analysis

This section is employed to investigate the correlation between the financial ratios and the Altman Z-score. The company has not been able to calculate the Altman Z score because it is impossible to calculate. The 2 ways to calculate the correlation:

Let's look at the way 1:

1. Current ratio, average collection period, Gross margin ratio and Altman Z-score correlation is 0.01-0.14. It does not affect the bankruptcy of these ratios.

2. Accounts receivable turnover, Net Profit margin, Return on Total Assets (ROA), Return on equity (ROE), Profit Margin ratio and market to book ratio and Altman Z-score correlation over the 50%. This means that their 6 ratios affect the company's bankruptcy by 53-95 percent. It's very risky. Companies should monitor their 6 ratios continuously and take measures to reduce this percentage. As a result, it is likely that the bankruptcy soon happens.

Let's look at the way 2:

1. Atar Urguu LC - Inventory turnover ratio, Debt Ratio, Book value per share and Altman Z-score correlation is 0.03 to -0.13. Talkh Chikher LC - Accounts receivable turnover, Fixed, total asset turnover, Net profit margin, ROA, ROE, Profit margin ratio, market to book ratio and Altman Z-score

correlation is 0.01-0.12. Uvs Khuns LC – inventory turnover ratio, Fixed, total asset turnover, interest coverage ratio and Altman Z-score correlation is 0.01-0.12. Darkhan Khuns LC – Gross margin ratio, ROE, earning per share ratio and Altman Z-score correlation is 0.03-0.13. It does not affect the bankruptcy of these ratios.

2. Atar Urguu LC - Accounts receivable turnover, Average collection period, Fixed, Total asset turnover, Earnings per share ratio, Market to Book Ratio and Altman Z-score correlation, Talkh Chikher LC - Current ratio, quick ratio, Uvs Khuns LC - Quick ratio, gross margin ratio, book value per share, market to book ratio, Darkhan Khuns LC - Account receivable ratio, average collection period, inventory turnover ratio, fixed, total assets turnover, market to book ratio and Altman Z-score correlation is over 50%. It's very risky. Companies should monitor their ratios continuously and take measures to reduce this percentage.

5.2 Research Contribution

This thesis will contribute greatly to the food industry in Mongolia. In this research, we can see the growth, decline, and trends of the food industry in Mongolia. It also shows what financial company needs to pay attention to. If companies can focus on it, they will be able to work successfully. At the same time, it is possible to compare your company with your competitors. Food production is the main sector of our country. Mongolia will develop as a result of sustainable sector development. It is possible to conduct this analysis in other sectors. So I sincerely want each branch to do this research. This study can help prevent bankruptcy.

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APPENDIX

Appendix 1. Each Company Financial Ratios

Company	Current ratio	Quick Ratio	Cash Ratio	Accounts receivable turnover	Average collection period	Inventory Turnover Ratio	Fixed asset turnover	Total asset turnover	Net Profit margin	Gross margin ratio	Return on Total Assets	Return on common stock equity	Profit Margin ratio	Debt Ratio	Interest coverage ratio	Book value per share	Earnings per share ratio	Market to Book Ratio	Altman's Z-Score model (1983)
a	1.91	1.26	0.54	16.89	21.60	0.23	2.05	1.28	0.08	0.35	0.10	0.12	0.08	0.20	1.51	33.62	0.62	5.17	8.80
a	1.98	1.13	0.16	7.06	51.73	1.22	1.52	0.99	0.01	0.28	0.01	0.01	0.05	0.18	1.15	36.58	0.48	5.45	3.60
a	2.32	1.16	0.15	15.98	22.84	2.00	2.86	1.84	0.01	0.27	0.01	0.01	0.03	0.15	0.56	36.28	0.44	4.93	7.45
a	1.94	1.52	0.38	7.04	51.87	0.92	1.30	0.67	0.02	0.28	0.01	0.02	0.02	0.25	1.56	35.21	0.43	4.06	2.58
a	2.60	1.51	0.10	10.52	34.71	1.91	2.43	1.48	0.06	0.30	0.09	0.11	0.06	0.15	4.74	32.26	0.53	3.49	3.65
a	4.25	2.55	0.24	4.88	74.86	0.82	1.34	0.78	0.03	0.29	0.02	0.02	0.02	0.10	1.07	34.54	0.41	4.52	4.03
a	6.44	3.81	0.45	9.82	37.17	1.61	1.87	1.24	0.05	0.31	0.06	0.07	0.05	0.05	2.35	34.37	0.37	2.63	0.00
a	3.10	2.20	0.37	3.29	110.80	0.74	0.95	0.53	0.05	0.31	0.02	0.03	0.04	0.14	1.71	35.79	0.34	1.44	1.84
a	3.76	2.21	0.28	5.26	69.41	1.09	1.97	1.02	0.05	0.30	0.05	0.06	0.05	0.13	2.14	36.39	0.44	3.34	4.12
a	5.03	2.94	0.33	3.25	112.44	0.50	1.00	0.55	0.04	0.29	0.02	0.03	0.04	0.09	1.91	36.78	0.33	4.53	4.80
a	9.86	5.18	0.59	8.70	41.96	1.12	2.17	1.23	0.02	0.27	0.03	0.03	0.02	0.04	1.02	38.33	0.36	3.32	0.00
a	5.86	3.13	0.91	6.35	57.48	0.54	1.03	0.60	0.04	0.29	0.02	0.02	0.04	0.07	2.16	41.42	0.34	1.54	0.00
b	0.81	0.64	0.01	4.96	73.65	1.50	1.00	0.61	0.07	0.24	0.04	0.08	0.08	0.48	1.67	0.98	0.73	2.99	0.00
b	0.95	0.52	0.02	1.34	272.55	0.68	0.56	0.41	0.07	0.26	0.03	0.04	0.07	0.33	1.34	0.89	0.65	3.00	17.16
b	1.02	0.62	0.03	4.14	88.23	1.35	1.20	0.87	0.09	0.30	0.08	0.11	0.10	0.31	1.78	0.88	0.64	3.52	27.72
b	0.99	0.62	0.02	13.00	28.08	1.53	1.27	0.91	0.08	0.29	0.07	0.11	0.09	0.33	1.62	0.88	0.69	3.59	26.04
b	0.79	0.48	0.01	20.65	17.67	1.82	1.26	0.94	0.07	0.27	0.07	0.11	0.08	0.38	1.47	0.87	0.67	3.38	25.15
b	1.56	0.96	0.04	19.33	18.88	1.70	1.22	0.92	0.07	0.27	0.06	0.08	0.08	0.18	1.50	0.87	0.65	2.74	34.50
b	2.55	1.70	0.07	23.33	15.64	1.96	1.33	0.97	0.07	0.26	0.07	0.08	0.08	0.12	1.69	0.87	0.62	2.69	40.80
b	2.85	2.03	0.06	10.17	35.88	0.91	0.63	0.44	0.04	0.28	0.02	0.02	0.04	0.11	0.65	0.88	0.48	1.82	78.10
b	3.03	2.22	0.11	15.36	23.77	1.92	0.90	0.68	0.04	0.26	0.03	0.03	0.05	0.08	0.82	0.86	0.73	2.18	0.00

Appendix 1. Each Company Financial Ratios (Continue)

Company	Current ratio	Quick Ratio	Cash Ratio	Accounts receivable turnover	Average collection period	Inventory Turnover Ratio	Fixed asset turnover	Total asset turnover	Net Profit margin	Gross margin ratio	Return on Total Assets	Return on common stock equity	Profit Margin ratio	Debt Ratio	Interest coverage ratio	Book value per share	Earnings per share ratio	Market to Book Ratio	Altman's Z-Score model (1983)
b	2.12	1.53	0.17	7.88	46.30	0.99	0.42	0.33	0.04	0.26	0.01	0.02	0.05	0.11	0.88	0.85	0.37	2.14	0.00
b	2.36	1.70	0.06	25.29	14.43	2.13	0.86	0.67	0.03	0.25	0.02	0.03	0.05	0.17	0.94	0.81	0.60	1.81	10.84
b	1.66	0.89	0.06	15.78	23.13	0.98	0.45	0.37	0.03	0.24	0.01	0.01	0.04	0.16	0.77	0.83	0.45	1.29	9.68
c	0.89	0.59	0.01	2.52	144.98	0.23	1.16	0.69	0.05	0.28	0.04	0.07	0.06	0.47	0.97	0.49	0.27	2.09	2.53
c	0.86	0.57	0.01	0.85	428.31	0.21	0.24	0.15	-0.20	0.22	-0.03	-0.06	-0.20	0.47	-1.64	0.45	-0.19	3.10	2.70
c	1.33	0.84	0.01	3.62	100.71	0.45	0.64	0.37	-0.22	0.21	-0.08	-0.12	-0.23	0.34	-1.84	0.49	-0.29	4.70	2.28
c	1.42	0.93	0.02	6.74	54.19	0.49	0.74	0.42	0.03	0.32	0.01	0.02	0.03	0.33	0.40	0.38	0.31	3.45	2.69
c	1.33	0.76	0.01	13.83	26.38	0.37	0.64	0.36	0.05	0.32	0.02	0.03	0.06	0.35	0.79	0.51	0.24	4.28	3.60
c	1.01	0.63	0.02	13.56	26.93	0.34	0.59	0.36	0.03	0.34	0.01	0.02	0.04	0.40	0.44	0.58	0.34	5.69	6.20
c	1.00	0.55	0.01	12.28	29.73	0.32	0.64	0.35	-0.18	0.37	-0.06	-0.12	-0.18	0.46	-1.13	0.74	-0.37	7.95	10.47
c	0.99	0.58	0.01	12.98	28.13	0.28	0.74	0.39	0.04	0.41	0.01	0.03	0.03	0.49	0.32	0.82	0.25	5.84	9.10
c	1.00	0.64	0.00	12.54	29.10	0.33	0.73	0.36	-0.22	0.31	-0.08	-0.16	-0.22	0.50	-1.47	0.98	-0.38	6.14	0.00
c	1.04	0.62	0.01	8.73	41.81	0.16	0.44	0.20	-0.03	0.37	-0.01	-0.01	-0.03	0.53	-0.22	1.47	-0.35	4.97	0.00
c	1.10	0.62	0.00	26.54	13.75	0.32	1.05	0.48	0.04	0.39	0.02	0.04	0.04	0.49	0.44	0.74	0.41	5.91	0.00
c	1.15	0.76	0.12	21.03	17.36	0.19	0.71	0.26	0.07	0.39	0.02	0.04	0.07	0.54	0.75	0.70	0.33	5.67	0.95
d	0.56	0.18	0.04	33.13	11.02	0.62	2.00	1.29	0.07	0.28	0.09	0.25	0.08	0.63	1.42	0.99	0.20	4.15	0.00
d	0.57	0.28	0.07	7.97	45.79	0.59	1.04	0.66	-0.02	0.25	-0.01	-0.04	-0.02	0.64	-0.22	1.10	-0.15	4.74	1.21
d	1.41	0.48	0.06	15.87	22.99	1.38	2.16	1.48	0.02	0.28	0.03	0.03	0.02	0.22	0.23	1.70	0.23	4.42	0.00
d	1.36	0.57	0.10	10.11	36.12	0.72	1.09	0.75	0.01	0.24	0.01	0.01	0.01	0.23	0.18	1.68	0.36	4.84	1.62
d	0.88	0.32	0.02	20.31	17.97	1.56	1.89	1.37	0.03	0.27	0.04	0.05	0.03	0.31	0.44	1.74	0.34	4.64	1.83
d	0.94	0.34	0.02	20.45	17.85	1.56	2.16	1.53	0.02	0.25	0.04	0.05	0.03	0.31	0.41	1.59	0.30	5.21	2.18

Appendix 1. Each Company Financial Ratios (Continue)

Company	Current ratio	Quick Ratio	Cash Ratio	Accounts receivable turnover	Average collection period	Inventory Turnover Ratio	Fixed asset turnover	Total asset turnover	Net Profit margin	Gross margin ratio	Return on Total Assets	Return on common stock equity	Profit Margin ratio	Debt Ratio	Interest coverage ratio	Book value per share	Earnings per share ratio	Market to Book Ratio	Altman's Z-Score model (1983)
d	1.03	0.38	0.03	21.19	17.23	1.59	2.34	1.63	-0.03	0.25	-0.04	-0.06	-0.03	0.30	-0.35	1.59	-0.34	5.35	2.29
d	1.44	0.60	0.07	7.34	49.75	0.67	1.11	0.71	-0.04	0.20	-0.03	-0.04	-0.05	0.25	-0.76	1.58	-0.24	5.30	1.14
d	1.56	0.61	0.04	13.73	26.59	1.33	2.38	1.51	-0.02	0.23	-0.02	-0.03	-0.01	0.23	-0.20	1.59	-0.20	5.76	3.40
d	1.43	0.59	0.04	6.64	54.97	0.64	1.20	0.72	-0.04	0.20	-0.03	-0.04	-0.04	0.28	-0.60	1.82	-0.27	4.28	0.00
d	1.45	0.52	0.07	13.93	26.20	1.31	2.63	1.64	-0.02	0.23	-0.03	-0.05	-0.03	0.26	-0.39	1.79	-0.32	5.15	0.00
d	0.99	0.42	0.05	7.11	51.37	0.70	1.38	0.92	-0.11	0.32	-0.10	-0.16	-0.09	0.34	-2.47	1.55	-0.28	4.15	0.00
e	0.67	0.22	0.01	3.39	107.60	0.27	3.15	1.69	0.08	0.69	0.13	0.41	0.08	0.69	0.43	4.29	0.16	13.93	0.00
e	0.64	0.31	0.01	0.80	454.83	0.14	0.70	0.40	0.21	0.62	0.08	0.25	0.21	0.66	1.81	4.09	0.14	16.57	0.00
e	1.13	0.41	0.02	2.85	128.18	0.79	2.24	0.99	0.00	0.14	0.00	0.00	0.00	0.49	0.02	56.13	0.12	12.47	0.00
e	1.01	0.34	0.02	4.72	77.38	0.63	2.21	0.97	0.00	0.12	0.00	0.01	0.00	0.56	0.11	47.74	0.14	9.45	0.00
e	1.14	0.34	0.03	13.24	27.56	0.61	2.88	1.10	0.00	0.10	0.00	0.00	0.00	0.54	0.01	45.45	0.13	13.22	0.00
e	1.08	0.42	0.03	6.09	59.92	0.31	1.60	0.63	0.01	0.24	0.00	0.01	0.01	0.56	0.10	42.56	0.15	13.94	0.00
e	1.16	0.48	0.03	5.28	69.13	0.36	2.22	0.78	0.00	0.31	0.00	0.00	0.00	0.56	0.02	41.85	0.10	12.24	0.00
e	1.13	0.45	0.03	4.57	79.87	0.34	1.91	0.70	0.00	0.26	0.00	0.01	0.01	0.56	0.07	38.21	0.15	13.16	0.00
e	1.19	0.46	0.03	4.22	86.43	0.27	1.73	0.59	0.00	0.27	0.00	0.00	0.00	0.55	0.02	37.66	0.12	10.31	0.00
e	1.18	0.58	0.02	4.09	89.25	0.32	1.89	0.61	0.01	0.22	0.00	0.01	0.01	0.57	0.10	35.62	0.14	8.40	0.00
e	1.27	0.69	0.03	6.67	54.71	0.79	4.31	1.36	0.01	0.21	0.01	0.03	0.01	0.54	0.16	33.74	0.18	10.45	0.00
e	1.26	0.80	0.04	3.90	93.57	0.65	2.68	0.86	0.00	0.15	0.00	0.01	0.00	0.54	0.09	23.51	0.16	9.29	0.00

a = Atar Urguu LC, c = Talkh Chikher LC, c = Uvs Khuns LC, d = Darkhan Khuns LC, e = Khuvsgul Khuns LC

Source: Original study