

***Feasibility Analysis for Investment of Cargo Village Development
in Soekarno-Hatta International Airport***

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ABSTRACT

The sector of world air cargo industry has become broader becoming one of the most integral parts of the global economy, as a significant airport company in Indonesia, PT Angkasa Pura II (Persero), AP2, builds Cargo Village of the Soekarno-Hatta International Airport to provide the best air cargo service providers to meet the competition in the global market. This research aims to investigate the most suitable Construction Staging scenario of the Cargo Village construction project for investment decision by using business issue analysis and financial analysis. This study uses mixed methodology, a combination of qualitative and quantitative research methods. The qualitative method in this study aims to assess the external conditions and AP2 resources, by TOWS Analysis method. Meanwhile, quantitative research methods are used to conducting Financial Feasibility in form of Capital Budgeting Payback Period (PP), Net Present Value (NPV) and Internal Rate of Return (IRR) for several scenarios of development staging. The result shows that AP2 continuously improves its capabilities and core competencies as the internal strength to balance the threat from outside the company and is prepared to start taking advantage of the opportunity available from the external environment to gain more knowledge to take a new step for comprehensive cargo business. the construction of Cargo Village is feasible to be done by the three scenarios of development staging. This research found that Development scenario of finishing the construction on the main cargo terminal building, which has the biggest investment cost prior to the construction of warehouse and additional services such as perishable and transshipment, gives the best result with the largest value of NPV & IRR and less payback period.

Keywords: Airport Cargo development; Construction Staging Scenario; project financing scenario; capital budgeting analysis

ABSTRAK

Sektor industri kargo udara di dunia semakin meluas dan menjadi salah satu bagian yang tidak terpisahkan dari perekonomian global, sebagai salah satu perusahaan kebandarudaraan yang signifikan di Indonesia, PT Angkasa Pura II (Persero), AP2 membangun Cargo Village Bandara Internasional Soekarno-Hatta untuk menyediakan layanan kargo udara terbaik dan memenuhi persaingan di pasar global. Penelitian ini bertujuan untuk mengetahui skenario Tahapan Konstruksi proyek pembangunan Desa Kargo yang paling sesuai untuk keputusan investasi dengan menggunakan analisis bisnis dan analisis keuangan. Penelitian ini menggunakan mixed methodology, penggabungan antara metode penelitian kualitatif dan kuantitatif. Metode kualitatif dalam penelitian ini bertujuan untuk menilai kondisi eksternal dan sumber daya AP2, dengan metode Analisis TOWS. Sedangkan metode penelitian kuantitatif digunakan untuk melakukan Financial Feasibility berupa Capital Budgeting Payback Period

(PP), Net Present Value (NPV) dan Internal Rate of Return (IRR) untuk beberapa skenario tahapan pembangunan. Hasil penelitian menunjukkan bahwa AP2 terus meningkatkan kapabilitas dan kompetensi inti sebagai kekuatan internal untuk mengimbangi ancaman dari luar perusahaan dan bersiap untuk mulai memanfaatkan peluang yang tersedia dari lingkungan eksternal untuk memperoleh ilmu lebih banyak guna mengambil langkah komprehensif bisnis kargo. Pembangunan argo Village layak dilakukan dengan tiga skenario metode pembangunan. Dari penelitian ini ditemukan bahwa Skenario Pembangunan penyelesaian pembangunan gedung terminal kargo utama yang memiliki biaya investasi terbesar sebelum pembangunan gudang dan layanan tambahan seperti perishable dan transshipment memberikan hasil terbaik dengan nilai NPV & IRR terbesar. dan waktu pengembalian modal yang lebih sedikit.

Kata kunci: Pengembangan Kargo Bandara; Skenario Pentahapan Pembangunan; Skenario pembiayaan Proyek; Analisis *Capital Budgeting*

INTRODUCTION

The global airport industry has a lot of promising opportunities with abundant new business models. Nowadays, the airport operators manage the major businesses derived from emerging passenger traffic, opening new airports, and domestic or regional route expansions. Nevertheless, other airport business opportunities can be seized, such as events, cargo handling, and aircraft handling to enter the global market.

Cargo income is predicted to increase by 4.0% in 2018, which is lower than 5.0% in 2017. E-commerce growth is expected to grow beyond the world trade expansion in 2018 to substitute the movement of short-lived restocking cycles. Cargo revenues will remain strong in 2018 at \$59.2 billion, with an increase of 8.6% compared to revenues from 2017, earning up to \$54.5 billion (IATA, 2018; Yudhistira and Darma, 2020; Widani and Darma, 2019; Darma and Noviana, 2020; Priskila and Darma, 2020; Handayani and Darma, 2018; Murti and Darma, 2021; Bali and Darma, 2019; Dewi and Darma, 2019; Darma et al., 2019; Handayani dan Darma, 2021; Yong dan Darma, 2020; Rivaldo et al., 2021).

For reaching a global business scale, AP2 encourages itself to be more agile in operating cargo terminal by creating global partnerships with worldwide air cargo operators. The transformation of the cargo business is a form of company business and portfolio transformation by building the Cargo Village of Soekarno- Hatta International Airport. On the other side, the investment needed for the Cargo Village area development is quite large. Therefore, AP2 will build the cargo area gradually, according to several options of construction methods, there needs to be a feasibility study and an investment scenario analysis of the Cargo Village in regards to AP2 financial situation and the most profitable way for the business.

Previous studies have used capital budgeting with discounted cash flow to determine NPV, IRR and payback period as a standard method for investment financial feasibility studies in various objects of study. However, the discussion of cargo investment is rare to find. Some of those studies also employed comparative scenario analysis to research the most beneficial investments. The comparative analysis includes price modification, capital investment, and resource funding (Berawi et al., 2015; Chu et al., 2017; Miao & Chan, 2019; Nikoloudis et al., 2017; Oktari et al., 2019; Sdino et al., 2016; Desyanta and Darma, 2020; Dewi and Darma, 2019; Shavitri and Darma, 2020, Sudiwedani and Darma, 2020; Premawati and Darma, 2017; Juzer and Darma, 2019; Wahyuni and Darma, 2019; Rusmahadewi and Darma, 2018; Widiatmika and Darma, 2018; Kanten and Darma, 2017; Wardana and Darma, 2020; Indradinata and Darma, 2019; Mahendrawati and Darma, 2021).

It can be concluded that most of the previous studies used capital budgeting as a method for studying investment financial feasibility. The object study of cargo investment is still rare to find, and studies mostly perform comparative analyses to evaluate the most beneficial investment scenario. Based on previous research results, this study will analyse the feasibility of the Soekarno-Hatta Cargo Village investment using Capital Budgeting discounted cash flow method for several scenarios of resource funding

METHOD

This study uses a combination of qualitative and quantitative research methods (mixed methodology), known as the Convergent Parallel Design model. According to Creswell & Creswell (2017), the Convergent Parallel Design model is a research model in which the data collection and analysis can be carried out at the same time, for both qualitative and quantitative data. The results of the two analyses are then combined and interpreted into one research conclusion.

The qualitative method in this study aims to assess the external conditions and AP2 resources, to determine the investment feasibility of the Soekarno-Hatta Airport Cargo Village Construction project, using the TOWS Analysis method. Threats (T) and Opportunities (O) are company external factors that affect the feasibility of investment; these factors can be used along with the concept of 5 Forces of Porter to analyse the external environment. Weaknesses (W) and Strengths (S) are internal factors of a company used to conduct investment activities, both of which will be discussed in the Organizational & Technical Feasibility section. Meanwhile, quantitative research methods are used to assess the feasibility of the project in financial terms. The method used in conducting Financial Feasibility is Capital Budgeting with

variables used consisting of Payback Period (PP), Net Present Value (NPV) and Internal Rate of Return (IRR).

RESULT AND DISCUSSION

1. Business Issues Analysis

The business issues will be analyzed based on two aspects: internal factors and external factors. Analysis of the external factors is done to understand the strength of business forces, and the analysis of the internal factors is done to describe internal factors such as organizational and technical capabilities to analyse how ready AP2 is to face the new cargo business.

a. External Environment Analysis

- Political, economical, sociocultural, ecological, and legal Issues

Based on the analysis political, economical and legal issues give significant impacts on the concept of development and the development purposes decision. Sociocultural give significant impact to the model of Cargo business to satisfy the market demands. While the ecological issues will not give significant issues as long as the Environmental impact analysis was done before the project.

- The Threat of New Entrants

The entry barriers for shippers, consignees, and forwarders are very low because everyone can start this type of business as long as they meet the requirements mentioned on the minister decree above. The only challenge for the new entrants is that the perfect place of forwarder warehouse, for instance, concerning the ease of access to the terminal, placed in the hinterland of the cargo area, mostly possessed by the incumbent company.

- Product substitutes

where logistic transportation is still dominated by land and sea routes, the possibilities of substitute services are still strong.

- Bargaining Suppliers

to promote the business of Cargo Village, moving forward, AP2 will only choose to partner with global companies. Referring to this condition, the supplier bargaining will be high because the option for AP2 is less than before.

- Power of Consumers

The service provided in cargo is in minimum differentiation, according to the supply chain process focused on delivering and receiving goods. Therefore, the customer may have the power to be the price maker; the provider will switch costs less within the cargo area to maintain the price range and competitiveness.

- Competitors

Looking at the competition in the air cargo industry, there are two kinds faced by the air cargo provider: competitions within the cargo business and competitions with other airports in the global market. Businesses will compete with each other to meet the requirements of airport demand and capacity by managing the price level and quality of services, both internationally and domestically. While on the other side, airports must compete with other airports to dominate the market and place their stamps on the market area.

b. Internal Environment Analysis

- Organizational

The latest organizational structure consists of three levels of strategy and the employee demographic of AP2 Company as the strong factor to grow the business

- Technology Mastered

AP2 adopts and implements new technologies within the automatic control of passenger and aircraft flow to provide the best experience for customers and reduce operational costs, with collaboration between stakeholders in managing complex operations through real-time data exchange.

c. TOWS Analysis

From the TOWS analysis above, we can derive that although AP2 has already had sufficient resources to handle cargo business, it has yet to manage it properly to overcome the challenges ahead for larger cargo business and compete for the market share to neighbouring airports. The innovation of technology is also required to get business differentiation. Meanwhile, the personnel also need to be trained and educated to understand that the business model has changed; for this purpose, the transfer of knowledge from external experts is recommended.

To enter the global market, AP2 has to decide the market to serve due to the strong competition in the Asia market and sturdy cargo business by neighbouring airports. The domestic movement benefits AP2. Therefore, instead of reaching the international market with significant challenges right away, it is wiser to focus on the

domestic market for early business. On the other hand, counting on the fast delivery to select the product serving is one of the solutions. The Cargo Village is suggested to serve fast product delivery, such as perishable goods, medical products and e-commerce business.

2. Financial Feasibility

Financial analysis was conducted by integrating underlying assumptions and scenarios happening in the Cargo Village construction proposal.

a. Staging Development

The construction method and staging development can be formulated into several development scenarios adjusted to the primary needs: supporting facilities and safety and security needs. It can be concluded that it is possible to create staging development scenarios to find the most beneficial option for AP2 and adjust it to the company's financial condition. The distribution of development scenarios are as follows:

Table 1.
Staging Development

Scenario A	the construction starts on the main terminal building and the supporting facilities such as parking building and offices, while the warehouse is built in the second stage followed by additional services such as perishable and transshipment.
Scenario B	the construction staging is based on a divided area, half on half. This scenario gives ease in construction methods due to the construction area being already blocked. It also offers advantages for the operation because the access and the building block has already been decided.
Scenario C	This scenario gives a chance to AP2 to pause the construction process for a while in the second stage, where the stakeholders manage all the constructions in partnership with AP2; the construction then continues in stage three with the capacity expansion of the cargo terminal and the building of offices.

b. Initial Cash Flow

The total investment cost to build the Cargo Village is Rp. 6.65 trillion, consisting of the investments to do land clearing and soil reinforcement and to construct the terminal building, parking building, offices, access road within the cargo area, and the utilities. According to the concept of partnership developed by AP2, not all buildings will be built by self-investment. The essential buildings such as the cargo terminal, office buildings, parking buildings and area, and access roads are built by AP2, while the warehousing were built by the stakeholders using the revenue sharing scheme with AP2

during the operation. Below is the distribution of investments in the Cargo Village by AP2:

Table 2.
Cargo Village Asset Investment Scenario

NO	Build Scenarios	Stage 1 (2022)	Stage 2 (2025)	Stage 3 (2028)
1	Scenario A	Rp. 4.013, 35 Billion	Rp. 2.000,00 Billion	Rp. 640,00 Billion
2	Scenario B	Rp. 4.961, 75 Billion	Rp. 1.051,60 Billion	Rp. 640,00 Billion
3	Scenario C	Rp. 5.249, 35 Billion	-	Rp. 1.404,00 Billion

c. Operating Cash Flow

- Revenues Calculation

Revenue component consists of Aeronautical and Non-Aeronautical revenues. Aeronautical revenues generated from Cargo Service Charge. Meanwhile, non-aeronautical revenue comes from warehousing and handling, parking fee, building rental, porters and rental utilities.

- Expenses Calculation

From the calculation of cost components, the contribution of cost components to the total cost is: employee costs contribute 22.93%, outsourcing costs at 7.97%, maintenance costs at 25.01%, utility costs at 26.48%, and administration and security costs at 17.61 %. The formulas and assumptions to determine the cash flow operation are applied to the whole scenario of staging development and forecasted through the year of calculation. Then the depreciation expense is calculated based on the stages of the construction implementation and the economic life of the building and the equipment in it. Due to the implementation phases, operations will also be done in stages as well as the depreciation imposed on assets that have been operated will be gradually according to AP2 internal Regulation. The economic life the terminal building uses the straight-line method follows the maximum capacity can be reached by the cargo village, there is no residual value at the end of the Partnership. Meanwhile, the tax rate that will be imposed on the entity is 25% based on Article 17 paragraph (1) part b of Law no. 36 of 2008 concerning Income Tax.

d. Cost of Capital

The Cost of capital or the discount rate is calculated with the WACC calculation formulas described below:

Risk-free Rate (K _{rf})	=	7,27%
Beta (B)	=	1,01
Market Risk (K _m)	=	10,08%

Cost of Equity (Ke)	$Krf + (B \times (Km - Krf))$
	= 10,11%
Cost of Debt (Kd)	= 8,95%
Weighted Equity (We)	= 20,00%
Weighted Debt (Wd)	= 80,00%
Tax rate	= 25,00%
Safety Margin	= 3,00%
WACC	$Ke \times We + Kd \times Wd \times (1 - Tax) + Safety\ Margin$
	= 10,39%

e. Capital Budgeting Methods Analysis

The capital budgeting is also calculated for do-nothing scenarios, meaning if AP2 only moves to the new area without any changes either in the business concept or the wide area. The result shows that the cost of capital is 10.39%, and the initial investment for construction is Rp. 2,656.92 billion, resulting in the NPV value of Rp760,631,091,737.24 and IRR of 16.30% with a payback period of 10.33 years. It means that by only moving without any business improvement, the cargo project is still feasible to be done. Although, this scenario will be the opposite of the vision and the long-term strategic planning of AP2 as a global company for cargo service providers. Technically, the messy supply chain within the cargo will not be fixed, and processing time will not be reduced, resulting in business opportunities loss for AP2. Therefore, the new cargo business should be built. The result of capital budgeting calculation of NPV, IRR, and payback period from the new Cargo Village in each scenario upon its cash flow operations are explained in the table below:

Table 3.
Capital Budgeting Calculation

Parameters	scenario A	scenario B	scenario C
NPV	Rp8.216.061.502.003,59	Rp5.899.660.963.175,58	Rp6.656.906.497.675,34
IRR	36,55%	25,86%	28,22%
PBP	6,06 years	7,64 years	7,41 years

From the table above, it shows that for 13 years of operation and three times staging development, the NPV of each scenario shows positive results, the IRR is bigger than 0, and the value of $IRR > \text{discount rate}$. Meanwhile, the payback period for scenario A is the shortest; this means that the construction of Cargo Village is feasible to be established by the three scenarios of staging development. Nevertheless, scenario A gives the best results with the largest value of NPV, IRR, and less payback period. Hence, even though all

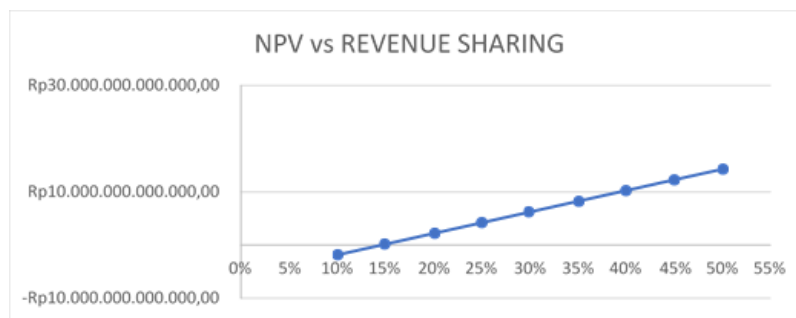
three scenarios is feasible to established, the first staging development scenario gives more benefit for AP2.

3. Sensitivity Analysis

The sensitivity analysis may show how sensitive the business decision is if the value of some variables affecting the business is changed.

a. Percentage of revenue sharing of handling and warehousing

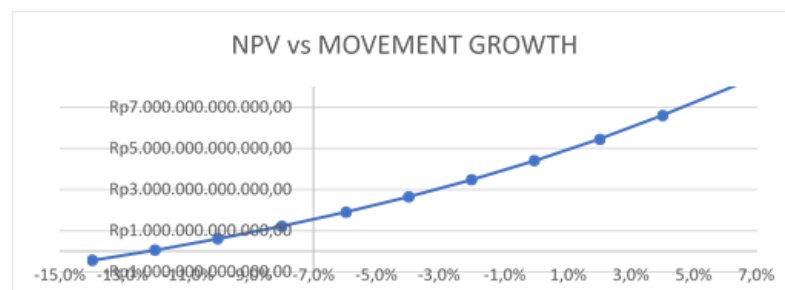
The graph shows that the reduction of revenue sharing will reduce the value of NPV; for every 5% reduction of revenue sharing, the value of NPV is reduced by Rp. 2,013.42 billion. The NPV value is still slightly positive if the revenue sharing is applied at 15%, but when the percentage of revenue sharing is less than 10%, the NPV shows negative results.



Graph 1. Revenue Sharing vs NPV Graph

b. Average movement growth

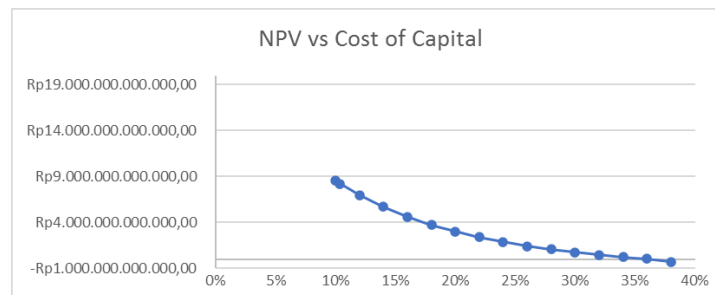
It can be seen that although the movement growth is decreasing, as long as the volume still increases, the NPV value will still be positive. The NPV will drop to zero when the cargo volume decreases by 14%.



Graph 2. Revenue Sharing vs NPV Graph

c. Cost of Capital

It can be summarized that with a composition of 80% debt, the changing of interest rate will not cause significant changes to happen in the business. The business would be at risk if one of these conditions were to happen: decreasing revenue sharing percentage, increasing cost growth, decreasing movement growth, and increasing cost of capital. AP2 has to manage these necessary conditions by monitoring the external and internal business environment that may affect those variables.



Graph 3. Cost of Capital vs NPV Graph

CONCLUSION

After deliberating the external and internal environment to analyze the business issue of Cargo Village, it can be concluded that the external factors have a significant role in forming the concept of Cargo Business in AP2. Meanwhile, AP2 continuously improves its capabilities and core competencies as the internal strength to balance the threat from outside the company. From the financial capital budgeting analysis of NPV, IRR, and payback period for 13 years of operation and three times staging development, the NPV of each scenario shows a positive result, the IRR is larger than 0, and the value of $IRR > \text{discount rate}$. The payback period for scenarios B and C are a year longer than scenario A; this means that the construction of Cargo Village is feasible to be done by the three scenarios of development staging.

It is found that scenario A gives the best result with the largest value of NPV & IRR and less payback period. Hence, although all three scenarios are feasible to be established, the first scenario staging development gives more benefits for AP2. While from the sensitivity analysis done to scenario A, it can be summarized that the business will be at risk if one of these conditions were to happen in the future: decreasing revenue sharing percentage, increasing the interest rate, increasing cost growth, decreasing movement growth, and increasing cost of capital. AP2 has to manage this by monitoring the external and internal conditions that may affect those variables.

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