

REVIEWING THE CAPITAL BUDGETING STUDY OF AIRPORT DEVELOPMENT PROJECT DURING COVID-19 PANDEMIC RECOVERY

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ABSTRAK

Bandara Juanda merupakan bandara tersibuk ketiga di Indonesia dan merupakan bandara dengan trafik penumpang tertinggi kedua di antara 15 bandara yang dioperasikan oleh PT Angkasa Pura I. Dalam upaya meningkatkan pelayanan kepada pelanggan yang menggunakan transportasi udara, PT Angkasa Pura I melakukan investasi pengembangan terminal Bandara Juanda pada tahun 2017 hingga 2021. Di masa konstruksi pengembangan bandara, terjadi pandemi Covid-19 di Indonesia yang mulai terjadi sejak awal tahun 2020 dan menyebabkan penurunan trafik penumpang hingga mencapai 59,1%. Hal ini menyebabkan realisasi trafik penumpang tidak sesuai dengan proyeksi trafik penumpang yang diestimasikan di masa perencanaan proyek pengembangan bandara. Tujuan penelitian ini adalah untuk melakukan kajian dan analisis terhadap kelayakan pengembangan bandara di masa *recovery* Covid-19. Penelitian ini menggunakan metode *capital budgeting* yang meliputi analisa *internal rate of return* (IRR), *discounted payback period* (PP), *net present value* (NPV), dan *profitabilitas index* (PI). Hasil penelitian menunjukkan bahwa proyek investasi pengembangan Bandara Juanda dinilai menguntungkan di masa pemulihan Covid-19 dengan menggunakan tiga skenario finansial berbeda.

ABSTRACT

The Juanda Airport ranks third in terms of overall traffic among airports in Indonesia and holds the second position in passenger volume among the 15 airports managed by PT Angkasa Pura I. Between 2017 and 2021, PT Angkasa Pura I undertook investments aimed at enhancing the level of support provided to clients utilizing air transportation, through the expansion of Juanda Airport. The COVID-19 pandemic has had a significant impact on the number of passengers utilizing Juanda Airport in Indonesia, resulting in a 59.1% decrease. This decline can be attributed to the ongoing pandemic that has adversely affected the country since the start of 2020. Thus, the observed passenger flow diverged from the passenger projections employed in the project's planning. The aim of the present investigation is to perform a comprehensive examination and evaluation of the capital budgeting aspect of the Juanda Airport Investment Project. The present inquiry employs computations related to capital budgeting. These calculations include the internal rate of return (IRR), discounted payback period (PP), net present value (NPV), and profitability index (PI). The profitability of the Juanda Airport investment project has been demonstrated across three distinct financial scenarios, even in the midst of the Covid-19 recovery period.



INTRODUCTION

Air travel is a method of mobilizing Indonesians that is regarded as effective and efficient in terms of costs and travel durations. Supporting the efficient operation of air transportation modalities requires careful consideration of the accessibility of airports that adhere to operational service standards. Airports are a crucial infrastructure in Indonesia that contributes to the efficient movement of aircrafts, passengers, and cargo. As part of its activities, the airport managed by PT Angkasa Pura I permits the mobilization of aircraft, people, and cargo as traffic increases. The table below depicts the increase in passenger traffic at PT Angkasa Pura I airport from 2015 to 2019 :

Table 1. Pre-Covid Passenger Traffic of Angkasa Pura Airports

	2015	2016	2017	2018	2019
Passenger (million)	73,93	84,76	89,75	96,65	81,53

Source : PT. Angkasa Pura I (2022)

Surabaya's Juanda Airport has one of the highest passenger traffic volumes. Juanda Airport has the second-highest passenger volume among the 14 airports operated by PT Angkasa Pura I and is Indonesia's third-busiest airport overall. Prior to the expansion of Terminal 1, Juanda Airport's passenger terminal space was 62,700 m² and its passenger capacity was 9 million. The passenger terminal at Juanda Airport has a higher total capacity than the actual number of passengers, which reached 16.6 million in 2019. PT Angkasa Pura I is investing in the development of Juanda Airport, which took place between 2017 and 2021, in an effort to enhance air transportation services for passengers. The development of Juanda Airport Terminal 1 is the initial step in addressing the current overcapacity.

During the construction of Juanda Airport, the Covid-19 pandemic impacted the aviation sector. Since February 2020, aircraft and passenger traffic growth has slowed significantly. This is consistent with the government's restrictions on community mobilization to prevent the spread of the Covid-19 virus. PT Angkasa Pura I was responsible for a decrease in airport traffic at all locations, including Juanda Airport.

The beginning of Covid-19 in 2020 reduce Juanda passenger traffic by 59.1% relative to 2019 levels, to 6.801.010 passengers. In 2021, there be 5.909.837 fewer passengers than in 2019, representing a decrease of 64.5%. This decrease is inconsistent with the projected passenger growth in the 2016 financial feasibility analysis (feasibility study) for the Juanda Airport Terminal 1 development project. The decrease in passenger traffic at Juanda International Airport contributes directly to the attainment of aeronautical revenue. This is because aeronautical revenue is dependent on aircraft production, passenger and cargo transportation volumes. Based on the description provided above, the authors conducted a capital budgeting analysis for the Juanda - Surabaya International Airport Development Project with traffic conditions during the recovery from the Covid-19 pandemic, where there is actual passenger traffic and a previous financial feasibility study.

LITERATURE REVIEW

Capital budgeting is a planning tool that facilitates the allocation of financial resources towards investment projects, with the aim of making profitable investment decisions. According to Mota et al. (2023), capital budgeting serves as a mechanism for assessing the feasibility of a given project. The field of Capital Budgeting is chiefly focused on the systematic processes of strategizing, assessing, scrutinizing, electing, executing, and supervising various undertakings (Mollah et al, 2021). The significance of the capital budgeting process in investment decision-making is also highlighted by the author. Numerous investment alternatives are available to every enterprise. Certain alternatives may prove advantageous for the organization, whereas others may not yield the same benefits. Financial administrators in the field of capital budgeting endeavor to discern investment prospects that yield superior value to the organization relative to the expenses incurred. Stated differently, the cash flow produced by an asset exceeds the cost incurred in obtaining the asset (Ross et al., 2019).

To evaluate long-term initiatives utilizing capital budgeting, there are 3 (three) steps that must be completed, as outlined below (Ross et al., 2019) :

- a. Calculating the cost of capital (cost of capital).
- b. Estimating cash flows from investment ventures (cash flow).
- c. Evaluating capital budgeting utilizing techniques such as Net Present Value, Payback Period, and Internal Rate of Return, etc.

Net Present Value

Capital budgeting can be viewed as a search for investment projects with positive NPVs in an effort to generate value for the owner. A positive NPV indicates that the investment adds value to the business, thereby increasing the owner's income. The method for calculating Net Present Value is the present value of cash flows minus the present value of cash outflows, so the present value is the amount of money that will be received. The Net Present Value method illustrates the significance of the concept of the time value of money, which states that the value of money today is greater than its value tomorrow (Ruoxin et al, 2022). The formula for Net Present Value is:

$$NPV = CF / ((1+i)^t) - IO$$

Where :

- NPV = Present value of the Investment
CF = Annual cash flow generated by the project
i = calculated interest rate
t = number of years
IO = Initial Outlay / issued capital

Discounted Payback Period

The Discounted Payback Period Method takes into account the amount of time necessary for the discounted investment project's cash flows to equal the initial investment. This calculation method compensates for the shortcomings of the repayment period method, which disregards the concept of time value of money, as discussed previously. Under the discounted repayment regulation, a project may be

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approved if the discounted payback period of the investment project is less than a predetermined number of years. (Ross et al, 2019).

Internal Rate of Return

When calculating Net Present Value (NPV), IRR is the most crucial alternative. (Ross et al, 2019). According to Yan et al., the Internal Rate of Return is the discount rate that correlates an investment's cash flow to its value. The authors add that because the Internal Rate of Return is affected by its cash flows and investors reinvest those cash flows, the IRR can be deceptive if investors cannot find opportunities that generate the same IRR. Internal Rate of Return is the discount rate when Net Present Value equals zero. Following is the formula for Internal Rate of Return:

$$0 = NPV = CF / ((1+IRR)^t) - IO$$

Profitability Index

The profitability index will be greater than 1 for positive NPV investments and less than 1 for negative NPV investments. The Profitability Index is calculated by the following formula :

$$\text{Profitability Index} = \frac{\text{PV of cash flows subsequent to initial investment}}{\text{Initial Investment}}$$

The Profitability Index measures the quantity of value generated per unit of invested capital. (Ross et al, 2019)

The study by Bakri et al. (2021) investigated the implementation of the capital budgeting approach in Lebanon. The present research presents an analysis of the viewpoints of corporations in Lebanon regarding the utilization of six distinct capital budgeting techniques, namely Payback Period (PB), Discounted Payback (DPB), Net Present Value (NPV), Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR), and Profitability Index (PI). The findings indicate that the Payback Period (PB) and Net Present Value (NPV) methods were the two commonly employed approaches among the companies surveyed.

Numerous research initiatives have been conducted previously on the subject of capital budgeting analysis pertaining to airport development projects in Indonesia. The financial feasibility of developing a passenger terminal at Palembang's Sultan Mahmud Badaruddin II International Airport was investigated by Oktari et al. (2018). The capital budgeting analysis employs various methods such as NPV, IRR, BCR, and Payback Period to project financial statements for a period of 10 years. The findings of the research indicate that investment initiatives are deemed viable as they satisfy the four benchmarks of capital budgeting.

A feasibility analysis was conducted by Meutia et al (2021) pertaining to the investment project of Cargo Village Development located at Soekarno Hatta International Airport. The present feasibility analysis evaluates the viability of the investment by examining both external and financial factors. The evaluation of financial feasibility involves the utilization of various Capital Budgeting techniques, including but not limited to the Payback Period, Net Present Value (NPV), and Internal Rate of Return (IRR). This study employs three distinct development scenarios, each of which exhibits variations in the stage of construction development.

Waworuntu, Rahma (2022) conducted a study on the capital budgeting analysis and risk management of Government Business Entity Cooperation (PPP) in the development of the New Bali International Airport Project. The present research employs five distinct capital budgeting techniques, namely Payback Period, Discounted Payback Period, Net Present Value (NPV), Internal Rate of Return (IRR), and Profitability Index. The findings of the study indicate that the investment endeavor is economically viable.

METHODS

The Juanda Airport in Surabaya served as the location for the research that was carried out. Quantitative approaches are utilized in this investigation for the purpose of analyzing the data, which is comprised of primary data and secondary data respectively. This investigation makes use of a selection of the following data:

- a. The materialization of the investment in the development of Juanda Airport in Surabaya.
- b. The documents pertaining to the company's work plan and budget.
- c. Rencana Jangka Panjang Bandara (RJPB)
- d. Information regarding the actual volume of traffic at Juanda Airport in Surabaya.
- e. Information regarding projected traffic at Juanda Airport in Surabaya.
- f. Information regarding the actual volume of aeronautical production at Juanda Airport in Surabaya.
- g. Information regarding the projections of the aeronautical production at Juanda Airport in Surabaya.
- h. Information pertaining to the actual of the Company's Budget Work Plan

According to Ross et al. 2019, considering the Discounted Payback Period, NPV, IRR, and PI as part of a Capital Budgeting analysis helps determine whether or not a project is financially viable. The authors did the calculations for the financial predictions using three different scenarios: the optimistic, moderate, and pessimistic ones. There are variations in production predictions, revenue assumptions, and expense assumptions throughout the various possible outcomes.

RESULTS

Juanda Airport, which is the largest airport in East Java, is seeing a growth in the number of passengers using its services. However, in the years 2020 and 2021, Juanda International Airport saw fewer passengers than usual as a direct result of the widespread Covid-19 pandemic that was sweeping the globe. As a result of government policies that place limitations on the ability of communities to organize and mobilize resources, the domestic and international flight schedules for the years 2020 and 2021 will not be adhered to as planned.

Table 2. Aircraft and Passenger Traffic

	2019	2020	2021	2022
Aircraft	129.542	69.248	55.942	78.028
Growth compared to 2019		-47%	-57%	-40%

Pasenger (million)	16,62	6,80	5,91	10,79
Growth compared to 2019		-59%	-64%	-35%

Source : PT Angkasa Pura I (2022)

The realization of decreased aircraft and passenger traffic at Juanda Airport has an effect on the realization of airport income, both aeronautical revenue and non-aeronautical revenue. Juanda Airport has implemented cost leadership as a cost efficiency effort to counterbalance revenue realization which has declined dramatically so that loss realization can be avoided in order to keep profit and loss realization at the level that was agreed upon by management. This is done in order to maintain profit and loss realization at the level that was agreed upon by management. Previously, the airport was open 24 hours a day; however, as part of the endeavor to demonstrate cost leadership, the working hours have been changed to 5:00 to 21:00.

The development project that was done was the Development of Terminal 1 Expansion of Juanda Airport, which is one of the development goals of Angkasa Pura I. The 2016 Management Contract was used as a reference for this information. The Terminal Development and T1 Interior Improvement projects are also included in the Juanda Airport Terminal 1 Expansion Project. As a result of the Terminal 1 Development Project at Juanda Airport in Surabaya, airport service consumers now have the use of additional facilities and infrastructure. One of these is an increase in the passenger terminal's capacity, which can now accommodate up to 11,67 million passengers as opposed to the previous capacity of 8.5 million passengers.

Non- financial aspect feasibility

The Juanda Airport Development Project is congruent with the following goals and objectives:

- a. The Main Program for Air Transportation Modes for the Next Five Years, as Stipulated in Perda Provinsi Jawa Timur No 5 of 2012 concerning Provincial Rencana Tata Ruang Wilayah (RTRW) for the years 2011 – 2031 Pasal 37 dan Pasal 38.
- b. Peraturan Daerah Kota Surabaya Nomor 12 Tahun 2014 tentang Rencana Tata Ruang Wilayah Kota Surabaya Tahun 2014-2034 Pasal 11 (d). It reads as follows: developing supporting infrastructure for air transportation networks by developing road infrastructure and interconnection of transportation modes
- c. According to the Sidoarjo Regency Regional Regulation No. 6 of 2009 concerning the Sidoarjo Regency Spatial Plan for 2009 – 2029 Paragraph 4 Article 30, which specifies that the plan for handling and administering the airport region, the Sidoarjo Regency Air Transportation Infrastructure Development Plan was developed.

Prior to the completion of the expansion, there were two passenger terminal buildings that occupied a total of 112,438 square meters within the Passenger Terminal's original footprint. Terminal 1, which has a passenger capacity of 8.5 million pax annually and covers an area of 62,700 square meters, is situated to the north of the runway at the airport. Terminal 2, which spans an area of 49,738 square meters and is situated to the south of the runway, can accommodate up to 6 million passengers per

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year. In light of the fact that the number of passengers who used Juanda Airport in Surabaya prior to the Covid-19 pandemic reached 19.48 million in 2016, 20.12 million in 2017, and 20.95 million in 2018, it is possible to assert that the passenger terminal at Juanda Airport is currently operating at a level that exceeds its capacity. Because of this, it is essential to construct a new passenger terminal building in order to expand the facility's capacity.

Capital Budgeting Analysis

Various assumptions are utilized in the process of calculating capital budgeting in order to determine scenario projections. These assumptions include pessimistic, moderate, and optimistic projections. The following is a list of the various ways in which the various scenarios make different assumptions:

Table 3. Assumption for Each Scenario

Assumptions	Pesimistic	Moderate	Optimistic
Aeronautical Rate Increases	10% per 6 years	20% per 6 years	20% per 4 years
Economic Growth Rate	2,97%	5,00%	5,17%
Inflation rate	5,51%	3,13%	1,68%

Source : Author's processing (2023)

Several key adjustments have been made to the capital budgeting of this study, including the following:

- a. The investment value of the ex Terminal 1 Development Project planned for the 2017 feasibility analysis is Rp. 3,297,584,840 includes air side works (construction of the apron in front of the cargo terminal, taxiway from the apron in front of the cargo terminal to a taxiway parallel to the runway, construction of a taxiway at the end of the runway), land side work (expansion of the Terminal 1 building ext. east side and west side, multipurpose building , archives building, international cargo terminal, construction of a multi-storey car park building, wastewater treatment, and maintenance of area lanes). The Juanda Airport Surabaya Terminal 1 Development Project, currently underway, possesses an asset value of Rp. 765,441,482,751. It is important to note that this value pertains solely to the landside area, encompassing the expansion of terminal 1 and interior enhancements.
- b. The feasibility study from 2017 determined that the investment benefit period would last for 30 years. According to the findings of this investigation, the usable life of the investment is estimated to be 20 years. This figure was derived from the computation of the value of each asset divided by the economic life of the asset in compliance with the relevant internal company standards.
- c. The traffic projection that was used for this study is based on the actual number of passengers that traveled through Juanda Airport in 2019, which was 15,806,958. Additionally, the projection of passenger traffic took into account the force majeure conditions caused by the Covid-19 pandemic, which is why the projected number of passengers traveling through Juanda Airport in 2024 is 14,533,372 travelers.

- d. The findings of the WACC calculations were used in this investigation to determine the amount of required return. These calculations took into account the cost of equity as well as the cost of debt in accordance with the reality of financial reports and the realization of financing. The WACC value obtained was 27.97%. The following are the capital budgeting results derived from this study :

Table 4. Capital Budgeting Analysis Result

No	Capital Budgeting Analysis	Unit	Result		
			Pesimistic	Moderate	Optimistic
1	NPV	juta	1.464.776	1.985.717	2.488.250
2	IRR	%	29,01%	35,37%	39,63%
3	PP	years	14,46	8,83	6,16
4	PI	x	1,05	1,42	1,78

Source : Author's processing (2023)

After the development project was completed, a feasibility study was conducted, and the findings of that study indicated that the project would be successful. The computations for this study were carried out using three different scenarios: pessimistic, moderate, and optimistic. Adjustments are made to a number of variables in each of the possible outcomes, including forecasts of traffic, assumptions regarding increases in tariffs, economic growth, and the rate of inflation. Even under a pessimistic scenario, wherein the anticipated revenue is lower and the estimated expenses are higher, the outcomes of capital budgeting remain advantageous when considering the indicators of NPV, IRR, Discounted Payback Period, and Profitability Index. The outcomes derived from computations based on optimistic and moderate scenarios exhibit similarity with the initial findings.

CONCLUSION AND SUGGESTION

Conclusion

Several conclusions can be drawn from this study, all of which are based on the analysis presented in the preceding chapter. The Juanda Airport Surabaya Terminal 1 Development project is being carried out in a manner that is consistent with the evaluation of non-financial issues. If the development project for terminal 1 at Juanda Airport in Surabaya is in agreement with the Rencana Tata Ruang Wilayah (RTRW) for the province of East Java, Sidoarjo Regency, and the City of Surabaya, then it will be approved. In addition, it is essential to carry out the Juanda Airport Terminal 1 Development Project in light of the anticipated increase in passenger traffic. This growth in passenger traffic is expected to continue. The 2017 feasibility study conducted for the development of Juanda Airport Terminal 1 project will not serve as the foundation for the project's work concept or investment worth during its actual implementation. The reduction in the extent of the required tasks leads to a decrease in the expenses associated with investment. Consequently, the feasibility study's results are no longer relevant in assessing the viability of the Surabaya airport terminal 1 development project. The traffic projection outlined in the 2017 feasibility analysis has been deemed excessively high when compared to the most recent traffic

projection. The latter has been adjusted to reflect the traffic growth projection provided by the Airport Council International (ACI) in light of the ongoing Covid-19 pandemic recovery efforts. The utilization of production predictions for both aircraft and passengers in traffic growth implies that any modification made to the traffic projection will significantly affect the anticipated revenue for the entire undertaking. The level of production at the airport, which functions as a hub for aircraft takeoff and landing operations, is contingent upon the volume of actual traffic. The decrease in anticipated vehicular flow leads to a corresponding decrease in estimated income across all categories, encompassing both aeronautical and non-aeronautical sources of revenue. The funding provided for the development of Juanda Airport Terminal 1 Project has been modified to align with the actual cash flow generated from airport operations, which have not met the projected targets. As a consequence of the inadequate cash flow of the company, it was unable to meet its obligation of paying interest on its loans. Consequently, the organization was compelled to reorganize its loan portfolio to align with its operational capacity amidst the Covid-19 recuperation phase. It is expected that the recent restructuring will lead to a rise in the borrowing rate's value until the end of maturity date. The Juanda Airport Terminal 1 Development Project in Surabaya underwent a capital budgeting analysis, which yielded positive results across three scenarios: pessimistic, moderate, and optimistic. Specifically, the analysis revealed a positive net present value (NPV), an internal rate of return (IRR) that exceeded the weighted average cost of capital (WACC) value of 27.29%, a discounted payback period that was less than the asset's useful life of 20 years, and a profitability index greater than 1. Hence, the Juanda Airport Terminal 1 Development Project is deemed lucrative, notwithstanding the decline in traffic observed during the post-Covid-19 pandemic recovery phase.

Suggestion

Some recommendations made by the authors based on research findings as follows : From the perspective of corporations, Monitoring and evaluating the capital budgeting of completed airport development projects is imperative. Particularly in cases where alterations occur in the dominant economic, political, or social circumstances that do not align with the suppositions made during the preliminary feasibility analyses conducted before the commencement of the undertaking. Moreover, it is imperative to monitor the capital budgeting to evaluate the extent to which the objective for the airport expansion initiative has been achieved. The aforementioned data can be subsequently integrated into the assessment procedure for forthcoming airport expansion schemes. According to the results of this study, a noteworthy alteration has occurred in the valuation of the debt-associated interest rate. In the event that management plans to proceed with a novel investment initiative, it is crucial that they consider the present financial condition of the enterprise. This is due to the fact that the corporation remains responsible for fulfilling the payments associated with loans and the corresponding interest that were accumulated throughout the construction phase of the prior investment endeavor. The present research assesses the viability of investment from non-financial perspectives, including the association with the Rencana Tata Ruang Wilayah (RTRW) of the <https://jurnal.umt.ac.id/index.php/dmj/index>

regional administration, and an examination of the prerequisites for airport operation infrastructure (land side). This study assesses the viability of investment, in addition to its financial implications. Conducting research on additional factors that contribute to the decision-making process surrounding the construction of an airport is imperative. Airports are a vital component of infrastructure that is necessary to meet the mobility needs of the Indonesian populace.

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