

Tankering Fuel Strategy in Garuda Indonesia Airline For Operational Cost Efficiency (Case Study: Route Cgk – Kno)

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Abstract

The challenge of politics in oil-producing countries of the Earth continuously volatile and will certainly have an impact on the country of the user or the consumer. The airline industry is one of the industries that use fuel, particularly in the airline industry, after price fluctuations avatar into a pretty serious threat, which will affect the operating costs that will be borne by the airline and prospective passengers. To reduce the impact of fluctuations in fuel prices, will certainly make avtur aviation industry vying to do different strategies in order to suppress the impact caused. In this research, we discuss strategies that you can use an aviation company and PT. Garuda Indonesia became our research materials which operate domestic routes, one of which is the CGK-KNO. For these routes the airline Garuda Indonesia aircraft B737-800. To save operating costs, one strategy that can be done is to implement the strategy of fuel tankering. This research proved that strategy tankering fuel can save operational costs in terms of fuel costs after. And those steps can help the airlines to survive in the competition the aviation industry, the price of avtur phenomenon, and the exchange rate of the rupiah against the dollar at the moment.

Keywords: fuel price, fuel tankering, airline, sustainability, currency exchange

Introduction

Transport is one of the chains of distribution networks of goods and passengers is growing very rapidly and can support all aspects of community life Indonesia well in the construction of political, economic, cultural and social defense as well as security. The growth of the transport sector will reflect the economic growth directly so that transport has an important role and strategic location, transportation also significantly contribute to the growth of the tourism sector in Indonesia. Air transportation as one of transportation has advantages compared to other transportation, that is effective and efficient, therefore air

transport becomes an option that is very much used by the people of Indonesia in traveling.

One of the air transport industry is airline PT Garuda Indonesia (Persero) Tbk, is Government-owned aviation companies (SOEs) that have the scale and business scope & service quality and safety. Garuda Indonesia is currently the national airline of Indonesia concept as a full-service airline (with full-service carriers) which hosts national and international flight service. This is the national carrier airline Indonesia first to join SkyTeam. The territory which continues to grow in widely both within and outside the country, Garuda Indonesia continues to solidify the existence of strong competitiveness in Southeast Asia. Together the SkyTeam Alliance, Garuda Indonesia ready for connecting more 1,000 city destinations around the world. In domestic flights, Garuda Indonesia serves 53 flights in Indonesia, and the level of occupancy experienced fluctuations, in 2013, Garuda Indonesia occupancy level of 77.57%, then in 2014 has decreased 2.9% to 74.67%, later in the year 2015 rising 2.82% to 77.49% in 2016, the next decline 74.37% to 3.12% and in the year 2017 has decreased 1.65% to 72.72%. If the averaged rate of 75% occupancy. Thus it can be concluded that the degree of occupancy of Garuda Indonesia is experiencing a declining trend in the past two years.

Talking about air transportation, there is one important component to support the existence of such transport, one of which is fuel avtur. For the fulfillment of the needs of domestic avtur, one of which is Pertamina Pertamina Aviation. Pertamina Aviation is a marketer and provider of aviation fuel, Pertamina Aviation have contributed to the aviation industry in the country for more from 50 years and plays an important role in the aviation industry through the presence of Pertamina Aviation at more than 50 airports in Indonesia.

Business aviation and aircraft fuel as an energy source have not yet been replaced. Dependency aviation business in avtur reaches around 50%. This means that about 50% of the costs of commercial aircraft operations exist in avtur. Operational costs will affect the financial capability of the company, the higher

operating costs then profits will increasingly low and vice versa (Prihananto, 2007). Then the airlines should save costs for aircraft avtur fuel, for aircraft avtur fuel is one of the largest expenses in the operating costs of an airline company (Singh & Sharma, 2016). The question of the price difference of avtur this long into the constraints of the airline industry in Indonesia.

Avtur fuel price differences at several airports in Indonesia that was created because of the geographical shape of the Indonesia archipelago, shaped so that it causes the provider of the parties in this case Pertamina avtur Aviation, should pay more that is the cost of shipping, that led to significant price differences at each airport in Indonesia.

Garuda Indonesia operates domestic routes 53, one of the routes operated by the airline Garuda Indonesia is the Jakarta-Medan, this route is one of the routes that are quite sought after community. On this route, there is a price difference of avtur fuel. Avtur fuel price differences at the Soekarno-Hatta International Airport (CGK) (Rp 8,874/liter) and Kualanamu International Airport (KNO) (Rp 9,980/liter) and the existence of price differences above, is one of the tasks of the airlines to pay attention to it.

Therefore, a strategy that can be performed by Garuda Indonesia in addressing the price difference is to save the cost of avtur tankering fuel strategy by doing. Tankering fuel essentially means refueling at the airport are cheaper to complete the second cycle (and return) flights to save fuel costs (Walter J. Lesinski III, 2011). Tankering fuel is one way that can be done by commercial airlines to save on operational costs.

Method

This study aims to fuel tankering strategy at the airline Garuda Indonesia to route the CGK-KNO by using aircraft B737-800, we conduct research with the data analysis techniques and collect the data retrieved. Data that has been processed on the basis of an appropriate theory and research has ever been done before, we also collect the basics techniques of data analysis.

To study the impact of the difference in the price of avtur in CGK and KNO, we watched the price of avtur fuel from January-August 2018, assuming an average payload CGK-KNO and the structure of the aircraft B737-800, in support of the above data, we use the technique of data analysis, we use the formula of calculation is as follows:

TANKERING FUEL

1. FIXED WING (CASR 135.637)

Formula :

MFR = T. F Destination + Cont. 5% + T.F Alternate + 30 Minutes Holding (at 1500 ft) + Taxi Fuel

Note :

T.F Destination : Trip Fuel Destination
T.F Alternate : Trip Fuel Alternate
Cont 5 % : Contingency 5 %
Taxi Fuel : 15 minutes

2. BLOCK FUEL CALCULATION

Formula :

B.F = MFR + Extra Fuel

Note :

MFR : Minimum Fuel Requirement

3. PAYLOAD ALLOWABLE CALCULATION

Formula :

a) MZFW

Payload = MZFW – DOW

b) MTOW

Payload = MTOW – (DOW + B.F)

c) MLW

Payload = ((MLW + T.F) – (DOW + B.F))

4. CARGO ALLOWABLE CALCULATION

Formula :

a) MZFW

Cargo = MZFW – ((DOW + (Pax + Bag))

b) MTOW

Cargo = MTOW – ((DOW + (Pax + Bag) B.F))

c) MLW

Cargo = ((MLW + T.F) – (DOW + (Pax + Bag) + B.F))

5. TANKERING FUEL CALCULATION

Formula :

$$\text{Available Tankering Fuel} = \text{B.F allowable} - \text{B.F (MFR)}$$

6. SAVING FUEL PRICE CALCULATION

Formula :

$$\text{Saving Fuel Price} = \text{Fuel Price Destination} - \text{B.E.PFuel Price Origin}$$

7. TOTAL SAVING COST CALCULATION

Formula :

$$\text{Total Saving Cost} = \text{Tankering Fuel} \times \text{Saving Fuel Price}$$

To study the tankering fuel, then the above calculation formula we use to calculate and analyze the data we've been getting. And from the results of the calculation, we can find out the total amount of costs that can be saved from avtur fuel operating costs with aircraft B737-800 for the route of the CGK-KNO.

Discussion and Result

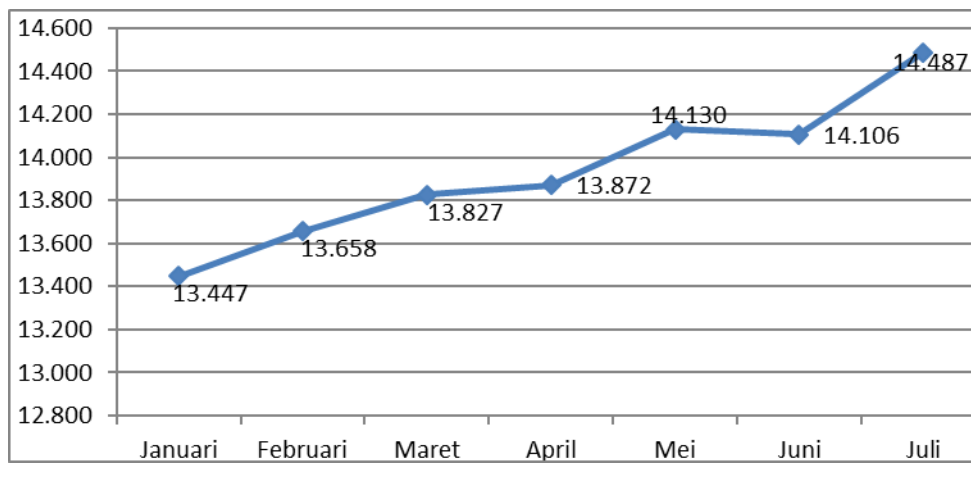


Figure 1. History of Exchange Rate Jan to Jul 2018

Source : www.bi.go.id

In 2018 the exchange rate of the Rupiah against the dollar weakening that can be influenced towards the operational costs of the aircraft. In January-July 2018 (see Figure 1), especially in the exchange rate of rupiah in January against the dollar in February, declining 1.57% to Rp 13,658 more precisely, and then in

February and March, the exchange rate of rupiah decreased by 1.24% to Rp 13,827, then for the period of March and April, the exchange rate of the rupiah's decline which is not too significant, i.e. decrease in 0.32% to Rp 13,872, from next April and may, the exchange rate of rupiah decreased 1.81% to Rp 14,130 translucent, and May and June exchange rate rupiah rising 0.17% to Rp 14,106, and then in June and July, the exchange rate of the rupiah back the biggest decline 2.7% to Rp 14,487.

In table 1 it proves that in 2018 the exchange rate of the rupiah against the dollar experienced fluctuations. The influence of the exchange rate of the rupiah could not be ignored, but to the whole, everything depends on local currency values against the US dollars, i.e. because it can affect the country's economy and the strength of the buyer of the passengers, as well as currency exchange rates, play an important part in the market competition (Oum & Yu, 1998)

In this case in the aviation industry that almost all its operating costs using dollars and the cost of its revenues with rupiah currency, then this will greatly impact on the survival of the airline. Then the airlines should be able to do a strategy in order to depress the operational cost, especially after fuel.

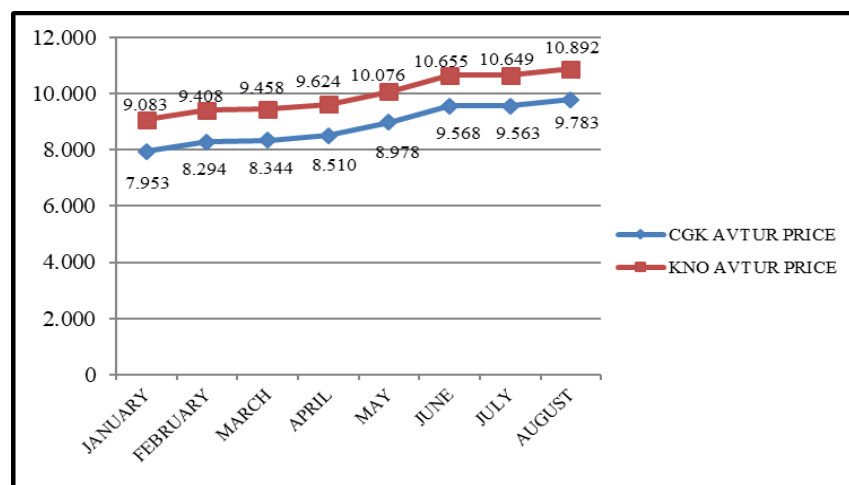


Figure 2.

Source : Pertamina Aviation

And in Figure 2 we use price data avtur at Soekarno-Hatta International Airport (CGK) and Kualanamu International Airport (KNO) in January, up to August. The data we sport into a graph in order to be able to see the development of both airports in avtur price. Our data, though is a valid data from Pertamina aviation in 1-15 and 16-30 each month, then that data was already our number and our flat-roll out so we can find out the average price of avtur per month. Table of graphs list price avtur, we can see the development of the price of avtur per month.

Table 1.

Avtur average price Kualanamu International Airport (KNO)			
Month	Product price	Pp + ppn + pph	Us cent / ltr
January - August	9,082	9,980	71.75

Avtur average price Soekarno - Hatta International Airport (CGK)			
Month	Product price	Pp + ppn + pph	Us cent / ltr
January - August	8,050	8,874	63.94

Source : Pertamina Aviation

In the table above, we can see the price of aviator are different at the Soekarno-Hatta International Airport and the Kualanamu International Airport. In the event that we do the research so you can make the savings on operational costs after fuel prices. We investigated to routes CGK-KNO that have a price difference of \$1,106/liter, with the price difference we can do strategies Tankering Fuel in order to depress operational cost

Then we describe the average price of avtur from January until August at each airport, the average price of avtur at Soekarno-Hatta International Airport (CGK) was Rp 8,874 while at Kualanamu International Airport (KNO) was Rp

9,980. The average price that we used as the data for the fuel tankering calculations it can do.

Table 2.

Aircraft Structure	
Description (Weight in Kg)	B738W
Dry Operating Weight	41,413
Max. Zero Fuel Weight	61,689
Max. Take Off Weight	70,534
Max. Landing Weight	65,317
Max. Structural Payload	20,276
Tank Capacity	20,894
Fuel Consumption	2,435 / hour
Optimum Speed	LRC / M.79
Maximum Speed	TAS = 486 kts / M.82
Flight Level Optimum	FL 350 / 360
Max Ceiling Altitude	FL 290
Seat Capacity	184 Y

Source : Boeing Manual Book

The Garuda Indonesia's B738 aircraft structure to flying CGK-KNO

Table 3.

Tankering Fuel Calculation	
Distance CGK – KNO	751 NM
Flight Time	98 Minutes
Block Time	113 Minutes
Trip Fuel	4,586 Kg
Block Fuel	7,500 Kg
Payload Allowable (Limit MZFW)	20,276 Kg
Cargo Allowable (Limit MZFW)	7,856 Kg
Average SLF (2013 – 2017) CGK - KNO	75%
Actual Passengers	12,420 Kg
Actual Cargo	5,892 Kg
Underload	1,946 Kg
Assumption for tankering	1,500 Kg / 1,875 Litre
BEP Fuel Price	Rp 9,362
Saving Fuel Price	Rp 618 / Litre
Total Saving / Flight	Rp 1,158,750

Total Saving / Day (11 Flights)	Rp 12,746,250
Total Saving / Months (30 days)	Rp 382,387,500
Total Saving / Year (365 days)	Rp 4,652,381,250

Then, on table 3 contains the results of the calculations from the data we have collected on the basis of formulas that we include. From the calculations, we get that the average number of paid occupancy the charge level domestic Garuda Indonesia amounting to 75%, of those results we can do calculations in order to find out the underload aircraft in flight Garuda Indonesia with CGK-KNO. The number of underloads available of 1,946 Kg, then we assume that the weight of the fuselage by underload 1,500 Kg, then from these data we can do fuel tankering of 1,500 Kg at Soekarno-Hatta International Airport with prices that are cheaper compared to Kualanamu international airport, which has a price difference of \$1,106.

After making the above calculation, we find that by doing tankering fuel, Garuda Indonesia can save operational costs of Rp 1,158,750 per flight, meanwhile, Garuda Indonesia operates CGK-KNO as much as 11 flights per day, which means if the Garuda Indonesia remain consistent 11 flights per day and then in one year, Garuda Indonesia can save operational costs of Rp 4,652,381,250.

In the airline industry, in order to confront fluctuations in world oil prices and a weakening rupiah exchange rate against the dollar, the airline industry should do the right planning strategies in order to face these problems. In this case, a very important strategic planning done by the airlines in order to survive in the airline industry, so from that strategy that can be done is with a fuel tankering calculation, as we have done on the route of the CGK-KNO, in a year can save on operational costs of Rp 4,652,381,250. This proves that tankering fuel can save operating costs of an airline company, as we know that the total operating costs of the aviation industry more or less 50% comes from fuel costs, by reducing the burden the operating costs, is one of the right's strategies to sustain competition in the airline industry.

Conclusion

As we know most of the operational costs of an airline industry use dollars, in case of changes in the exchange rate of rupiah against the dollar then the airlines would make changes to the ticket price a flight and it will impact on a community that will use the transportation services. In the last seven months, we can see that the exchange rate of the rupiah against the dollar increases significantly and the price of avtur fuel also experienced price increases.

World oil prices experienced significant fluctuations, it is caused by the political activities of the oil-producing countries. It will have an impact on companies that use oil as one of its operational needs. The airline industry is one of the companies that use the oil, in this case, is avtur fuel airplanes. As has been explained, about 50% of the total operational costs for an airline come from the cost of avtur fuel. Steps that can be made to the efficiency of the operational cost is the carrying amount of avtur fuel maximum at the airport with avtur fuel prices are cheaper so that it is capable of reducing total operating costs.

The strategy should be implemented by the airline company with the conditions and the exchange rate of the rupiah against the dollar, which is quite significant by making a fuel-saving policy of avtur, one strategy that can be done is by doing tankering fuel (Juliater & Charles An, 2014). In this case, especially the airline Garuda Indonesia should be able to do proper planning and strategy in order to be able to compete and survive in the aviation industry.

References

- Juliater, S., & Charles An. (2014). Analysis and Evaluation on the Strategy of Indonesian Airline Companies to Face the Increasing Price of Avtur and the Decreasing Exchange Value of Rupiah against the US Dollar Juliater, (2), 1–16.
- Oum, T. H., & Yu, C. (1998). Cost competitiveness of major airlines: an international comparison. *Transportation Research Part A: Policy and Practice*, 32A(6), 407–422. [https://doi.org/10.1016/S0965-8564\(98\)00007-X](https://doi.org/10.1016/S0965-8564(98)00007-X)

Prihananto, D. (2007). Pemilihan Tipe Pesawat Terbang Untuk Rute Yogyakarta – Jakarta Berdasarkan Perkiraan Biaya Operasional, (May), 0–8. Retrieved from <http://p3m.amikom.ac.id/p3m/77> - Pemilihan Tipe Pesawat Terbang Untuk Rute.Pdf

Singh, V., & Sharma, S. K. (2016). Erratum to: Fuel consumption optimization in air transport: a review, classification, critique, simple meta-analysis, and future research implications (Eur Transp Res Rev, 10.1007/s12544-015-0160-x). *European Transport Research Review*, 8(1), 1. <https://doi.org/10.1007/s12544-016-0193-9>

Walter J. Lesinski III, U. (2011). Tankering Fuel: A Cost Saving Initiative. Retrieved from <http://www.dtic.mil/docs/citations/ADA547625>

www.bi.go.id

www.aviation.pertamina.com

https://www.boeing.com/commercial/airports/plan_manuals.page (downloaded on August 16, 2018)

www.garuda-indonesia.com/id/id/investor-relations/company-data/historical-operating-data/index.page