Application of Managerial Accounting Information to Land Reform Management for Sustainable Agriculture

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Abstract

This research aims to: (1) investigate causal factors and effects of financial ratios on land reform management for sustainable agriculture and (2) examine the financial situation and operational efficiency of Agricultural Land Reform Office (ALRO) during 2008-2016 based on annual reports from 2008 to 2016. The sample of this study includes 463 staff members from administration, accounting, and financial teams of ALRO in Thailand. Purposive sampling together with a questionnaire was used for data collection. The data was analyzed by descriptive statistics comprised of basic statistical data consisting of mean, standard deviation, frequency, and percentage. Also, path analysis for hypotheses testing and analysis of ALRO financial reports were performed. It was found that the application of managerial accounting data has direct influence on financial ratios. In addition, financial ratios in terms of liquidity, assets management, debt management, and profitability have direct influence on land reform management for sustainable agriculture. Moreover, the study found that the overall financial situation of Agricultural Land Reform Office (ALRO) is fine and the organization is able to pay off liabilities sufficiently. ALRO has good assets management for both fixed assets and total assets that generate income, and capabilities to invest in land to ensure operational efficiency. When comparing the financial situation during 2008-2016, the whole picture demonstrated that its entire finance was manageable and there were no faults. For operational efficiency in those years, 2010 and 2014 were in the red due to expenses from investment for profit in the following year. This study, thus, helps create knowledge as an important organizational resource that enables competitive advantages of the organization, leads to great performance based on its ultimate goals, and optimizes expenses for the benefits of population according to the government's policy.
Keywords: Managerial Accounting Information, Agricultural Land Reform Office, Sustainable Agriculture

Introduction

Thai population had requested land reform since 1957 and Agricultural Land Reform Act was first launched in 1975 because His Majesty King Bhumibol Adulyadej supported the land reform project. As he was aware of poverty of citizens with no land to cultivate, he contributed pieces of land, which were his personal properties, to Agricultural Land Reform Offices in eight provinces comprised of Pathum Thani, Phra Nakhon Si Ayutthaya, Nakhon Nayok, Nakhon Pathom, Ratchaburi, Phetchaburi, Saraburi, and Chachoengsao. Moreover, according to criteria in Agricultural Land Reform Act B.E. 2018, in terms of land compensation, His Majesty King Bhumibol Adulyadej suggested to set up a cooperative support fund. To follow in His Majesty's

footsteps and honor his royal grace, several sectors had contributed their land for land reform bringing delight to peasants and numerous people who are grateful for his kindness towards Thai population (Agricultural Land Reform Office, 2017). According to Section 4 of Agricultural Land Reform Law, agricultural land reform is an improvement of rights and ownership of agricultural land. It also includes accommodation arrangement on agricultural land, derived from state land or expropriation from land owners, for farmers who do not have their own land at all and who do not have enough land to make a living. This represents the aim of agricultural land reform that ensures equality of land ownership among farmers and assists in development of professions and earnings for farmers to make a living out of the reformed land. ALRO has three main responsibilities: (1) allocation of land, obtained from state and private sectors, for peasants' leasing and hire purchase; (2) necessary basic development in land reform zones; (3) enhancement in professions and earnings of peasants. Organizations related to agricultural land reform consist of Agricultural Land Reform Committee, Provincial Land Reform Committee, Agricultural Land Reform Office, Provincial Land Reform Office, and Agricultural Land Reform Fund (Agricultural Land Reform Office, 2017). Agricultural Land Reform Fund was established in Ministry of Finance based on Section 9 of Agricultural Land Reform Law related to finance and assets from national budget, government, and Farmer Aid Fund based on Farmer Aid Fund Law. Benefits related to agricultural land reform received by ALRO are working capital and expenses in the operation of agricultural land reform. Every year, ALRO issues its annual report to indicate allocated revenue and occurred expenses. Such report represents its financial situation and past performance of ALRO and helps in ALRO administration.

The annual report is a collection of quantitative and qualitative data about the operation. The data can be both financial and non-financial and in terms of accounting, it is called managerial accounting data or managerial accounting information. Managerial accounting data is significantly important and utmost benefits in business operation because executives and employees have to use it for planning and decision making in order to achieve the highest organizational aim (Pumkaew et al., 2018).

To demonstrate comparison and operational trends in the annual reports, financial ratio analysis is performed to utilize in several operational decisions of ALRO at the present time and for future plan prediction. Previous studies have emphasized the importance of financial data analysis by employing financial ratio analysis. Some items in the ratio analysis can help prevent the organization from failure and some can be the alarm with statistical significance for organizational operation (Siriwatthanakoon, 2002; Yu and Wenjuan, 2010; Lin, Liang, and Chen, 2011; Halkos and Tzeremes, 2012; Watthanakarn, 2015; Tian and Yu, 2017). However, in previous studies, ratio analysis was widely conducted in private organizations or registered companies on the stock market, while there was a little analysis in government sections such as studies of Harntrakul and Khangwon (2015), etc. Pumkaew et al. (2018) also explored the factors affecting financial effectiveness of managerial accounting information of small and medium enterprises of Para Rubber industry in Thailand and some of the findings indicated that managerial accounting data has impact on financial effectiveness. Therefore, this study is based on the research of Pumkaew et al. (2018) to emphasize the application of managerial accounting data for financial ratio analysis enabling land reform management for sustainable agriculture. This study analyzes financial ratios for ALRO as an application of managerial accounting data and the analysis result can be a guideline for forecasting and planning future ALRO operations. It is also related to advantages in establishing stability, wealth, and sustainability for agricultural sector.

So, research objectives are to (1) investigate causal factors and effects of financial ratios on land reform management for sustainable agriculture and (2) examine the financial situation and operational efficiency of Agricultural Land Reform Office during 2008-2016 based on annual reports from 2008 to 2016.

Concepts, Theories, and Research Framework

Theory of Knowledge-Based View (KBV) of the Firm

Barney (1991) demonstrated that the theory of resource-based view of the firm is a characteristic of capability and organizational resources which are greatly important in strengthening potential of competitive advantages. Competitive advantages include uniqueness, unity, and assets which are rare, valuable in themselves, and hard to imitate or replace. Miller (1998) claimed that the firm strength leading to competitive advantages consists of four attributes of resources, which are: truly valuable in business operation and competition; rare as an advantage over rivals and industrial rivals do not have such resources; inimitable or costly to imitate; non-substitutable. As mentioned above, Barney (1991) and Miller (1998) represented that the firm resource is an important internal factor as it creates sustainable competition, but the firm has to possess valuable, rare resources that its business rivals do not have and cannot imitate or substitute. If the firm has these qualities, sustainable competitive advantages will occur.

The RBV theory was later applied to create knowledge-based theory of the firm (KBT) or knowledge-based view (KBV) which considers organizational knowledge as an extremely important resource (Clarke & Rollo, 2001). The KBV indicated that organizational knowledge is a crucial matter that helps the organization establish competitive advantages and enable good operational performance as aimed. Such knowledge is in each individual and can be transferred through organizational policies and culture, performance, document reports, and communication among employees. As a result, there is strategic management of organizational knowledge with the main objective to apply knowledge and skills about organizational resources to produce goods and services that yield competitive advantages from capability to invent new products and processes and effectively improve the number of products that exist (Grant, 1996: 109-113, 2001: 114-118; Theriou, Aggelidis, and Theriou, 2009: 177-181; Rebolledo and Nollet, 2011).

Concept of Financial Statements

Managerial accounting data analysis exhibits definitions, components, major characteristics of financial statements, and methods of financial statement analysis. The accounting data from financial statement analysis is useful for decision making, planning, controlling, and revising. There are several definitions of financial statements as follows:

Kijprad (1999: 1) defined a financial statement as a financial report created to present financial data about operational performance of a business during a period of time and indicate the status of a business on any day. A financial statement generally comprises balance sheet, income statement, and statement of changes in financial position. Moreover, it includes footnotes to financial statement, other related statements, and explanations specified as a part of the financial statement.

Eue-jirapongpan (2006: 514) demonstrated that a financial statement is a document displaying data about financial position, performance, and financial changes of a business in several meanings resulting from various types of business activities. Popular financial statements are balance sheet, income statement, and cash flow statement.

MaakCharoen (2008: 10) illustrated that a financial statement is a report of performance, financial position or changes in financial position of a business whether it is a report of balance

sheet, income statement, retained earnings statement, cash flow management, statement of changes in equity, related statements, footnotes to financial statement or other descriptions specified as a part of the financial statement.

Prasertsri (2013น: 2) represented that a financial statement is a financial report or financial data generated from recorded financial data about business performance in an accounting period to show financial position of a business.

To sum up, from several definitions above, a financial statement is a financial report generated in an accounting period to display financial position, performance, changes in statement of equity, and footnotes to financial statement or various descriptions useful for reviewing of past business activities and making economic decisions in the future.

Concept of Financial Ratio Analysis for Management

The application of accounting data to financial statement analysis is crucial because executives can use the analysis result of such data to evaluate operational performance of the business as it reveals strengths, weaknesses, opportunities, past operational obstacles within an accounting period, and profitability when comparing with sales volume and capital. Moreover, it indicates financial risk of debt and equity financing of the business, ability to pay off interest and fixed charge, efficiency of financing, and suitability of capital use. There are various methods of analyzing financial position and performance of a business, but every method uses comparison, such as comparison of historical data of a business, external comparison with business rivals with the same size of manufacturing, and comparison of standard values or average business rates. This research utilizes financial statement analysis by financial ratios to analyze relations of different sets of financial data. The results are shown in percentages, multiples, and durations of time to solve problems in comparison of firms with different sizes (Ross, Westerfield, and Jordan, 2009: 36).

Concepts and theory mentioned above refer to research framework which illustrates that ALRO has issued its annual reports and applied managerial accounting data on financial ratio analysis. Such reports and managerial accounting data, based on the KBV theory, are knowledge considered as a greatly significant resource. The presented knowledge establishes competitive advantages, leads to expected performance, and serves as a report presentation to personnel of the organization. The knowledge presentation also encourages communication among agricultural land reform offices in different provinces to acknowledge strengths and weaknesses in order to carry out administration and operation stably, wealthily, and sustainably for people sector.
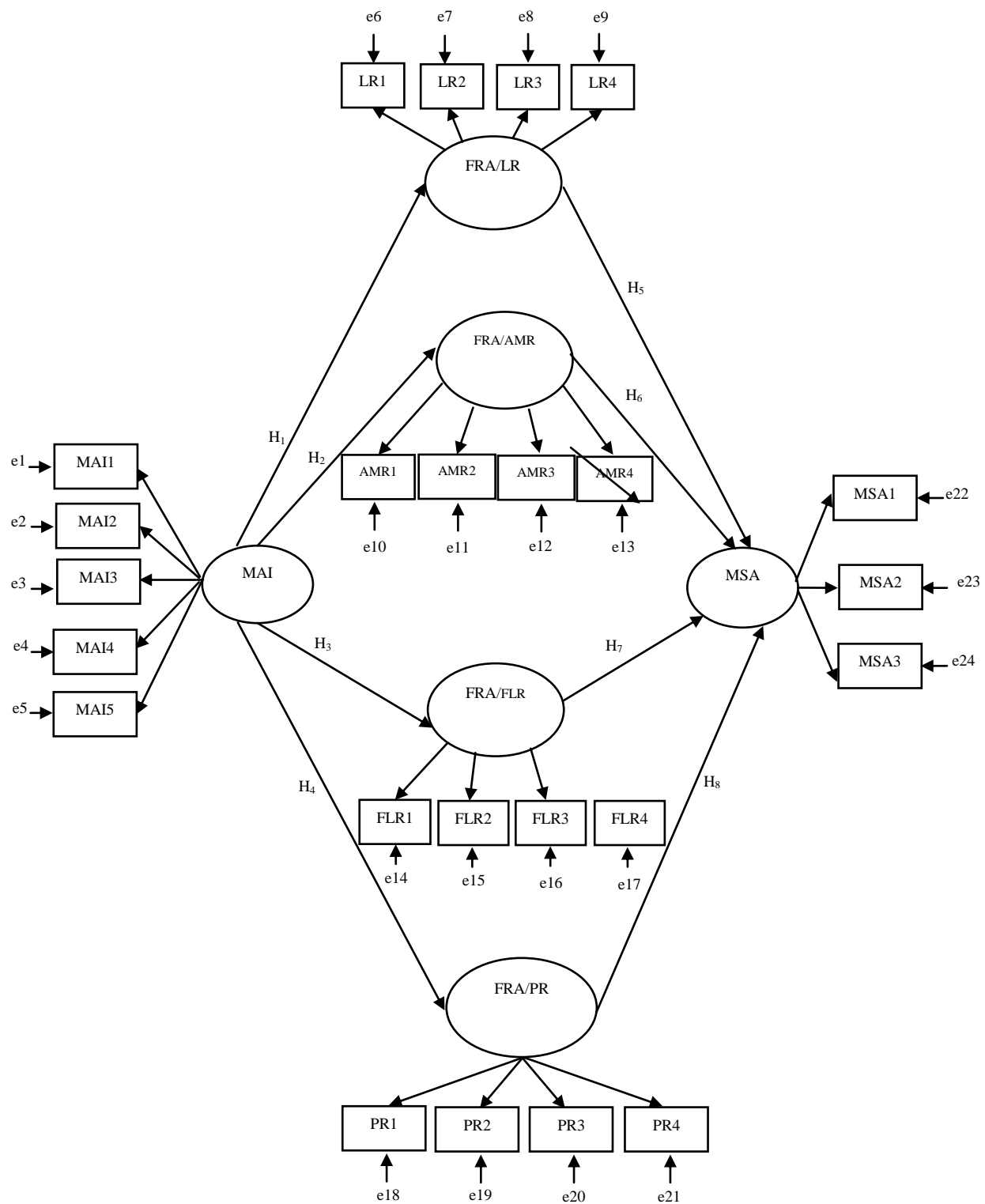
Figure 1 Research Framework

Research Methodology

Population and Sample

The population for data collection of this study are 1,256 ALRO officers (Office's Internal Structure Database, 2017). For sample, the researcher takes into account suitability of hypotheses testing; therefore, purposive sampling was performed to select 463 officers from administration, accounting, and financial teams. The number of sample follows the sample condition that sample size must be consistent with statistics used for data analysis: a sample of 10-20 persons per observable variable based on the rule of thumb (Hair et al., 2010). There are 24 observable variables in this study, so the size of sample must be 220-480 persons. The size of this research's sample corresponds to such condition. After collecting data from the questionnaire, there are 368 copies completely answered, which equal 79.48%, ready for data analysis.

Research Tools

A questionnaire was used for acquiring data in order to prove hypotheses (H_1-H_8) and ALRO financial reports were used for examining financial situation and operational efficiency of Agricultural Land Reform Office within 10 years from 2008 to 2016 to display the most obvious trends. The ALRO annual reports were selected for analysis because land reform is critical in solving the problem of poverty in Thai farmers and lessons about land reform are introduced more in school and educational circles.

In terms of quality assurance of the questionnaire, content analysis was performed by three experts who examined accuracy, clarity of language, content inclusion, and relevancy between research questions and objectives to analyze and calculate index of congruency (IOC). Evaluated values from three experts equal 0.68-0.92 which are acceptable. Following experts' suggestion, the questionnaire was edited and tested with a group of 30 persons who were not the sample of this study to analyze and find item-total correlation between 0.36-0.65 that exceeds 0.4 (Pallant, 2010). The values were selected to analyze reliability of the questionnaire. It was found that reliability has Cronbach's alpha between 0.81-0.89 which is more than 0.7. It demonstrated that every component has acceptable level of reliability (Hair et al., 2006). Moreover, composite reliability is between 0.85-0.90 which exceeds 0.4 and it represented that the set of observable variables can measure structural latent variables with high reliability (Hair, Black, Babin, and Anderson, 2006). Also, average variance extracted (AVE) is between 0.45-0.55 which exceeds 0.4 and it indicated that error variance is lower than variance in observable variables. As a result, the measurement model of this study has good structural reliability.

Statistics for Data Analysis

General data was analyzed by descriptive statistics including elementary statistics for basic data consisting of mean, standard deviation, frequency, and percentage. For testing hypotheses, path analysis by computer program was employed.

Data analysis was proceeded to fulfill the second objective of this study. Statement of financial position and income statement from the annual reports were analyzed by financial ratios using financial statement analysis formulas from Delen et al. (2013). Although the study of Delen et al. (2013) investigated performance of an organization in private sector for the sake of investors, it claimed that financial ratios help forecast and analyze performance accurately. Each formula of financial ratio analysis assures reliability of its analysis results. Therefore, this research refers to such study as shown on the list below.

Table 1 List of Financial Ratios

Quick ratio	(Current assets-inventory)/ current liabilities
Liquidity ratio	Current assets/ current liabilities
Fixed assets turnover	Sales/fixed assets
Total assets turnover	Sales/total assets
Debt ratio	Total liabilities/total assets
Debt to equity ratio	Total liabilities/owners' equity
Net profit margin	Net incomes/sales
Return on assets	Net income/total assets

Source: Delen, Kuzey, and Uyar (2013: 3972)

Research Results

Analysis results of the model based on hypotheses (H_1-H_8) indicated goodness of fit with empirical data as shown in Table 2.

Table 2 Results of Analysis of Model Goodness-of-Fit

Quality of fit measure	Model's Fit Based on Criteria	Statistics	Results
Chi-square/df	Less than 3.00	1.63	Passed
p-value of Chi-square	More than 0.05	0.24	Passed
GFI	More than 0.90	0.98	Passed
AGFI	More than 0.90	0.95	Passed
CFI	More than 0.90	0.92	Passed
RMSEA	Less than 0.05	0.036	Passed

Figure 2 depicts relations of variables based on hypotheses. In terms of influence of applying managerial accounting information (MAI) on financial ratio analysis (FRA), it was found that application of managerial accounting information has positive impact on financial ratio analysis for liquidity ratio (FRA/LR) of 0.63, assets management ratio (FRA/AMR) of 0.24, financial leverage ratio (FRA/FLR) of 0.72, and profitability ratio (FRA/PR) of 0.48 with statistical significance at 0.05. Accordingly, hypotheses H_1-H_4 are accepted. For influence of financial ratio analysis on land reform management for sustainable agriculture (MSA), it was found that financial ratio analysis for liquidity ratio (FRA/LR), assets management ratio (FRA/AMR), financial leverage ratio (FRA/FLR), and profitability ratio (FRA/PR) has direct influence on land reform management for sustainable agriculture (MSA) with values of 0.57, 0.74, 0.14, and 0.54 respectively, while statistical significance is at 0.05. Therefore, hypotheses H_5-H_8 are also acceptable.
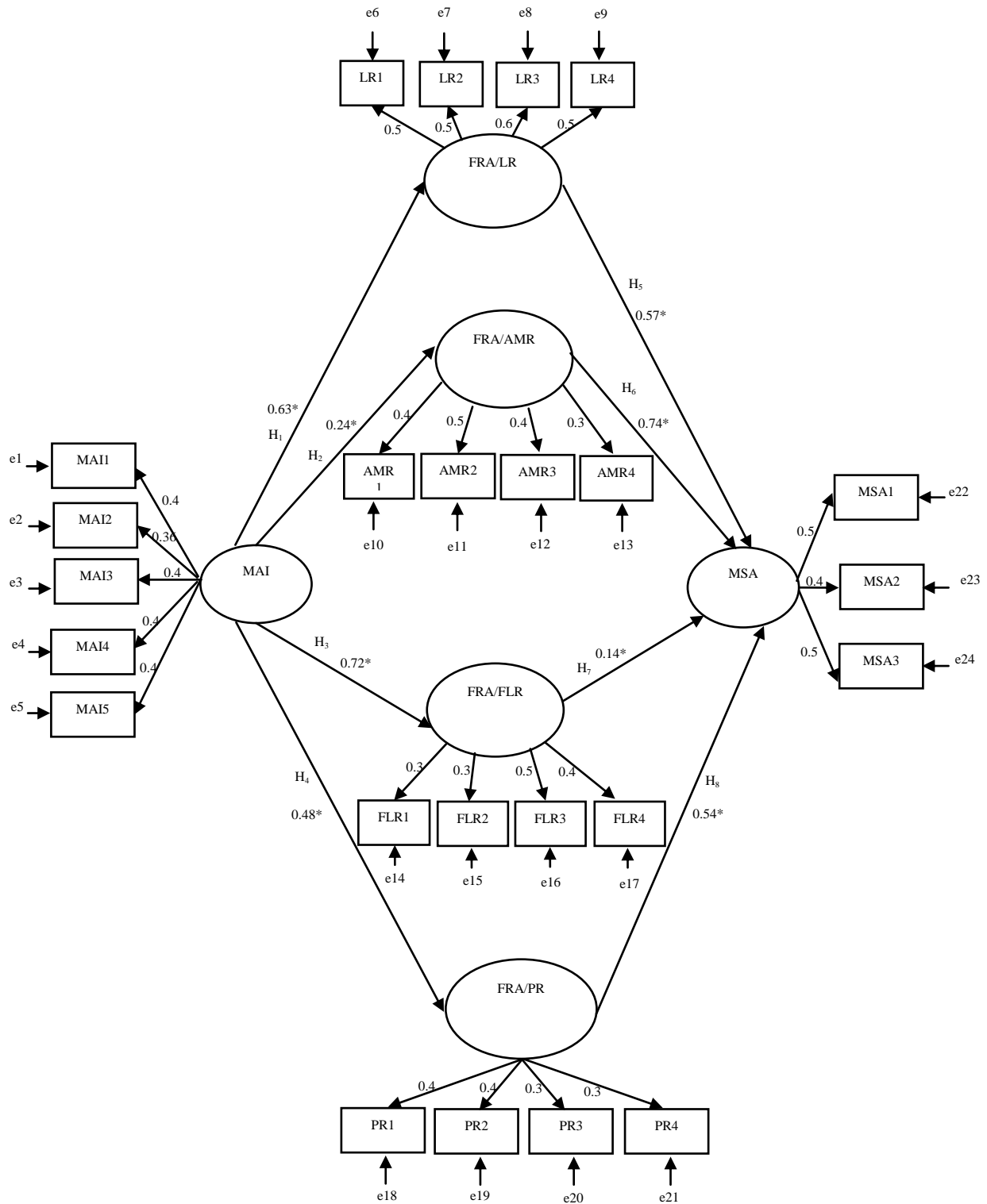
Figure 2 Testing Results of Structural Equation Modeling

The results of examining the financial situation and operational efficiency are indicated in Table 3. It exhibits financial ratio analysis where liquidity ratios of ALRO are related to ability to pay

off short-term liabilities. This set of ratios, thus, emphasizes current assets and current liabilities. Contrarily, in 2008, current ratio and quick ratio could not be calculated due to negative liabilities in the statement of financial position.

Table 3 Results of Financial Ratio Analysis

Ratio	2008	2009	2010	2011	2012	2013	2014	2015	2016
Liquidity Ratios									
Current ratio (-fold)	N/A	1.00	0.92	1.38	1.39	1.39	1.22	1.71	0.84
Quick ratio (-fold)	N/A	0.78	0.85	1.35	1.32	1.30	1.15	1.68	0.79
Assets Management Ratios									
Fixed assets turnover (times)	N/A	1.81	3.63	2.94	2.91	3.09	3.23	3.18	2.58
Total assets turnover (times)	N/A	1.69	3.16	2.48	2.64	2.86	2.94	2.41	2.38
Financial Leverage Ratios									
Debt ratio (-fold)	N/A	0.07	0.15	0.12	0.08	0.07	0.09	0.15	0.10
Debt to equity ratio (-fold)	N/A	0.08	0.18	0.14	0.09	0.07	0.10	0.18	0.11
Profitability Ratios									
Net profit margin (%)	-2.08	3.86	-3.95	0.19	3.53	1.51	-2.51	7.36	1.94
Return on assets (%)	3.26	6.52	-12.46	0.47	9.33	4.31	-7.37	17.78	4.62

It represents that ALRO in 2008 had considerably high liquidity because negative liabilities revealed that ALRO had enough assets to pay off the debt more than in the past. Similarly, the quick ratio could not be calculated because of negative liabilities. From Figure 2, 2015 had the highest liquidity (except for 2008), but 2016 had the lowest liquidity in current ratio, while 2010 had the lowest liquidity in quick ratio. This implies that 2010 had a lot of inventory but ALRO could gradually manage it later. Until 2016, there was more inventory than in 2015 and there was a decrease in cash and cash equivalents. Accordingly, the quick ratio reduced from 2015. The whole picture of analysis showed that ALRO had considerably high financial liquidity because it maintained current assets enough for paying current liabilities and for the year it had many cash and cash equivalents, it would invest in land for benefits of Thai farmers' living.
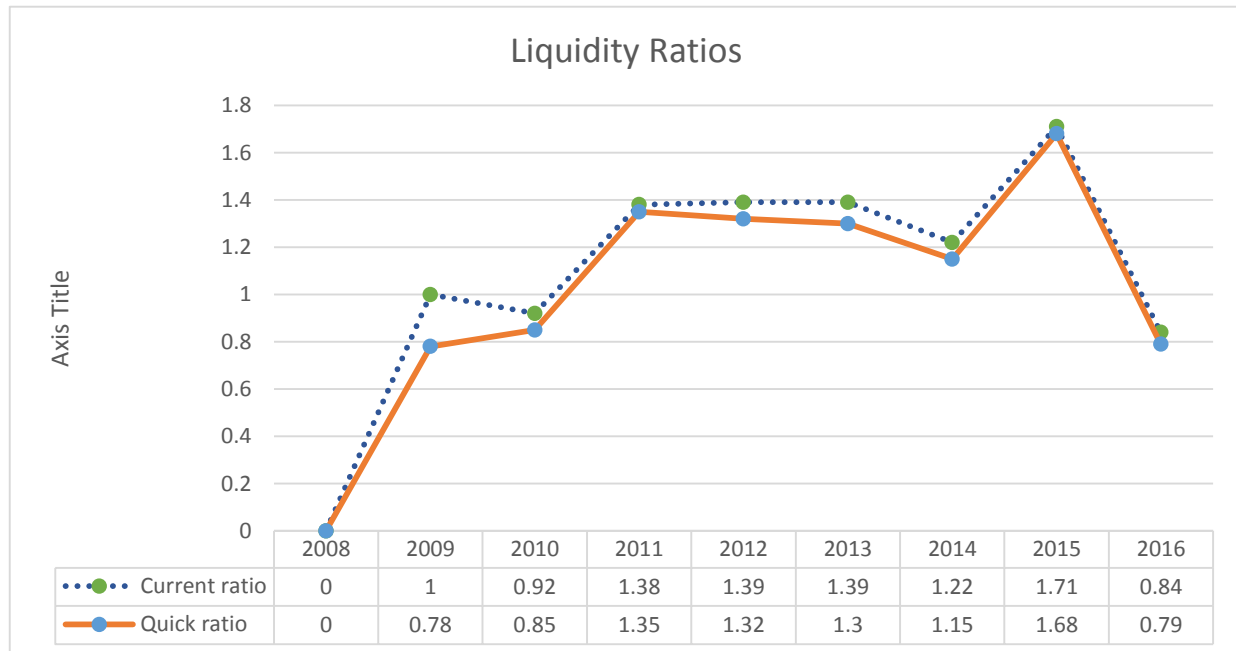
Liquidity Ratios

	2008	2009	2010	2011	2012	2013	2014	2015	2016
⋯•⋯ Current ratio	0	1	0.92	1.38	1.39	1.39	1.22	1.71	0.84
— Quick ratio	0	0.78	0.85	1.35	1.32	1.3	1.15	1.68	0.79

Figure 3 Trend in Financial Liquidity of Agricultural Land Reform Office

Assets Management Ratios

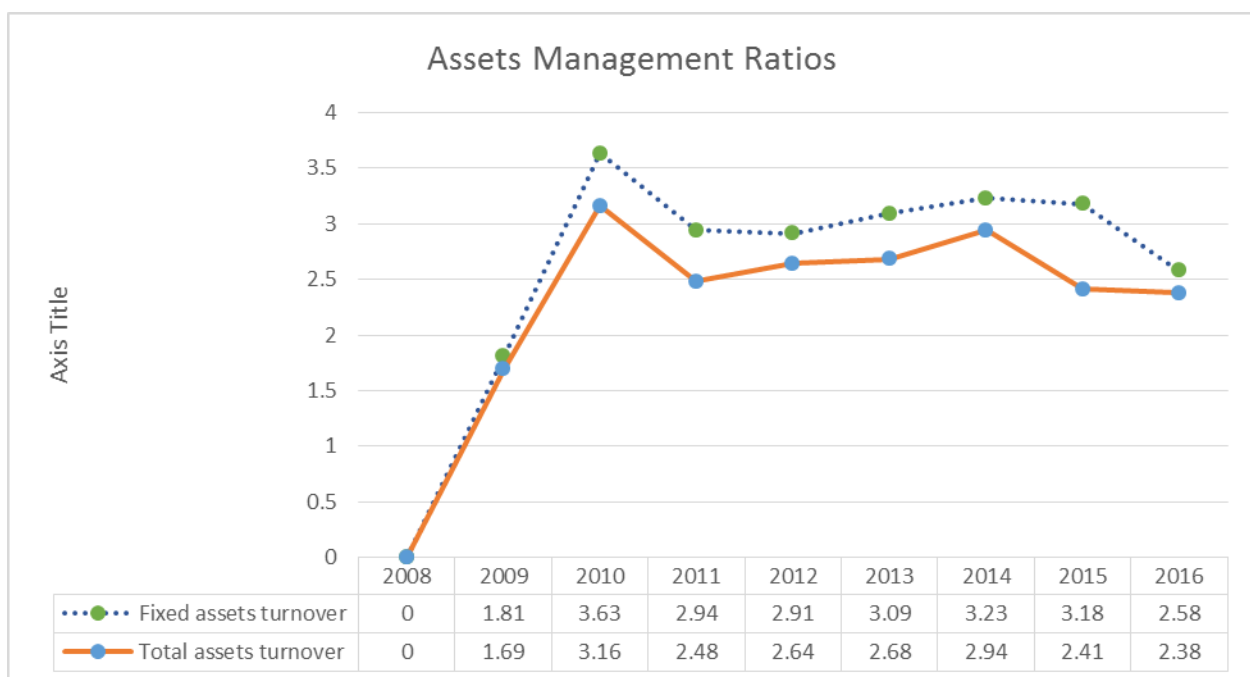|	2008	2009	2010	2011	2012	2013	2014	2015	2016
⋯•⋯ Fixed assets turnover	0	1.81	3.63	2.94	2.91	3.09	3.23	3.18	2.58
— Total assets turnover	0	1.69	3.16	2.48	2.64	2.68	2.94	2.41	2.38

Figure 4 Trend in Assets Management of Agricultural Land Reform Office

The next set of ratios is an analysis of assets management capability which depicts measurement of assets management to find out the effectiveness of the organization in utilizing its assets for making revenue. From Table 2, it was found that during 2009-2016, ALRO greatly managed its fixed assets and total assets that generate income as the analysis results showed the values more than 1.
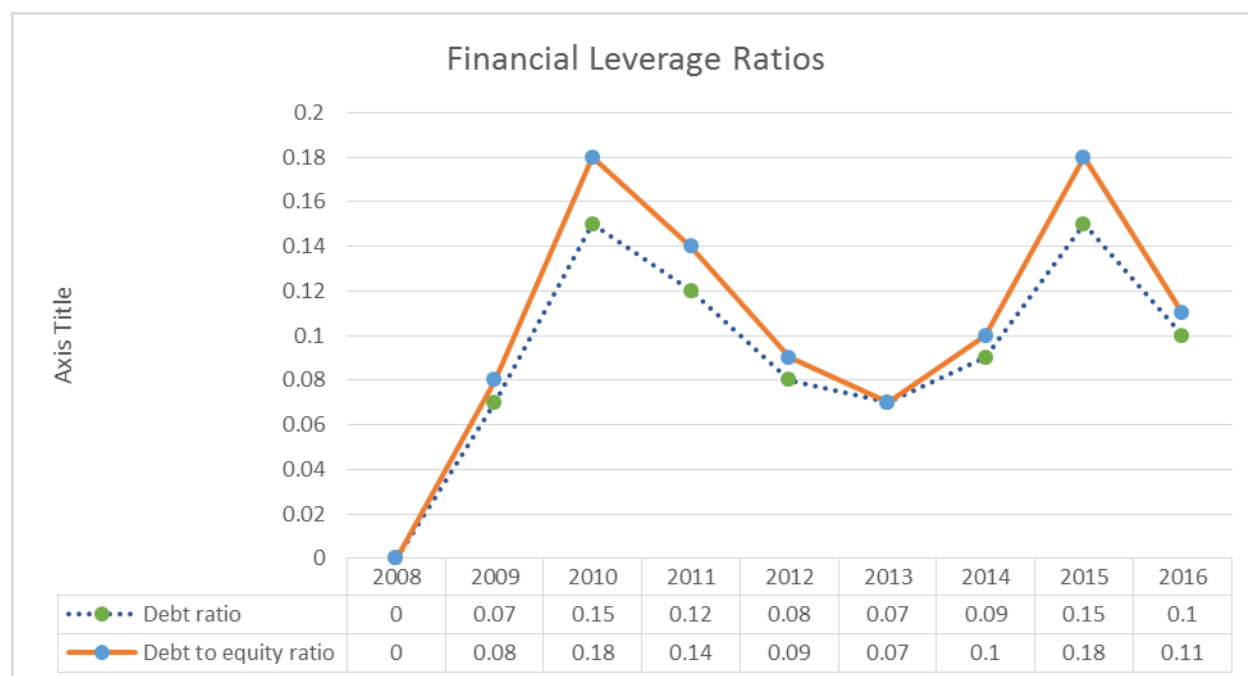
Figure 5 Trend in Debt Management of Agricultural Land Reform Office

This set of ratios indicates debt management which includes measurement of debt paying ability, debt financing ability, and consideration of capital use from debt and equity financing when the debt ratio is high. The business will encounter high risk of sequestration due to delayed payment of encumbered debt. Debt to equity ratio and debt ratio are included. Debt to equity ratio is a comparison between debt and equity while equity works as an armor for creditors, because when the financial situation is not good, shareholders will lose their equity before creditors do. Therefore, if this ratio is high, the debt is also high; as a result, the business faces financial risk and creditors also faces higher risk. Yet, the analysis of debt to equity ratio of ALRO demonstrated that the calculated values of each year were not more than 1, which revealed that ALRO had good debt management and debt paying ability. In other words, the owner's equity is sufficient for paying off debt. For investment in the total assets of a business, debt ratio indicated amount of money used in paying debt. Creditors will be satisfied if this ratio is low as they can be sure of getting repaid. On the other hand, if the debt ratio is high, it implies that there is high financial risk. Creditors have to consider debtors carefully. If the debtors' businesses have financial problems, there is a high possibility of not being able to pay off the debt. From the calculation, it was found that ALRO encounters low financial risk because the values calculated for each year did not exceed 1. It represented that ALRO has enough total assets to repay its total liabilities. In terms of debt management, the whole picture of ALRO depicted that it has great management of debt with low financial risk due to debt paying ability from total assets and the owner's equity.
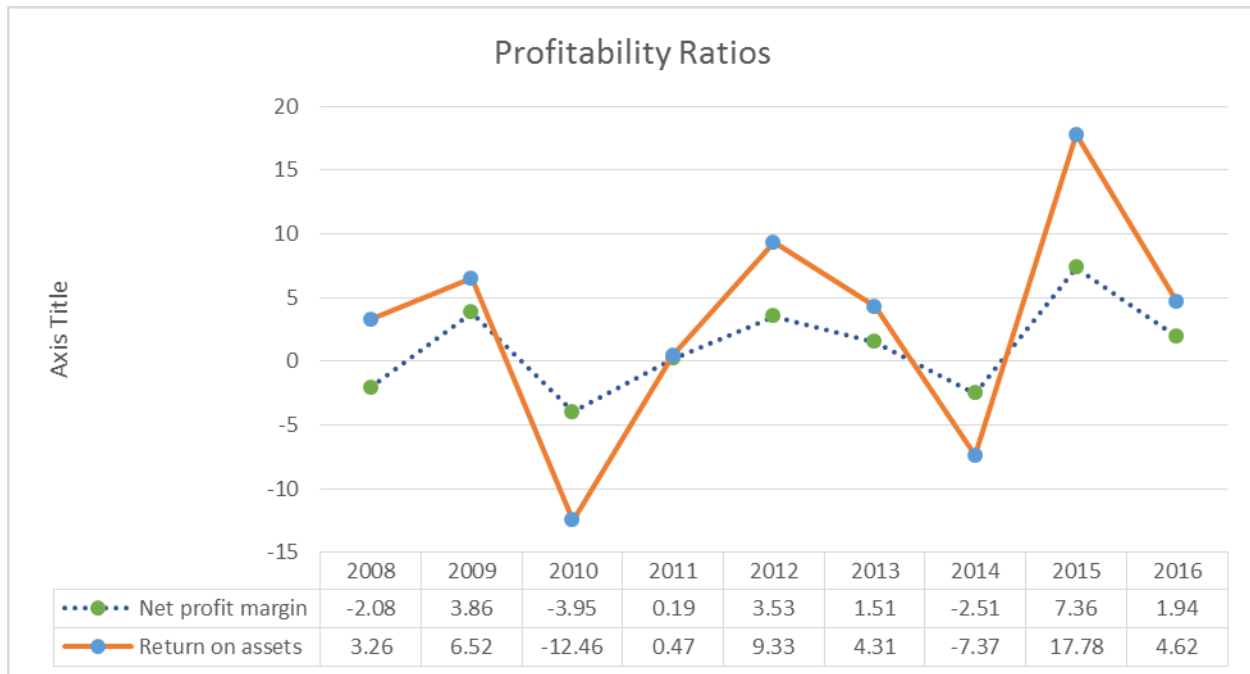
Profitability Ratios

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Net profit margin	-2.08	3.86	-3.95	0.19	3.53	1.51	-2.51	7.36	1.94
Return on assets	3.26	6.52	-12.46	0.47	9.33	4.31	-7.37	17.78	4.62

Figure 6 Profitability of Agricultural Land Reform Office

The last set of ratios illustrated profitability of ALRO. To begin with, net profit margin and return on assets were analyzed. Net profit margin presented net profit from the sales volume, but in the case of ALRO, the amount of money received from the government was considered in stead of the sales volume. As a result, the calculation represented that years 2008, 2010, and 2014 were in the red because those years had more expenses than revenue from the government. The results of ratio analysis were also negative, but the overall picture indicated that ALRO had profitability as after it obtained budget from the government, it administrated the money and operated to gain profit. For the ratio of return on assets, it measured performance by comparing with total investment in assets for operation and the results implied that ALRO could utilize its assets to operate and gain some returns. ALRO has actually invested in land based on its operation principles. Although the result of 2010 was negative, the annual report of 2010 illustrated that the expenses which were more than operational revenue were from investment and operation to serve the society as a whole.

Conclusion and Discussion

Previous and recent studies about financial ratio analysis have focused on relations between financial ratio analysis and stock price or influence of accounting data on investors' decision making. However, this study emphasizes managerial accounting in forms of financial and non-financial data in the past and present. It also includes estimation for future forecast and further decision making. The analysis result of causal factors and effects of financial ratios on land reform management for sustainable agriculture represented that application of managerial accounting data has direct influence on financial ratios. Furthermore, financial ratios for liquidity, assets management, debt management, and profitability have direct influence on land reform management for sustainable agriculture. This study is consistent with the research of Pumkaew et al. (2018) which found out direct influence of accounting data on financial

effectiveness. It also demonstrated that this research is different from previous studies and shows a new concept for a research in managerial accounting perspective.

Examination of financial situation and operational efficiency of Agricultural Land Reform Office during 2008-2016 is considered as an analysis which enables financial planning and forecasting that help make decisions about investment and finding investment funds. It also controls and appraises operational efficiency such as performance evaluation and payment for executives based on efficiency and operation of the business. In addition, financial statement analysis is a significant tool for management by exception, which is an administrative characteristic that executives solve problems when facing faults or errors. The numbers from financial statement analysis help in finding out each fault. This research analyzed ALRO financial ratios which are application of managerial accounting data and the results can be a guideline for forecasting and planning future operation of ALRO. The overall research results of the ALRO financial situation found that ALRO had a good financial situation with enough debt paying ability. For assets management, ALRO had greatly managed fixed assets and total assets that generate income. Moreover, it had ability to invest in land to establish operational efficiency. When comparing financial situations during 2008-2016, the whole picture demonstrated that its entire finance was manageable and there were no faults. For operational efficiency in those years, 2010 and 2014 were in the red due to expenses from investment for profit in the following year.

This study, however, is a presentation and analysis of the government's financial report. Most studies analyzed ratios for private companies to show relation and information useful for investors. This study corresponds to the study of Xu et al. (2014) that performed business failure prediction (BFP) using financial ratios for firms in China with the result claiming that financial ratios are useful tools for prediction of performance and financial situation. Results of this research also correspond to the study of Bem et al. (2014) that tested factors affecting the set of ratios which depicted financial liquidity. Such factors were number of beds, annual income per bed, profitability ratios, and debt ratio. It was found that financial liquidity has positive relation with debt ratio, profitability ratios and liquidity ratio, but does not have relation with the size of hospital. Whether the hospital is small or big, it does not affect financial liquidity.

Contributions and Future Research

In practice, this research can be applied to other government sections as a guideline for operation with different context from private organizations. For private companies, financial statement and results of financial statement analysis are presented to people who are interested in them, especially investors. The analysis of financial ratios truly represented managerial accounting data for administration. Results of the analysis exhibited strength that should be maintained and opportunities from outside to create competitive advantages for operational strength.

Moreover, weaknesses that must be improved for better administration and obstacles which are external factors will affect the operation of government sector. The theory of KBV stated that if personnel of the organization have knowledge in applying managerial accounting data, it will encourage and support agricultural land services for population, consolidate sustainability in ALRO's administration and enable competitive advantages of the organization as well as leading to great performance as aimed. Finally, it will become strategic management of the government sector with the main purpose to apply and utilize knowledge and skills about organizational resources to create new services that as a result, the government has confidence in budget distribution to several sections and population obtains the picture of government sector working confidently and loyally.

The limitation of this research is that it only investigated financial reports of a government section. In the future, there should be studies of several government organizations to cover financial ratios and examine relation between factors affecting financial ratios of government sector to find out whether there are other operations that do not appear on the official reports but have impacts on the results and study how they affect such results.

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