

Thai Airways Restructuring Plan to Avert Bankruptcy

Rupesh Sinha¹, Navaneetha Kumar², Chinmay Gandre³, Rajesh Kumar Nair⁴, Finn Alessandrino⁵, Daisy Mui Hung Kee⁶, Jullia Deol⁷, Khairunrahani Mohd Samuddin⁸, Nor Asyiqin Rosmadi⁹, Rif'atul Muna¹⁰, A.A. Gde Satia Utama¹¹

CMS Business School^{1,2}

Senshadri Rd, Gandhi Nagar, Bengaluru, Karnataka 560009, India

SIES College of Management Studies^{3,4}

Sri Chandrasekarendra Saraswati Vidyapuram Sector-V, Nerul, Navi Mumbai, Maharashtra 400706, India

Universiti Sains Malaysia^{5,6,7,8,9}

Jalan Sungai Dua, 11800 Minden, Pulau Pinang, Malaysia

Universitas Airlangga^{10,11}

Jl. Airlangga No.4 - 6, Airlangga, Kec. Gubeng, Kota SBY, Jawa Timur 60115, Indonesia

Correspondence Email: rupesh.sinha@cms.ac.in

ORCID ID: 0000-0002-5898-380X

ABSTRACT

For the past ten years, Thai Airways International Public Company Limited (THAI) has been suffering successive losses year after year. In 2014, THAI implemented a restructuring plan to improve its revenue streams, yet to no avail as it has been reporting losses. This study aims to determine the impacts of the restructuring plan on profitability ratios in the company and to determine which variable contributes the most towards their profits or losses. The data used were THAI financial statements of 2010 to 2019. As the results show, THAI's profitability ratios show no significant changes before and after the implementation of the restructuring plan, and the largest contributors to their losses are fuel and oil expenses and impairment losses of aircraft.

Keywords: Bankruptcy, Losses, Operating Expenses, Restructuring Plan, Thai Airways International PLC

INTRODUCTION

Thai Airways International Public Company Limited (THAI) is the national majority-owned airline enterprise by Thailand Ministry of Transportation and was registered within the Securities Exchange of Thailand in 1991. Its primary business is transporting passengers, goods, postal, and parcels from scheduled flights to chartered flights. THAI also offers other related services, e.g., aircraft maintenance service, in-flight meals, and beverage service. The fact that the Ministry of Finance owns 53.16% of the company as of 2019 and its businesses are under the State Enterprise Policy Committee's supervision, consider THAI as a state-enterprise (Thai Airways International Public Company Limited, 2019).

In 2010, THAI received the highest profitability in its fifty years of operation, and due to the improved financial performance, it successfully regained investor confidence through its induction back into the MSCI Index (Thai Airways International Public Company Limited, 2010). However, the phase of glory did not last long when THAI started to

experience loss in 2011. The losses continuously increased and became worse year by year. CAPA Centre for Aviation (2015) reported the company's operating had experienced failure more than doubled from 2013 to 2014. As a consequence, THAI's operating margin had decreased significantly from -6.2% to -14.9%.

To sustain the company, the Board of Directors and THAI management have put together the THAI restructuring plan, which they labeled as 'big change' to the company. Fedorková and Czillingová (2014) highlighted that when a company fails to eliminate its depression in the market using restoration measures, it is a suitable time for a formal restructuring. This relates to this case study, where THAI did not make profits, and therefore their financial problems escalated.

Katowski and Wysocki (2014) distinguished restructuring plans into two dimensions. In a broader sense, it consists of processes, procedures, systems, and action plans, including its scope and all elements within the enterprise. To a smaller degree, it goes through a financial perspective, limited to the restructuring plan of the company's assets and liabilities.

THAI implemented the first approach of restructuring since the company's strategy covered three stages to prevent any further losses, increase the company's competitive business advantage, and build long-term sustainable growth (Thai Airways International Public Company Limited, 2014). The restructuring plan was completed in December 2014 and approved for implementation by the State Enterprise Policy Committee at the end of January 2015. THAI then carried out and proceeded with the plan continuously from 2015 to 2017.

Within the context of this study, seven variables were taken into consideration. The variables are fuel and oil expense, flight service expenses, aircraft maintenance and overhaul cost, impairment loss of aircraft, depreciation and amortization expense, and net income. Paired sample t-test and multiple regression were used to measure these variables. This paper used these chosen variables to measure the effectiveness of the implementation of the restructuring plan.

RESEARCH METHOD

The objectives of this paper are to examine the effectiveness of THAI restructuring plan and to analyze factors that lead THAI to the edge of bankruptcy. This paper solely used secondary data obtained from THAI annual and financial reports, particularly from 2010 to 2019. The profitability ratios for the four years before and after the plan implementation were listed and analyzed for THAI performance evaluation. Subsequently, six variables consisting of five independent variables and one dependent variable were selected. The dependent variable was net income while independent variables were fuel and oil expense (FOE), flight service expenses (FSE), aircraft maintenance and overhaul costs (AMO), an impairment loss of aircraft (ILA), and depreciation and amortization expenses (DAE). This study took the variables to fulfill the second objective of this paper. For the discussion section, several journals and internet sources were included to support the results.

For the first objective, the profitability ratios were divided into two periods: 2011 until 2014 (pre-restructuring) and 2015 until 2018 (post-restructuring). Firstly, the ratio of average margin was manually calculated for comparison purposes. Afterward, paired

sample t-test was used to determine whether the profitability ratios showed an improvement. Meanwhile, for the second objective, to investigate the correlation between the independent variables, FOE, FSE, AMO, ILA, DAE, and the dependent variable, the net income, a regression analysis was employed. Following the multiple regression, this paper then carried out one further test, partial regression to measure precisely which one of the independent variables contributed the most towards the variation in the net income.

RESULTS AND DISCUSSION

To analyze THAI's performance after the enactment of the restructuring plan, this paper compared three profitability ratios, i.e., net profit margin, return on total asset, and return on equity of the company. The profitability ratios in 2011, 2012, 2013, and 2014 were used for pre-restructuring performance while taking 2015, 2016, 2017, and 2018 profitability ratios for post-restructuring performance. Table 1 below presents the average margin for each ratio.

Table 1. The Paired Sample Statistics of Profitability Ratios

Ratios	Mean		Mean Difference	Std. deviation		Std. Deviation Difference	t-value	p-value (2-tailed)
	Before	After		Before	After			
Net Profit Margin	-1.4%	-3.4425%	2.042500	6.48845	3.41846	7.416056	.551	.620
Return on Total Asset	-0.525%	-0.825%	.300000	3.527393	2.121910	2.78687	.215	.843
Return on Equity	-13.875%	-21.375%	7.500000	17.368818	21.571490	14.241957	1.053	.370

Note. The average margin based on the profitability ratios extracted from Thai Airways International PLC annual report were calculated manually

After comparing the average margin of profitability ratios, the analysis of this paper extended by running paired sample t-test to see if there were any statistically significant changes by each ratio. The outcomes were expected to get a higher mean value for post-restructuring than pre-restructuring. The hypotheses were set as below:

- H0: $\mu_D = 0$: There is no difference in profitability ratios before and after the restructuring plan
H1: $\mu_D \neq 0$: There is a difference in profitability ratios before and after the restructuring plan

At the $\alpha = 0.05$ level of significance, and with the assumption that the differences were distributed normally with a sample size of $n = 4$ and 3 degrees of freedom, the decision rule was:

$t_{\text{stat}} < t_{\text{table}} = -2.7764$ or $t_{\text{stat}} > t_{\text{table}} = 2.7764$, reject H0. Otherwise, H0 is not rejected.

According to Table 1, the results of paired sample t-test can be concluded as follows:

a) Net profit margin

At 0.05 level of significance, $t_{\text{stat}} = 0.551 > -t_{\alpha} = -2.7764$, therefore did not reject H0. There was no statistical evidence proposing a significant change in net profit margin after the implementation of the restructuring plan.

b) Return on total asset

At 0.05 level of significance, $t_{stat} = 0.215 > -t_{\alpha} = -2.7764$, therefore did not reject H_0 . There was no statistical evidence proposing a significant change in return on the total asset after the implementation of the restructuring plan.

c) Return on equity

At 0.05 level of significance, $t_{stat} = 1.053 > -t_{\alpha} = -2.7764$, therefore did not reject H_0 . There was no statistical evidence proposing a significant change in return on equity after the implementation of the restructuring plan.

To find the sources of variation for the net income, a multiple regression test needed to be conducted as well as discussions and introduction of other secondary data to justify the fluctuations in the variables. Table 2 below presents the dataset for the variables chosen as either our dependent or independent variables used within the multiple regression test for variables affecting THAI's net income. Notice that THAI obviously experienced loss in 7 out of 10 years of our sample size.

Table 2. Dataset for Dependent and Independent Variables by Thai Airways International PLC (Expenses and Income in Thai Baht)

Year	Net Income (INCOME)	Fuel and Oil Expense (FOE)	Flight Service Expense (FSE)	Aircraft Maintenance and Overhaul Cost (AMO)	Impairment Loss of Aircraft (ILA)	Depreciation and Amortization Expenses (DAE)
2010	14,791,677,097	56,518,905,218	19,064,241,405	9,674,696,586	170,914,911	20,236,478,167
2011	(10,162,111,975)	76,388,558,174	20,427,965,628	11,698,186,020	180,909,303	19,989,063,832
2012	6,510,224,508	80,178,542,248	21,321,411,821	12,600,010,809	181,143,438	20,523,682,320
2013	(11,999,946,937)	80,525,255,227	21,726,825,135	13,446,842,295	5,092,536,008	20,025,665,524
2014	(15,572,557,251)	79,231,321,984	21,624,911,990	14,683,624,297	6,196,331,961	20,534,528,787
2015	(13,046,928,484)	63,242,833,143	20,474,091,602	10,310,630,041	11,876,432,369	19,132,779,719
2016	46,821,201	45,335,913,346	20,817,778,532	16,986,636,235	3,217,748,674	17,990,828,445
2017	(2,072,047,441)	50,214,668,767	22,353,433,918	17,796,784,451	2,721,335,582	17,021,470,515
2018	(11,569,125,225)	60,095,677,157	22,164,846,590	20,087,736,505	3,149,969,372	19,045,361,201
2019	(12,016,470,577)	54,675,194,646	21,058,256,685	19,321,533,731	455,712,627	16,787,211,108

Source: Thai Airways International PLC annual reports

Table 3. Linear Regression Analysis for Dependent and the Independent Variable

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
1	(Constant)	-132693932534.136	83809150428.107	-1.583	.189
	FOE	-.967	.293	-1.295	.030
	FSE	7.153	4.033	.695	.151
	AMO	-2.929	1.182	-1.090	.068
	ILA	-2.074	.577	-.766	.023
	DAE	4.632	2.692	.654	.160

a. Dependent Variable: INCOME

Table 3 shows the constant value indicating the pinnacle of the regression line when it crosses the y-axis. The constant of -132,693,932,534.136 was the predicted value of

the net income, which was the dependent variable in this model if all independent variables used were 0. As for the t value of independent variables, fuel and oil expense (X1) is -3.306, flight service expense (X2) is 1.773, aircraft maintenance and overhaul cost (X3) is -2.479, impairment loss of aircraft (X4) is -3.593, and depreciation and amortization expenses (X5) is 1.721. Hence, the equation could be stated as follows:

$$Y = -132693932534.136 + (-0.967) X1 + (7.153) X2 + (-2.929) X3 + (-2.074) X4 + 4.632X5 + e$$

Where:

Y = Net Income

E = Epsilon/Estimator Style X1 = Fuel and Oil Expense X2 = Flight Service Expense

X3 = Aircraft Maintenance and Overhaul Cost X4 = Impairment Loss of Aircraft

X5 = Depreciation and Amortization Expense

Given that at least one of the independent variables selected did have a significant effect on net income, to determine whether which variable had a significant effect on net income, after taking into account the effect of FOE, FSE, AMO, ILA, and DAE, the null and alternative hypothesis were:

$$H0: \beta_i = 0$$

$$H1: \beta_i \neq 0$$

At the $\alpha = 0.05$ level of significance, and 3 degrees of freedom, the critical t value was ± 2.7764 . Therefore, the rejection region was:

$$t_{\text{stat}} < t_{\text{table}} = -2.7764 \text{ or } t_{\text{stat}} > t_{\text{table}} = 2.7764, \text{ reject } H0. \text{ Otherwise, } H0 \text{ is not rejected.}$$

a) Fuel and Oil Expenses (FOE) on Net Income

The unstandardized coefficient $\beta = -0.967$ indicates that for a 1 Baht increase in fuel and oil expenses, net income would decrease by 0.967 Baht. To determine whether the FOE variable has a significant effect on net income, the $t_{\text{stat}} = -3.306 < t_{\text{table}} = -2.7764$, therefore $H0$ is rejected, as there is significant statistical evidence to suggest that FOE has significantly affected net income.

b) Flight Service Expenses (FSE) on Net Income

The unstandardized coefficient $\beta = 7.153$ implies that for every 1 Baht increase in flight and services expense, the net income would increase by 7.153 Baht. To determine whether the variable FSE has a significant effect on net income, the $t_{\text{stat}} = 1.773 < t_{\text{table}} = 2.7764$, therefore $H0$ was not rejected. There was no significant statistical evidence to suggest that FSE had affected net income significantly.

c) Aircraft Maintenance and Overhaul Costs (AMO) on Net Income

The unstandardized coefficient value proves that net income decrease by 2.929 for every 1 Baht increases aircraft maintenance and overhaul cost. To determine whether the variable AMO has a significant effect on net income, the $t_{\text{stat}} = -2.479 < t_{\text{table}} = -2.7764$, therefore $H0$ is not rejected, as there is no significant statistical evidence to suggest that AMO has significantly affected net income.

d) Impairment Loss of Aircraft (ILA) on Net Income

The unstandardized coefficient value of impairment loss of aircraft is -2.074 . This indicates that for every 1 Baht increase in an impairment loss of aircraft, the net income experience decreased by 2.074 Baht. To determine whether the variable ILA has a significant effect on net income, the $t_{\text{stat}} = -3.593 < t_{\text{table}} = -2.7764$, therefore H_0 is rejected, as there is significant statistical evidence to suggest that ILA has significantly affected net income.

e) Depreciation and Amortization Expense (DAE) on Net Income

The unstandardized coefficient $\beta = 4.632$ implies that for every depreciation and amortization expense increase by 1 Baht, net income increases by 4.632 Baht. To determine whether the variable DAE has a significant effect on net income, the $t_{\text{stat}} = 1.721 < t_{\text{table}} = 2.7764$, therefore H_0 is not rejected. There is no significant statistical evidence to suggest that DAE has significantly affected net income.

The model in Table 4 below presents the proportion of variance within the net income based on the fuel and oil expense, flight service expense, aircraft maintenance and overhaul cost, impairment loss of aircraft, and depreciation and amortization expenses.

Table 4. Result of Independent Variables' Variance in Dependent Variable

Change Statistics									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.933 ^a	.870	.707	5409096203.54729	.870	5.354	5	4	.065

a. Predictors: (Constant), FOE, FSE, AMO, ILA, DAE

Table 4 shows the correlation between the observed and predicted values of net income is 0.933 (strong). Whereas the coefficient of multiple determination, r^2 value is 0.870. This implies that 87% of the variation in the net income can be explained by the values of the independent variables. Note that the corrected r^2 shown within table 4 is 0.707. This indicates 70.7% of the variation in the net income is described by the multiple regression model which has been adjusted for the number of independent variables used in this study and the sample size.

Given that 70.7% of the variation in the net income can be explained by the multiple linear regression model, as well as two of the five independent variables have a significant effect on the net income, it is crucial to ascertain the factors that lead to the two variables FOE and ILA to have such a significant impact on the dependent variable, net income of THAI.

a) Fuel and Oil Expense (FOE)

Fuel and oil expenses are the highest contributors to THAI's operating expenses. The highest FOE the company ever reported from 2010 until 2019 was in 2013 with 80,525 million Baht (35.9% of total costs), followed by 2012 at 80,178 million Baht (39.50% of total costs). Note that these were the years before the restructuring plan was implemented. According to Thailand Airways International PLC (2013), the company was facing difficulties in managing its FOE as the jet fuel price was relatively high and fluctuating at that time. Due to political uncertainties in oil-producing countries, specifically the North Africans and Middle Eastern countries. Park and O'Kelly (2014)

stated that airlines were struggling in confronting financial pressures caused by higher fuel prices in 2013, which eventually led them to merge or enter route-sharing deals with other lines.

As jet fuel accounted for approximately 40% of THAI's operating cost, the company was motivated to improve its fuel hedging and fuel surcharge to lessen the impact of rising jet fuel costs on FOE. Furthermore, hedging is useful when it comes to relaxing financial constraints. Hedging strategy enables the company to provide a higher value by decreasing the expected expenses from their inadequate investing (Froot, Scharfstein, & Stein, 1993), or by attempting to minimize expected expenses beyond the cost of doing business (Smith & Stulz, 1985). THAI's decision of enforcing more efficient fuel hedging management in 2012 resulted in a compensation income of as much as 3,764 million Baht. Unfortunately, in 2013 the amount decreased to 1,885 million Baht, and even worse, THAI recorded an expense for fuel hedging with 281 million Baht in 2014. This amount was due to the weakening Thai Baht against the US Dollar that affected not only the fuel hedging plan but also the amount of fuel and oil expenses for that year. The fuel hedging then remained as the expense to the company until 2019.

Aside from the negative effect of depreciating Thai Baht against the US Dollar that THAI had to face, another mistake that led to THAI's poor performance was the errors in coordinating the aircraft types to their stage length (Thai Airways International Public Company Limited, 2019). This mistake only had been recognized by THAI management at the end of 2018 after analyzing the main problems that made the company had fallen into the trap of a repeated cycle of business loss for a long time. The mismatch in coordinating aircraft types had made THAI incurred high fuel costs considering that old aircraft consumes more fuel than the new-generation aircraft.

Within the aviation industry, reducing fuel consumption is an important goal, and fuel efficiency correlates directly to several prominent factors, such as the distance an aircraft can fly (Mrazova, 2013). Youredi in Santhanakrishnan, Naithani, Parasar, and Gilliani (2019) argued that reducing fuel consumption could save substantial costs. Likewise, Park & O'Kelly (2014) found that other than seat configuration and the number of stops at an intermediate hub location, the stage distance of the aircraft also linked to the fuel burn rates. These findings indirectly emphasized the importance of getting the proper stage length according to the aircraft type or else having to suffer high fuel cost, just like what happened to THAI. In brief, high jet fuel price, fluctuation in foreign exchange rates, and aircraft problems were the reasons for the increase in FOE for THAI.

b) Impairment Loss of Aircraft (ILA)

In 2010, Thai Airways stated the company would recognize impairment losses in its income statement whenever the carrying amount of an asset, in this case, its aircraft, exceeded its recoverable amount. Based on Table 2, THAI was able to keep its ILA low until 2013, where THAI had an increase of 4,655 million Baht or 603.8% compared to 2012. This significant expense (Thai Airways International Public Company Limited, 2013) has made THAI incurred a net loss in 2013 of 12,000 million Baht due to the impairment of a total of 11 aircraft including 4 Airbus A340-500, 3 Airbus A300-600, and 4 Boeing B737-400, compared to 2012, where THAI earned 6,510 million Baht of net profit.

The company had put a strategy to optimize its fuel consumption by working on several adjustments in its flight schedule and the use of appropriate aircraft. Thus, in their efforts to modernize their fleet, 11 planes were impaired. THAI's foresight was right because flight planning affects fuel consumption (Schiefer & Samuel, 2011) and route selection (Altus, 2009) aside from other factors. Therefore, the increase of the ILA in 2013 was expected by THAI's management as they also bought several new aircraft as part of the plan. Besides, according to Rutherford (2020), each newer generation of aircraft operates 15% more efficient fuel per passenger kilometer compared to older aircraft, which supports its fleet modernization strategy.

The ILA expenses kept increasing from 2013 to 2015 with 2015 holding the highest amount at 11,876 million Baht as THAI continued to impair up to 26 aircraft in 2015 consisting of 6 Airbus A340-600, 4 Airbus A340-500, 2 Boeing B747-400, 2 Boeing B747F (freighter), 6 Airbus A330-300, 4 Boeing B737-400, and 2 ATR72. Note that 2015 was the first year of the implementation of THAI Transformational plan. The high number of impaired aircraft in 2015 was due to efficiency issues, or these assets were at the end of their useful lives.

THAI's president said the company would sell their planes to reduce its fleet to 77 from 101 jets by the end of 2015 and he also stated they would incur impairment charges. When being asked the details of the expected costs, THAI's president refused to answer (Webb & Jittapong, 2015). Elliott and Hanna (1996) hypothesized that successful impairment recognition would make analyzing their recurring revenues complicated, and thus would lead to lower investor confidence in the company. THAI was, therefore, unable to successfully predict the impact of the ILA expenses on their future recurring revenues, incurring substantial losses and eventually affected THAI's net income.

CONCLUSIONS

In terms of profitability ratios, THAI has not shown any significant improvements in its net profit margin, return on total asset, and return on equity. The results of the paired samples t-test using a significance level of 95% showed that the improvements made were statistically insignificant, and there was no difference in financial performance between pre-restructuring periods and post-restructuring periods.

Within THAI's financial statements, over the past 10 years, two items greatly impacted the net income negatively, namely fuel and oil expenses and impairment loss of aircraft. These two, along with flight service expenses, aircraft maintenance and overhaul expenses, and depreciation and amortization expenses contributed to 70.7% of the variation found within the net income of THAI. Increases in fuel and oil expenses may be attributable to the company's innate difficulty in managing FOE. Errors in managing the coordination of aircraft types to their stage length have led THAI to increase in FOE, the largest contributor to THAI's expenses for the past 10 years.

Since THAI has not made significant improvements in their profitability and suffered continuous increases in expenses from 2010 to 2019, this study contributes towards the current aviation industry by highlighting issues faced by THAI within this period, as well as providing statistical insight towards their financial issues. Although the restructuring plan was supposed to carry out its proper goals and objectives, its implementation of the restructuring plan was riddled with mismanagement issues.

This assumes that if the restructuring plan has been implemented correctly, THAI could see a positive impact on the company. However, this is beyond the extent of this study, as this research exclusively focuses on the financial aspects of the restructuring plan and does not touch on managerial practices of THAI that would impact the application. Further research will be required to diversify the samples and variables used to quantify how effective THAI's managers are at creating value for the company.

REFERENCES

- Altus, S. (2009). Effective flight plans can help airlines economize. *AERO QTR_03.09 Online Special Issue: Operational Efficiency and Environmental Performance*. Retrieved from http://www.boeing.com/commercial/aeromagazine/articles/qtr_03_09/article_08_1.html
- CAPA Centre for Aviation. (2015). Thai Airways embarks on major network and fleet restructuring but long-term challenges remain. Retrieved from <https://centreforaviation.com/analysis/reports/thai-airways-embarks-on-major-network-and-fleet-restructuring-but-long-term-challenges-remain-215907>
- Elliott, J., & Hanna, J. (1996). Repeated accounting write-offs and the information content of earnings. *Journal of Accounting Research*, 34, 135-155.
- Fedorková, K., & Czillingová, J. (2014). Restructuring as a part of company crisis management. *European Scientific Journal*, 10(10), 39-50.
- Froot, K., Scharfstein, D., & Stein, J. (1993). Risk management: Coordinating investment and financing policies. *Journal of Finance*, 48(5), 1629-1658.
- Katowski, A., & Wysocki, J. (2014). The objectives of corporate restructuring in dynamic and turbulent markets. *International Journal of Contemporary Management*, 13(1), 114-124.
- Mrazova, M. (2013). Future directions of fuel efficiency in aviation industry. *INCAS BULLETIN*, 5(4), 71-86.
- Park, Y., & O'Kelly, M. E. (2014). Fuel burn rates of commercial passenger aircraft: variations by seat configuration and stage distance. *Journal of Transport Geography*, 41, 137-147. doi:10.1016/j.jtrangeo.2014.08.017.
- Rutherford, D. (2020). *Standards to promote airline fuel efficiency*. Retrieved from <https://theicct.org/sites/default/files/publications/Airline-fuel-efficiency-standard-2020.pdf>
- Santhanakrishnan, R., Naithani, C., Parasar, B., & Gilliani, W. (2019). Gap analysis of promotional strategies for express logistics operations in Indonesia: A case study on JNE Logistics. *Journal of The Community Development in Asia*, 2(1), 81-89.
- Schiefer, G., & Samuel, T. (2011). *Managing flight operational costs*. <http://www.sabreairlinesolutions.com/pdfs/ManagingFlightOperationalCosts.pdf>
- Smith, C. W., & Stulz, R. M. (1985). The determinants of firms' hedging policies. *Journal of Financial and Quantitative Analysis*, 20(4), 391-405.
- Thai Airways International Public Company Limited. (2019). *Annual report 2010*. Retrieved from <http://thai.listedcompany.com/misc/flipbook/index.html?id=29786>
- Thai Airways International Public Company Limited. (2019). *Annual report 2013*. Retrieved from <http://thai.listedcompany.com/misc/flipbook/index.html?id=57455>
- Thai Airways International Public Company Limited. (2019). *Annual report 2014*. Retrieved from <http://thai.listedcompany.com/misc/flipbook/index.html?id=66300>

- Thai Airways International Public Company Limited. (2019). *Annual report 2019*. Retrieved from <http://thai.listedcompany.com/misc/flipbook/index.html?id=130644>
- Webb, S., & Jittapong, K. (2015). *Thai Airways says could sell assets to cover 2015 losses*. Retrieved from <https://uk.reuters.com/article/uk-thai-airways-outlook-idUKKBN0M21I620150306>