Part 1:
Connectivity Economic Infrastructure

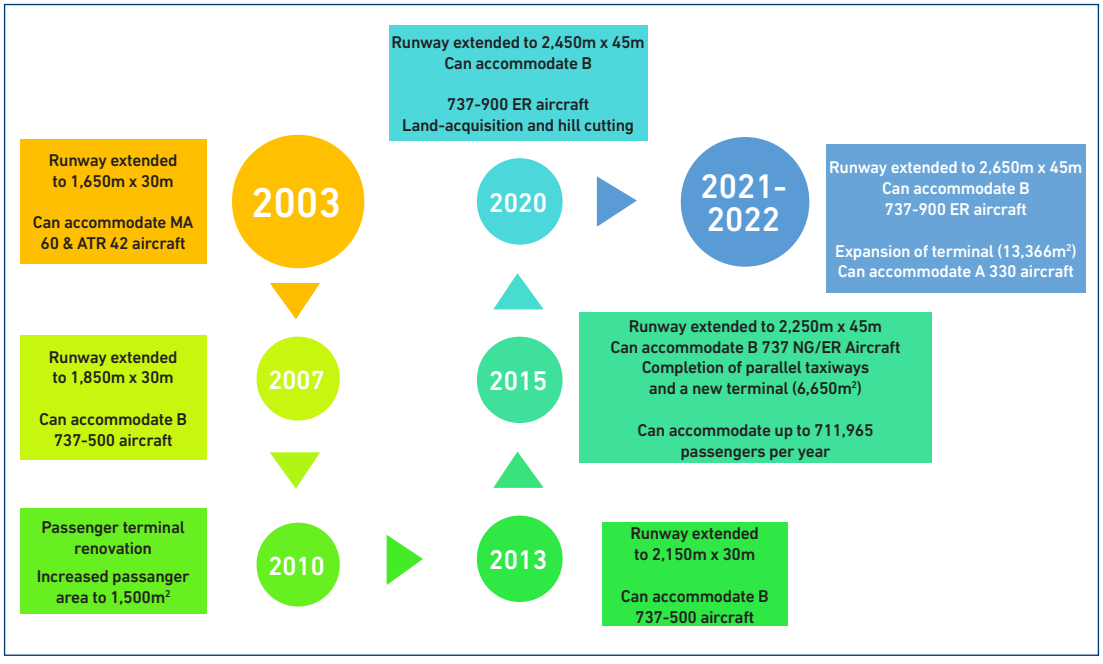
1.1. Komodo International Airport

1.1.1. Project Profile

Komodo Airport is located in Labuan Bajo, Komodo District, West Manggarai Regency, East Nusa Tenggara (on the island of Flores). It was originally named Mutiara II Airport and was built in 1990 with a runway length of 1,200 metres (m) x 30 m, the passenger terminal area of 240 square metres (m^2) and could serve Cessna and Casa 212 aircraft types.

The development of the airport in the form of extending the runway and expanding the passenger terminal was carried out in stages. In 2010, the passenger terminal was expanded so that the shape of the facade became wider and the area increased from 1,260 m^2 to 1,500 m^2, with a capacity of 35,000 passengers per year.

Figure 3.1. Development of Mutiara II Airport, Labuan Bajo, 2003–2022



m =metre, m^2 = square metre.

Source: Compiled from Ministry of Transportation (2023).

In 2015, the name of the airport was changed from Mutiara II to Komodo Airport (Jemali, 2023). The new name used was a symbolic ode to the ancient animal 'Komodo', which is a tourist icon in the area, hence the name, Komodo Island. The expansion of the passenger terminal in 2015 to 6,650 m² increased the passenger capacity by 20 times that of 2010, from 35,000 passengers per year to 711,965 passengers per year. The renovations and repairs were carried out throughout 2016–2018 at a cost of Rp125.98 billion. In 2019 a review of the Komodo Airport master plan was carried out, which cost Rp1.40 billion. The development stages of the airport can be seen in Figure 3.1.

With this development, the passenger capacity of Komodo Airport increased to 1.1 million passengers per year from the previous 712,000 passengers per year. The inauguration of the 2020–2022 Komodo Airport development was carried out by President Joko Widodo on Thursday 21 July 2022.

In 2015, the government initiated tourism development that was more focused on 10 priority Indonesian tourist destinations outside Bali, one of which was Labuan Bajo in East Nusa Tenggara. In line with that, Komodo Airport continued to improve through renovations and improvements to better the quality of the runway and passenger terminal, as well as to review the Komodo Airport master plan.

In 2017, the Research and Development Centre of Civil Aviation (*Puslitbang*) of the Ministry of Transportation conducted research related to fulfilling the criteria for Komodo Labuan Bajo Airport for upgrading the status from a domestic airport to an international airport (Ministry of Transportation, 2019). This research conducted by Yarlina (2018) concluded that the current infrastructure for Komodo Labuan Bajo Airport is sufficient to be developed into an international airport, judging from the existing conditions and stages of the development of the runway, taxiway, apron, and flight safety facilities. Furthermore, in 2019 the Ministry of Transportation conducted a review of the Komodo Airport master plan, which cost Rp1.40 billion. In 2020, based on Presidential Regulation (*Perpres*) Number 109 of 2020, 17 November 2020, Komodo Airport was included as part of the National Strategic Projects (PSN) scheme.

1.1.2. Project Objectives

In 2011, with Government Regulation (PP) Number 50 of 2011 concerning the National Tourism Development Master Plan for 2010–2025, the government included Komodo National Park as one of the national tourism destinations, which is the target of increasing and strengthening Indonesia's tourism image in a sustainable manner. In 2015 the government initiated tourism development that is more focused on 10 priority Indonesian tourist destinations outside Bali (10 new Balis), one of which is Labuan Bajo, East Nusa Tenggara. In line with that, Komodo Airport was developed so that in 2015 the capacity of its passenger terminal increased to 712,000 passengers per year. In the following years (2016–2019) the growth in the number of foreign and domestic tourist visits to the area was encouraging, with as many as 84,000 people in 2016, 133,000 people in 2017, 161,000 people in 2018, and 255,000 people in 2019.

In a limited cabinet meeting on 15 July 2019, in Jakarta, President Joko Widodo initiated the development of Super Priority Tourism Destinations (DPSP) in five regions, one of which is Labuan Bajo, East Nusa Tenggara (KPPIP, 2022). This development is part of the PSN programme, specifically the National Tourism Strategic Area Development Programme, as stated in Perpres Number 109 of 2020 concerning the Third Amendment to Presidential Regulation Number 3 of 2016.

In line with the development direction of Labuan Bajo as a DPSP under the PSN, quality infrastructure support is needed, including the expansion and development of Komodo Airport and the existing passenger capacity. The inclusion of the development of Komodo Airport as one of the PSNs is a form of government support in connection with the establishment of Labuan Bajo as part of the development of one DPSP. PSN's goal of developing Komodo Airport is to support tourism development, so that the community's economy can grow and develop, which in turn can have an impact on increasing people's welfare.

As part of the PSN, Komodo Airport receives a government guarantee facility, through PT Penjaminan Infrastruktur Indonesia or PT PII, for the Komodo Airport public–private partnership (PPP) project. This guarantee will only be obtained if the project is entered as a PSN. On 7 February 2020, an agreement was signed between the Ministry of Transportation and the CAS Consortium or PT Cinta Airport Flores with the PPP scheme for Komodo Labuan Bajo Airport in Jakarta. Unfortunately, the PPP was declared terminated in early 2023, because the CAS Consortium was unable to fulfil the conditions precedent set forth in the PPP agreement.

1.1.3. Project Cost and Source of Fund

The amount of funds that have been spent to finance the development of Komodo Airport from 2016–2022 is Rp459.35 billion. All the funding came from the state budget (Anggaran Pendapatan dan Belanja Negara, APBN). Details of expenditure allocation can be seen in Table 3.1.

Table 3.1. Komodo Airport Development Costs, 2016 to 2022

Year	Work	Realisation
2000		**54,597,201,900**
	Airport Development Supervision 1 Package	1,285,350,000
	Airport Fence Making Work 1 Package	7,154,000,000
	RW, TW, Apron, Turning Area and Fillet Coating Work to Increase PCN Carrying Capacity Including Markings 1 Package	33,408,268,900
	Installation of Box Culvert Under Taxiway Alpha Along with Channel 1 Package	2,205,100,000
	Security Office Construction 200 m^2	1,232,000,000
	Land side Parking Expansion of 3,200 m^2	2,623,083,000
	Procurement of Cargo X-RAY with 1 Unit TIP Application	1,199,000,000
	Expansion of the Powerhouse Building including Rehab of the Old PH Building 1 Package	1,370,000,000
	Procurement of Airport Maintenance Vehicle Equipment 1 Unit	350,000,000
	Airport Electrical System Optimisation 1 Package	3,770,400,000
2017		**8,534,400,000**
	Drainage Channel Making 1 Package	8,534,400,000
2018		**61,457,921,000**
	Apron coating 495 m^3	2,957,320,000
	Apron expansion 7,987 m^2	21,726,400,000
	Supervision of Airport Infrastructure Work 1 Package	1,272,424,000
	Passenger Terminal Setup Work 1 Package	9,476,200,000
	Terminal Canopy Work and Travelator Installation 1 Package	7,434,097,000
	Work on Landscaping, Car Parking and Curb Side 1 Package	18,287,000,000
	Procurement and installation of 2 units of WTMD	304,480,000

Year	Work	Realisation
2019		**1,400,000,000**
	Review of the Comodo Airport Master Plan	1,400,000,000
2020		**204,221,186,410**
2020	Land Acquisition for Airport Development	150,417,255,020
2020	Transitional Area Hill Cutting	27,831,547,390
2020	Supervision of Transitional Area Hill Cutting	620,000,000
2020	Runway Extension including Marking	24,821,589,000
2020	Supervision of Runway Extension	530,795,000
2021		**72,911,087,913**
2021	Integrated Design and Build Construction Work for the Construction and Development of Komodo Airport – Labuan Bajo (MYC 2021–2022)	65,767,612,000
2021	Komodo Airport Construction Management Work – Labuan Bajo (MYC 2021–2022)	2,858,286,672
2021	Continuation of Consignment Land Acquisition	4,285,189,241
2022		**56,225,243,000**
2022	Komodo Airport Construction and Development Work (MYC 2021–2022)	56,225,243,000
2022	Construction Management (MYC 2021–2022)	
TOTAL		**459,347,040,223**

MYC = multi-year contract, WTMD = walk-through metal detector.

Source: Project Report and Financial Realization 2016–2022, Ministry of Transportation.

Of the Rp459.35 billion, not all the costs are due to its status of a PSN as Komodo Airport was only registered as a PSN in 2020. Therefore, the amount of funds spent for Komodo Airport as a PSN is Rp333.36 trillion, that is the funds disbursed from 2020–2022.

1.1.4. Internal and External Factors

1.1.4.1. Internal Factors

Internal factors analysis (IFAS) is an analysis tool that provides the internal conditions of a company or project to be able to determine its strengths and weaknesses. In this study, an IFAS was carried out after identifying the aspects of the airport's internal environment to determine its strengths and weaknesses. The internal factors analysed are the location, physical quality, financing, regulations, conformity with regional spatial planning and land use, tender implementation, queue time for check-in, facilities at the airport, waiting time for baggage collection, supporting facilities, implementation permit constraints, duration of airport construction, technical obstacles in construction, development results, and impact on the environment.

1.1.4.2. External Factors

An external factor analysis (EFAS) is an analysis tool that provides the external conditions of a company or project to be able to determine its opportunities and threats. The external factors analysed are support from local communities, opportunities to open/expand businesses, job creation, increase in community income, increase in state/regional income, implementation of national and/or international standard activities, attraction to investors, development delays, land procurement constraints, the disbursement of funds, travel business actors, and cultural attractions and activities. In this study, an EFAS was carried out after identifying the aspects of the external environment to determine the factors of opportunities and threats.

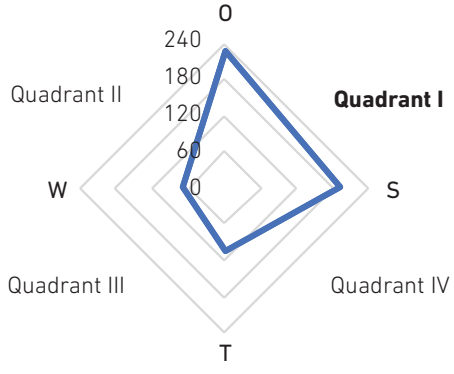
These factors were then entered into the IFAS and EFAS tables and their values were calculated by weighting. By multiplying the weights and rankings, the values of each factor were obtained, which were then added together to obtain the total IFAS and EFAS scores.

1.1.5. SWOT Analysis

A SWOT analysis is a systematic identification of various factors to formulate a company or project strategy, by evaluating the strengths, weaknesses, opportunities, and threats that exist in a company or project. In a SWOT analysis, strategic mapping of strengths and weaknesses with opportunities and threats can be carried out using Internal Factor Analysis (IFAS) and External Factor Analysis (EFAS). Data collection was carried out through a questionnaire, which was submitted via a survey link on a Google Form, via WhatsApp to each respondent. Responses from these respondents were recorded on a Google Sheet, and then processed by the authors. Out of the 12 respondents who were asked to fill out the questionnaire, there were eight respondents who filled out and returned the questionnaire.

The result of IFAS is 331.94 with the difference between the strength and weakness values of 122 (226.97–104.97). This can be interpreted as the internal factor strengths of Komodo Airport being greater than its weaknesses. In contrast, the value of EFAS is 258.64 (189.80+68.84). The difference between the opportunity and threat values is 120.96 (189.80–68.84), which can be interpreted as Komodo Airport having greater opportunities than threats. Depicted in matrix form, the internal–external matrix of Komodo Airport can be seen in Figure 3.2.

Figure 3.2. SWOT Analysis Results



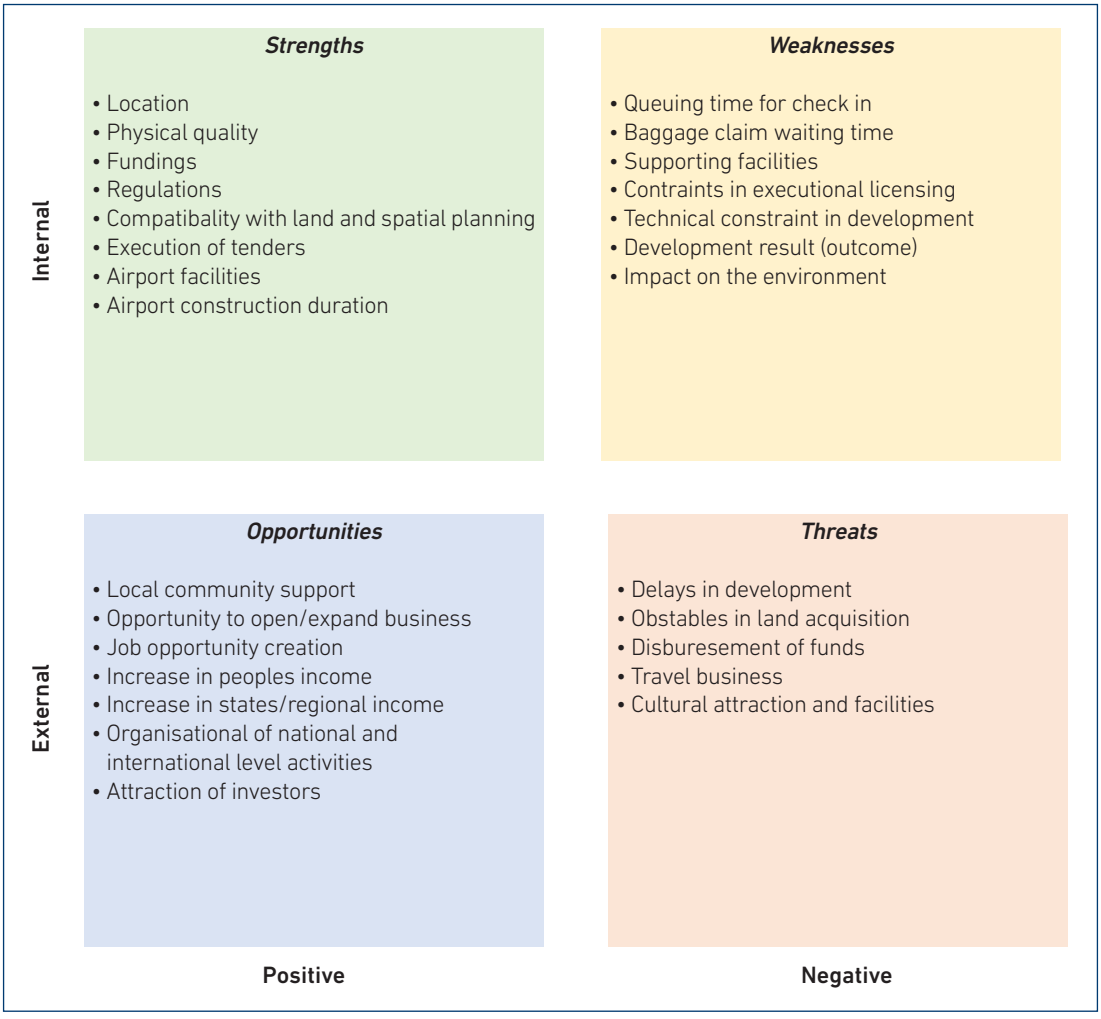
Categories		Values
S	**Strengths**	**226.97**
W	Weaknesses	104.97
O	**Opportunities**	**189.80**
T	Threats	68.84

Source: Authors, 2023.

Figure 3.2. shows that, from an internal perspective, the relative position of Komodo Airport is in quadrant one and is located at coordinate 226.97:189.80. A high coordinate indicates that Komodo Airport has relatively high opportunities and strengths. Thus, the strategy to follow is to take advantage of existing opportunities and use the available strengths. From the external side, Komodo Airport has a slight threat indicated by the coordinate 68.84 on the left side and a slight weakness indicated by the coordinate 104.97 down. An overview of the SWOT analysis is provided in Figure 3.3.

From the results of the SWOT analysis that was carried out, the development strategy that can be implemented by Komodo Airport is the strategy of utilising its strengths to obtain maximum opportunities (strengths and opportunities [SO] strategy), for example: using regulatory powers to obtain opportunities for holding national and/or international activities and attracting investors to the airport location and its surroundings; the facilities at the airport to be used by the community for opening or developing their business, thereby increasing the attractiveness of tourism.

Figure 3.3. SWOT Overview



Source: Authors.

1.1.5.1. Main Challenges

In 2016–2019, the number of tourist visits to Labuan Bajo increased sharply. 2019 was the peak year for tourist visits – about 255,000 people. In 2020 and 2021, due to the impact of the COVID-19 pandemic, this number decreased drastically. Nonetheless, in 2022, the number of tourist visits increased to 170,000 people.

The growth in tourist visits has had an impact on the growth in the number of passengers at Komodo Airport, where during 2016–2019 there was an increase in the number of passengers at the airport. In 2019, the number of passengers experienced a peak, at 694,000 passengers. With this number of passengers, the passenger capacity used is optimal, namely 97.48% of the existing capacity of 712,000 passengers per year.

In 2020–2021 there was a decrease in the number of passengers at the airport due to the decrease of tourists. However, the development of Komodo Airport continued to be carried out to accommodate the possibility of a surge in passengers after the end of the COVID-19 pandemic. This development has, amongst other things, increased passenger capacity to 1.1 million passengers per year in 2022. In 2022, the number of passengers at Komodo Airport increased to almost the same as the number of passengers in 2019, about 610,000 people. With these numbers, the airport only reached 56% of the available capacity.

One of the external factors that can increase the number of visits to Labuan Bajo is through national and/or international activities being held there. Through this implementation, more domestic and foreign people will know Labuan Bajo, so that the number of tourists is expected to continue to increase. The increase in tourist visits will increase the number of passengers served by Komodo Airport, so that the existing airport capacity can be used optimally.

1.1.5.2. Main Benefits

Location is one of the internal factors, which is significantly the strength of Komodo Airport. The location of Komodo Airport is strategic because it is the entrance for tourists who want to visit the Komodo National Park and the main entrance for those who want to visit Flores Island. This position provides an advantage for the airport to promote tourism activities in Labuan Bajo and Flores in a comprehensive manner, by providing initial information for passengers about tourist attractions, culinary experiences and activities or attractions that can be enjoyed by tourists; micro and small and medium-sized enterprise products; and other matters related to tourism activities. This can be done by providing several location points inside or outside the airport area that are easily accessible and viewable by people to provide or display that information. The more often this information is obtained by the public, it is hoped that the higher the interest and more tourists will visit.

Based on the facts previously mentioned, Komodo Airport occupies a strategic location. However, up to now, only 56% of the available airport capacity has been utilized. By implementing this SO strategy, it is hoped that the number of airport passengers can be increased so that existing capacity can be maximized.

Conclusion

Komodo Airport is in Labuan Bajo, Komodo District, West Manggarai Regency, East Nusa Tenggara (on Flores Island). Previously this airport was named Mutiara II Airport, which was built in 1990. The construction and development of this airport have been ongoing throughout the years, until it was declared complete and inaugurated in 2015 by President Joko Widodo.

In 2019, Labuan Bajo was designated as one of the DPSP development areas, which is part of the PSN Programme for the Development of National Strategic Tourism Areas based on Presidential Regulation Number 109 of 2020. To support the DPSP under the PSN programme, Komodo Airport was also included as part of the PSN in the same Presidential Regulation. The development of Komodo Airport from 2016 to 2022 incurred a cost of Rp459.35 billion. All of the funding sources came from the state budget.

Based on the SWOT analysis, Komodo Airport is positioned in quadrant I with high coordinates, indicating that it has relatively high opportunities and strengths. With this position, Komodo Airport has been able to increase the number of passengers served, reaching a peak in 2019 with 694,015 passengers.

From 2020 to 2022, despite a decrease in the number of passengers due to the COVID-19 pandemic, the development of Komodo Airport continued, resulting in an expansion of the passenger terminal area to 13,366 m^2 and an increase in passenger capacity to 1.1 million passengers per year.

The airport only reached 56% of its capacity in 2022, with 610,014 passengers. This number is still below the number of passengers in 2019.

In addition to increasing the number of passengers served, the presence of Komodo Airport also boosts tourist visits to West Manggarai. Along with that, the number of star-rated and non-star hotels in West Manggarai Regency has also increased (BPS, 2021). This increase is accompanied by the growth of gross regional domestic product in the accommodation and food and beverage sectors (BPS, 2023).

With the establishment of Labuan Bajo as one of the super priority tourism development destinations, it is hoped that the number of domestic and foreign tourists making recreational visits will increase. The growth in tourist visits has also had an impact on the growth in the number of passengers at Komodo Airport and the growth in the number of hotels.

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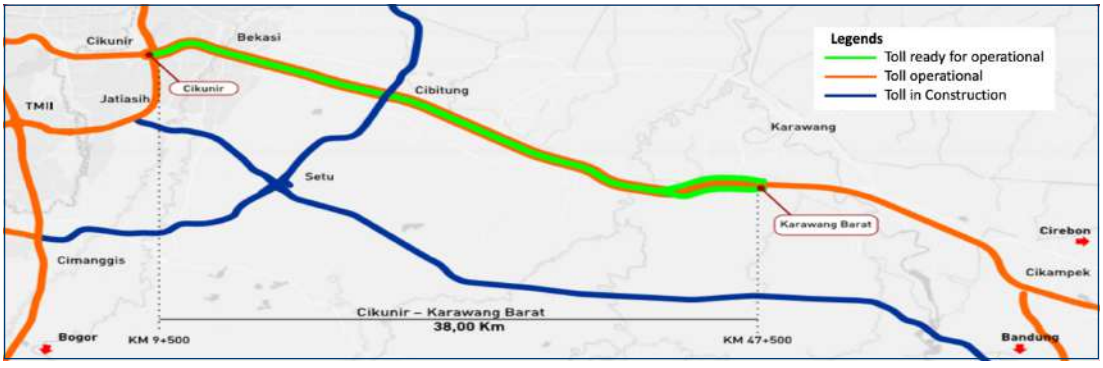
1.2. Jakarta-Cikampek II Elevated Toll Road

1.2.1. Project Profile

The Jakarta–Cikampek (Japek) II elevated toll road connects the Cikunir interchange and the West Karawang toll gate, approximately 38 kilometres in length. It is constructed entirely as an elevated road and is the longest flyover in Indonesia. The flyover construction is over the existing Jakarta–Cikampek toll road, covers a right of way area of 915.375 hectares, 70–80 metres width land. Considering the limited availability of land and the availability of technology for the construction of flyovers, construction over the existing road was considered the most logical choice. The elevated toll road section covers the area of Bekasi City, Bekasi Regency, and Karawang Regency and can be seen in Figure 3.4

Figure 3.4. Map of the Location of Jakarta–Cikampek II Elevated Toll Road



Source: PT Jakarta Jalan Layang Cikampek.

The growth of industrial estates and the big number of commuters from the eastern part of Jakarta have added to the burden on the Japek toll road. To reduce the burden on the Japek toll road, which has almost exceeded the carrying capacity, PT Jasamarga initiated the Japek toll overpass project, which is referred to as the Jakarta–Cikampek II elevated toll road. This idea was approved by the government, and it was categorised as one of the National Strategic Projects (PSN) based on Presidential Decree number 58 of 2017. With this categorisation, along with the project inauguration it received a joint guarantee by the Ministry of Finance and PT IIF for the safety and convenience of investment for business entities (PT IIF, 2017). Prior to construction, the Jakarta–Cikampek elevated toll road received a spatial conformity statement from the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, with Decree No. 1124/200/XI/2016 concerning the Status of the Jakarta–Cikampek Highway Freeway Elevated Law, and in line with the National Spatial Plan.

The development consisted of two stages: the construction stage and the operational stage, with the Ministry of Public Works and Public Housing through the toll road regulatory agency (BPJT) as the project manager. Construction was planned for 24 months, starting in November 2017. It hired 250 workers, consisting of project elements (owners), supervision elements, and implementation elements (contractors). The workers were local, their jobs did not require special skills, and from outside the project area, as shown in Table 3.2.

The operational and maintenance phase was carried out by PT Jasa Marga Toll Road Operator through the Toll Road Business Entity (BUJT), PT Jasamarga Jalanlayang Cikampek (PT JJC). Entering the operational stage, the workers shifted to operating officers, such as toll gate guards, branch office employees, and toll operation and maintenance officers.

After completing construction and tests were done, the elevated toll road was inaugurated by President Joko Widodo on 12 December 2019. In April 2021, as an appreciation from the Indonesian government to the United Arab Emirates government, which has established diplomatic relations for 45 years, this flyover was renamed Jalan Layang Sheikh Mohammed bin Zayed.

Table 3.2. Workforce in the Construction of the Jakarta-Cikampek II Elevated Toll Road

No.	Labor Classification	Outside Regions	Locals	Quantity
1	Road and Bridge Experts	5	5	10
2	Expert Assistants	5	5	10
3	Project Administration	5	5	10
4	Logistics	5	5	10
5	Security	10	10	20
6	Heavy Equipment Operators	25	0	25
7	Forepersons	15	10	25
8	Labourers	40	100	140
Total		**110**	**140**	**250**

Source: PT Jasa Marga Persero Tbk.

The flyover section consists of two lines, the Cikunir–Karawang route (Line A) and the Karawang–Cikunir route (Line B), each line has two lanes. Each lane is 3.5 metres wide, with an inside sidewalk, 1 metre in width, and an outer sidewalk, 2.5 metres in width. To comply with toll road service standards, various supporting facilities have been provided. Cikunir access has six on/off ramps, whilst Karawang has two ramps. Along the flyover, four parking bays are provided, with a limited lot because vehicles are not allowed to stop. The parking bays are in line A (located at KM 21+000 and KM 41+500) and line B (KM 22+000 and KM 40+000). As the emergency openings in case of extraordinary situation, U-turns and emergency stairs are provided at eight points. The U-turns are only for official vehicles, not for road users. To provide information to users, two units of variable sign messages were built, at KM 23+800 A and 28+000 B, 113 CCTV were installed, and two units of smart CCTV to support Electronic Traffic Law Enforcement (ETLE).

Figure 3.5. Bumpy Appearance of Japek II Elevated Toll Road

Source: Authors.

An interesting fact about this toll road is its bumpy look (Figure 3.5). PT Waskita Karya, the contractor, explained the main reason for this bumpy look is that the flyovers were built following the topography of the road and constructions below and above. This flyover intersects with many constructions, including existing toll roads, interchanges, pedestrian bridges, as well as the Perusahaan Listrik Negara's (PLN) (Indonesia's electric power company) high voltage electricity transmission. According to the provisions, it must have 5.1 metres distance from the construction below or above (clearance area). With the varying heights of the constructions that intersect, it is not possible to build flyovers at the same height. If enforced, it would be very high and costly to build.

Since the beginning, this flyover was designed as a free load road allowing all types of vehicles to pass. Construction has also been tested with load tests carried out at 15 points. However, with various considerations, only small vehicles are allowed, whilst buses and trucks are not. This setting is based on Regulation of the Director General of Land Transportation Number 4963 of 2019. The consideration for this prohibition is due to the limited width of the lanes and sidewalks. if a large vehicle broke down causing traffic jams, it will be more difficult to handle.

1.2.2. Project Objectives

The density along the Japek toll road is inseparable from the growth of industrial areas in eastern Jakarta. The East Jakarta Corridor is one of the biggest contributors to the national economy. This area, which also includes the Bekasi agglomeration area, has seven industrial estates containing more than 4,000 companies (Irawan, 2020). Several large industrial areas in the corridor are Jababeka Industrial Estate Cikarang, Karawang International Industrial City, and Suryacipta City of Industry (PT Jasa Marga Persero, 2015). Before the elevated toll road, the accessibility of this corridor was served by the existing Japek toll road, which mostly consisted of four lanes in each direction. Without additional lanes as a solution to overcome congestion, the existing toll road is no longer able to accommodate the increasing traffic volume.

Figure 3.6. Cikunir Interchange, Starting Point for the Japek II Elevated Toll Road

Source: Authors, 2023.

The cause of congestion on the Jakarta–Cikampek toll road is the mixture of commuter traffic going to Bekasi and its surroundings with the flow of intercity vehicles to the west, central, and east Java. Commuter vehicles are dominated by small cars, whilst intercity vehicles are dominated by the transportation of goods and people, large and small vehicles. The elevated toll is expected to increase road capacity to complement the existing road network system and to expedite traffic flow on the Japek toll road. The congestion could be reduced by dividing the flow on the Japek toll road into two, the lower line for commuter and the top for intercity vehicles. If traffic eases, vehicles could reach 80 kilometre (km)/hour speeds. This situation increases transportation's efficiency, which is further expected to support national economic growth.

Traffic congestion has become a common situation on the Jakarta–Cikampek toll road. Congestion occurs all day, especially during Eid or long holidays. This toll road, which is the main node between the western and eastern parts of Java Island, has seen increasing traffic density from year to year, and has even been overloaded. The traffic overload of the Japek toll road shown from the vehicle volume and road capacity (V/C) ratio which has exceeded 0.8 in both lanes, and in some sections has even reached more than 1 (Ministry of Public Works and Public Housing, 2021). If the V/C ratio reaches 0.8 or greater, it means that the traffic flow category approaches the maximum capacity of the road.

In addition, easing the flow improves the quality of land transportation services, so that the mobility of people, goods, and services increases, too. It is hoped that this increased accessibility will also spur the development of cities in West Java Province, which have so far not maximised their development.

1.2.3. Project Cost and Source of Fund

The Japek elevated II toll road construction project was carried out under the public–private partnership (PPP) scheme. Construction of the toll roads began after the project was declared economically and financially eligible – the two eligibility types were requirements under the PPP scheme on the initiative of a Business Entity (unsolicited PPP), with PT Jasa Marga (Persero) Tbk as the project initiator. The total investment cost is Rp16.23 trillion, so the construction cost per kilometre is around Rp427 billion. Compared to the construction of another elevated toll road that will be built, the 22-km elevated Jakarta Outer Ring Road (JORR) toll road at a construction cost of Rp21.5 trillion (Rp977 billion per km), the cost for the Japek elevated toll road is more efficient. Of the total investment cost, Rp11.66 trillion was allocated for construction (National Toll Road Authority, 2016).

The funding scheme for this project is contractor pre financing, where the contractor funded the construction of this project first. After completion, there was a handover to the National Toll Road Authority (BPJT), which was to purchase it. The construction itself was carried out through a joint operation between PT Waskita Karya Tbk (51% equity) and PT Acset Indonusa Tbk (49% equity) (CNN Indonesia, 2017). The concession is 45 years.

1.2.4. External and Internal Factors

1.2.4.1. External Factors

The identified external factors are the level of support from the local community for PSN (E_1); the level of investor interest in the development of the Japek elevated toll road (E_2); PSN opportunities in job creation (E_3); PSN impact in new business creation for the community (E_4); PSN support for the development of regions through the opening of access to neighbouring areas (E_5); PSN opportunities for increasing tourism (E_6); the level of accessibility to western, middle, and eastern Java (E_7); level of smoothness of road traffic (E_8); timeliness of disbursement of toll development funding from the investors (E_9); potential for disputes or lawsuits in the PSN implementation process (E_{10}); level of fuel efficiency (E_{11}); level of risk of accident (E_{12}); level of people and goods mobility (E_{13}); PSN opportunities to increase land value (E_{14}); level of accessibility for local communities (E_{15}); impact of the PSN on land transportation services (E_{16}); and the impact of the PSN on the economy of regions not traversed by the elevated toll road (E_{17});

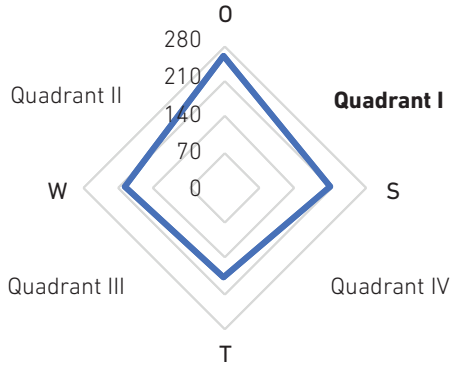
1.2.4.2. Internal Factors

The identified internal factors are the deregulation or enactment of regulations (I_1); suitability of the PSN development location (I_2); compatibility of PSN development with regional spatial planning and land use (I_3); availability of infrastructure that supports PSN (I_4); appropriateness of PT Waskita Karya's appointment as the project operator (I_5); support from the central and/or regional government in PSN financing (I_6); ease of licensing in the PSN preparation and implementation process (I_7); level of technical smoothness of PSN construction (I_8); level of use of modern technology in PSN development (I_9); timeliness of PSN construction (I_{10}); PSN physical quality level (I_{11}); suitability of PSN to split the traffic for commuters and long-distance travellers (I_{12}); level of concern for the development of PSN for environmental sustainability (I_{13}); adequacy of PSN-supporting facilities (I_{14}); and the reasonableness of the toll rate (I_{15}).

1.2.5. SWOT Results and Analysis

A SWOT analysis was used to evaluate this PSN project. In a SWOT analysis, strategic mapping of the strengths and weaknesses with opportunities and threats can be carried out using Internal Factor Analysis (IFAS) and External Factor Analysis (EFAS). Data collection was carried out through a questionnaire, which was submitted via a survey link on a Google Form to each respondent. There were 13 respondents, which came from internal parties (PT JJC and PUPR) and external parties, which were commuters, businessmen, and academics. The responses from these respondents were recorded and then processed by the author. From the SWOT analysis as shown in shown in Figure 3.7, it is in quadrant I, with the strenghts (S) still dominate with 206 points, whilst the weaknesses (W) have a score of 199. In terms of opportunities, many opportunities (O) have been presented, compared to the threats (T) faced. This can be seen from the pull towards O which is more than towards T. It can also be seen that the opportunity score of 260 is much higher than the threat score of 177.

Figure 3.7. SWOT Analysis Results

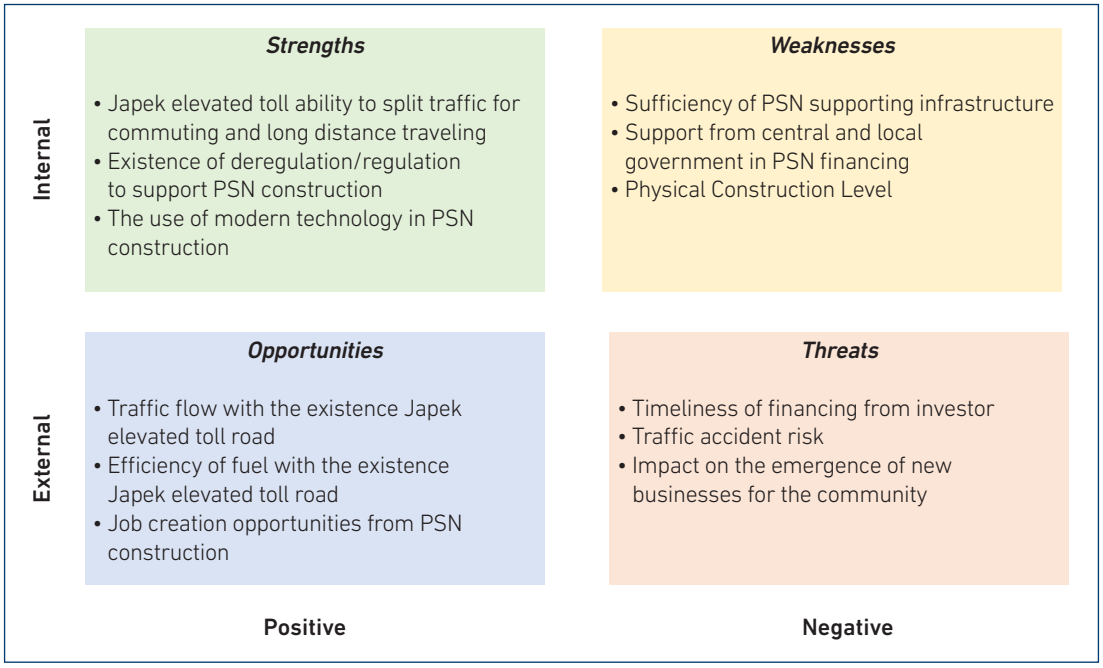


Categories		Values
S	**Strengths**	**206.39**
W	Weaknesses	199.23
O	**Opportunities**	**260.01**
T	Threats	177.92

Source: Authors, 2023.

A summary of the three factors with the highest values identified as strengths, weaknesses, opportunities, and threats is presented in Figure 3.8. The observed factors are ranked based on the highest values of the average perceived reality and importance by the respondents. The higher the score obtained, the better the perception of respondents for the factor.

Figure 3.8. SWOT Analysis Priority Matrix



Source: Authors, 2023.

1.2.5.1. Main Challenges

One of the weaknesses in the elevated toll road project, according to respondents, is the level of physical quality of the construction. Respondents consider this indicator important, but the score is low. This weakness seems to be related to the comfort of the user when passing over the joints, which has not been felt as a pleasant experience. The cause of this discomfort includes connections at the expansion joints that cause vehicles to 'bounce' when passing.

In addition to the physical quality, the adequacy of the supporting facilities is still a weakness. The elevated toll road is not intended to accommodate drivers seeking rest or stopping, except in emergency situations. Therefore, the facilities provided do not support such activities. This is often misinterpreted as a lack of facilities.

In the threats category, an indicator with a high score is the risk level of accidents on the toll road, whether on the existing toll road or the elevated one. The risk of accidents is perceived to increase due to the higher vehicle speeds resulting from reduced traffic volume after the traffic separation. This risk is expected to diminish with the regulation that only small passenger vehicles are allowed to pass through the elevated toll.

The accuracy of funding disbursement from investors is also a threat to toll road construction. This concern is reasonable because all funding comes from the private sector, and there is no funding from the national budget for this project. Additionally, respondents are also concerned about the impact of the elevated toll road on the growth of new businesses that could threaten existing community enterprises.

1.2.5.2. Main Benefits

On the strength factor, the highest score is the indicator of the ability of the elevated toll road to split traffic flow into two, for commuters and long-distance travel. This result is also supported by research conducted by Riwanto (2022), which states that the existence of the Jalan Layang Sheikh Mohammed bin Zayed is effective in unravelling congestion on the Jakarta–Cikampek toll road, as evidenced by the decrease in total traffic volume by 36.4%.

An indicator that also scores high is the existence of regulations to support the PSN implementation. This result is not surprising, because the main objective of a project designated as a PSN is to remove implementation obstacles related to bureaucracy. The existence of this regulation will also be needed to harmonise various existing conditions at locations affected by the existence of elevated toll roads. The West Java Provincial Government has anticipated this by adjusting the Provincial Spatial Plan by issuing West Java Provincial Regulation number 9 of 2022 concerning the West Java Provincial Spatial Plan for 2022–2042. These provisions were issued to accommodate the existence of various new infrastructures in the regional spatial layout plan.

Another indicator with a high score is the level of use of modern technology in the project development. This result is in accordance with the explanation from PT Waskita Karya Tbk as a contractor, which explained that the construction of elevated toll roads applied modern technology that is not used in other projects. The modern technology used includes the use of expansion joints in the form of asphaltic and seismic modular ones, which make the elevated toll road structure flexible so that it can withstand earthquakes.

In terms of opportunity, the benefit most felt by road users is the smooth flow of the existing Japek toll road after the flyover. The score for this indicator is the highest on external factors, at 30.67. This is consistent with the results on internal factors that the Japek elevated toll road managed to separate traffic flow for commuters and long trips. Data from the Ministry of Public Works and Public Housing (2021) state that there has been a decrease in the average traffic density (V/C ratio) on the Japek toll road, from previously 0.8 to 0.56 (Line A) and 0.81 to 0.54 (Line B).

Also getting a high score is the level of efficiency in fuel use that has increased after the construction of the flyover, which also got a score of 30.67. This result is in line with the results for indicators of the level of mobility of goods, services, and people after the construction of the Japek elevated toll road. One proof of this opportunity is the significant reduction in travel time from Jakarta to Bandung to 2.5 hours (Bawono et al., 2021), which previously took more than 3 hours.

The job creation opportunities were also considered by respondents as an opportunity that accompanies the existence of the elevated toll road and received a score of 29.52 in the SWOT analysis. The increased accessibility from Jakarta to the east has accelerated growth of the industrial areas in eastern Jakarta, and there is an opportunity for increasing demand for the workforce in these industrial areas.

Conclusion

The East Jakarta Corridor is the biggest contributor to the national economy. With the growth of the corridor, the road density is increasing along the Japek toll road as the main connection from the western side of Java to the eastern side. Congestion can occur at any time, and the road carrying capacity has almost been exceeded, as can be seen from the Vehicle Volume/Road Capacity (V/C) ratio, which has reached over 0.8 in both lanes. This condition certainly does not support efficiency and needs to be overcome. Because of the limited land and the ever-increasing volume of vehicles, the decision was made to build a toll road on top of the existing Japek toll road. This project, namely the Jakarta–Cikampek II Elevated Toll Road, was then designated as a PSN.

The 38-kilometre Japek Elevated Toll Road was built to increase road capacity to complement the existing road network system and expedite traffic flow on the Japek toll road. The congestion could be reduced by dividing the flow on the Japek toll road into two sections: the lower lane for commuter vehicles and the top for intercity vehicles. The easing of the flow has improved the quality of land transportation services and improved the mobility of people, goods, and services. The Japek Elevated II Toll Road construction project was carried out under a public–private partnership (PPP) with the initiative of a business entity (unsolicited PPP). It cost Rp16.23 trillion using the contractor pre-financing scheme.

Constructed above an active toll road, the Japek elevated project had many challenges during the construction phase. The biggest was the worsened congestion on the Japek toll caused by the project. In addition, there were three other massive projects at the same time, the LRT, MRT, and high-speed train. Despite these challenges, the project was completed on time and was inaugurated on 12 December 2019 by President Joko Widodo.

To understand the impact of the Japek elevated toll road, a SWOT analysis was carried out. The result showed that the strengths dominate the weaknesses. The opportunities also had a higher score than the threats, which means that the respondents had a better perception of the opportunities of the project. The project's ability to split traffic into commuting and long-distance travelling has been the strongest result of the project, evidenced by the decrease in traffic volume on the Japek toll road. Contrarily, the uneven surface has emerged as the primary weakness of the elevated toll road. The highest opportunity according to the respondents was the smooth flow for both the Japek and Japek elevated toll roads, whilst the threat was the increasing risk level of accidents due to the increase in driving speed.

In addition to the strong factors, with the smoother traffic flow, it is hoped that the Japek elevated toll road will also boost the growth of cities in the southern part of West Java

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1.3. Manado–Bitung Toll Road

1.3.1. Project Profile

The Manado–Bitung toll road project, situated in North Sulawesi Province, connects the City of Manado as the provincial capital and the City of Bitung. Manado City is famous as one of the best tourist cities in Indonesia. Bitung is famous as a producer of tuna and skipjack, a seaport city with a strategic location as an economic gateway to countries in the Asia-Pacific region. Bitung City was also designated as a special economic zone (SEZ) through Government Regulation Number 31 of 2014.

The distance between Manado City and Bitung City is approximately 44 kilometres. Presently, the roads connecting the two cities, including the national route, struggle to handle the growing vehicle traffic, particularly because of industrial activities lining these roads. In response to these anticipated challenges, the Ministry of Public Works and Housing planned to construct a toll road linking Manado and Bitung. The aim is to boost the accessibility between these pivotal cities, thereby fostering economic development, industry, tourism, and the overall well-being of the residents.

Figure 3.9. Manado–Bitung Toll Road

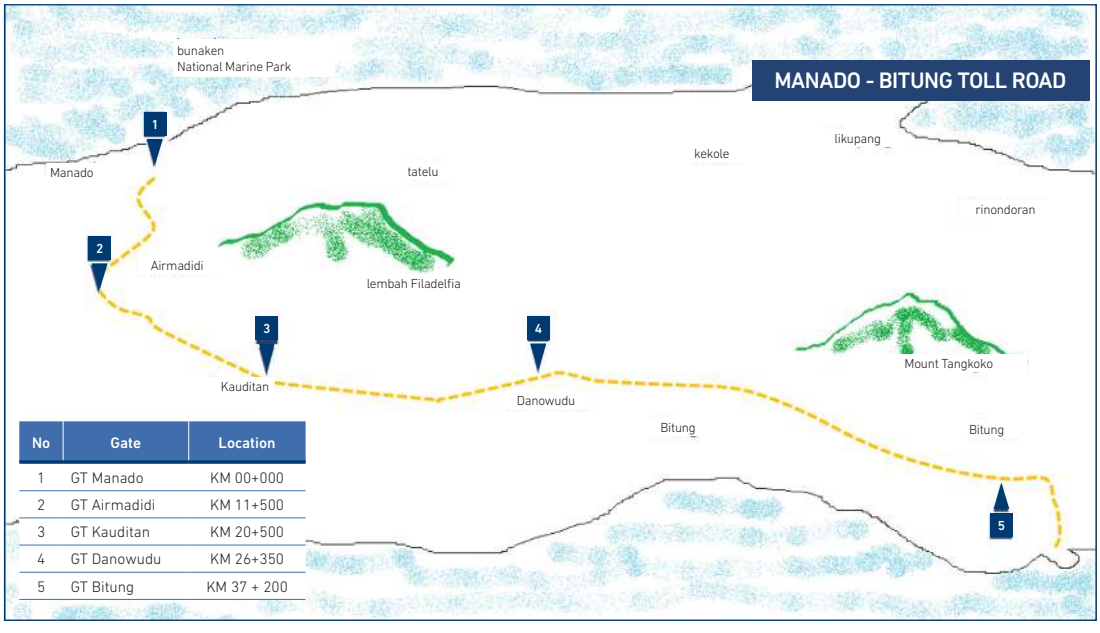
Source: PT Jasa Marga Manado Bitung.

The toll road infrastructure is the pioneering project in the Province of North Sulawesi and constitutes an integral component of the Trans Sulawesi Toll Road network.

The construction of the toll road is also a manifestation of the mandate of the Presidential Regulation concerning the Master Plan for the Acceleration and Expansion of Indonesia's Economic Development 2011–2025. In 2016, the Manado–Bitung toll road was incorporated into Presidential Regulation Number 3 of 2016 regarding the Acceleration of National Strategic Project Implementation. With this project's inclusion in the National Strategic Projects (PSN) list, its construction, which began in 2016, was able to be completed by 2022. Figure 3.9 illustrates the toll road.

The Manado–Bitung toll road Section A (Manado–Danowudu) began operating on 29 September 2020. It was then followed with Section B (Danowudu–Bitung) which has been fully operational since February 2022. The toll road is 39.9 kilometres (km) long and is divided into four sections, Section 1A Manado–Sukur (7.9 km), Section 1B Sukuk–Air Madidi (7 km), Section 2A Airmadidi–Danowudu (11.5 km), and Section 2B Danowudu–Bitung (13.5 km). The lane count in the Initial stage is two x two lanes, while the final stage is two x three lanes. The lane width is 3.6 metres, with an inner shoulder of 1.5 metres, and an outer shoulder of 3 metres. The pavement used for the main road and the inner shoulder is rigid pavement, while the outer shoulder uses flexible pavement.

Figure 3.10. Map of Manado–Bitung Toll Road



No	Gate	Location
1	GT Manado	KM 00+000
2	GT Airmadidi	KM 11+500
3	GT Kauditan	KM 20+500
4	GT Danowudu	KM 26+350
5	GT Bitung	KM 37 + 200

Source: Authors, 2023.

The Manado–Bitung toll road comprises five toll entrance and exit gates located in Manado, Airmadidi, Kauditan, Danowudu, and Bitung (Figure3.10). It is managed by PT Jasamarga Manado Bitung (PT JMB), which was established on 6 June 2016.

1.3.2. Project Objectives

The development of the Manado–Bitung toll road aims to achieve the Sustainable Development Goals (SDGs) by promoting economic prosperity, social well-being, environmental preservation, and equitable governance. It seeks to enhance the quality of life for current and future generations, ensuring justice and sustainable progress for the community. It also aims to increase accessibility between regions in North Sulawesi Province. In essence, the toll road is expected to increase the smoothness of logistics routes and the efficiency of travel time between cities, reduce the risks of accidents on provincial roads, and connect roads between Manado and Bitung.

As one of the PSN projects, the Manado–Bitung toll road was designed to foster balanced growth and decrease the export product logistics costs from Manado to the primary Bitung international port in North Sulawesi. Furthermore, the toll road will support Bitung's evolution into a special economic zone. As the inaugural toll in North Sulawesi, it is anticipated to slash the journey time between Manado and Bitung from its previous 90–120 minutes to roughly 30 minutes.

This project aims to increase regional development, support regional economic growth in North Sulawesi Province, and equitable development, especially in eastern Indonesia. This road is expected to open the development of areas around toll access, such as the Airmadidi sub-district, Kauditan sub-district, and Danowudu sub-district. This in turn support activities in the KEK in the city of Bitung, the Bitung international port, and tourism in surrounding areas such as the Bunaken National Marine Park, the Parom waterfall, the Tri Kora monument, and other tourist attractions.

As a National Strategic Project, this toll road holds a distinctive status due to its inclusion among the government's infrastructure acceleration priorities. The project commenced in 2016, with functional operation achieved by the end of 2018. Notably, it stands as the first toll road in North Sulawesi Province to connect regions within the province and is poised to become the key link in the trans-Sulawesi Island road network in the future.

1.3.3. Project Cost and Source of Funding

The development is carried out under government cooperation with a business entity (PPP) funding scheme with government construction support (Ministry of Public Works and Public Housing Decree) through foreign loans.

The Manado–Bitung toll road has a project value of Rp8.94 trillion (KPPIP, 2022), with the following funding sources:

- Section I, along 14.9 km from Manado–Sukur–Airmadidi, is financed through the state budget and loans from the Chinese government, with the government portion of Rp3.01 trillion. The construction of Section I is divided into (i) intersection to Manado–Bitung Ring Road (0.675 km), (ii) Section 1A Maumbi to Suwaan, 7 km long, carried out by the Sino Road and Bridge Group, and (iii) Section 1B Sukur to Tumaluntung along 7 km, which is divided into five sections and carried out by five different contractors.
- Section II, which is 25 km long from Airmadidi to Bitung, has a concession right owned by the Toll Road Business Entity (BUJT) PT. Jasa Marga Manado Bitung with an investment cost of Rp3.17 trillion. Section 2 construction is undertaken by PT JMB (Manado–Bitung Toll Road), whose shares are held by PT Jasamarga (Persero) Tbk (64.97%), PT Wijaya Karya (Persero) Tbk (20.04%), and PT Pembangunan Perumahan (Persero) Tbk (14.99%).

This project is being carried out under the supported build–operate–transfer scheme with a concession period of 40 years, in which the government provides construction support for a 13.5 km long section to make this project financially viable (PT.PII,2016). The government's role is to support infrastructure projects implemented through the PPP scheme through infrastructure guarantees. Manado–Bitung toll road financing is guaranteed by PT. PII.

To reduce investment costs for BUJT, the government provides physical assistance by building part of the toll road sections using the state revenue and expenditure budget (*APBN*) and loans from abroad. After that, the BUJT will be given a concession to operate all toll roads being built, both by the government and the BUJT itself.

Apart from that, financing for the Manado–Bitung Toll Road is also in the form of grants for some of the construction used in the toll road construction.

1.3.4. External and Internal Factors

1.3.4.1. External Factors

The identified external factors supporting the construction of the Manado-Bitung toll road are (i) The Level of Community Support for the Project; (ii) The Level of Interest of Prospective Providers/ Enterprises in Development; (iii) Project Opportunities in Job Creation; (iv) The Project's Impact Level on the Emergence of New Ventures for the Community; (v) increase in tourists; (vi) the level of accessibility to Manado-Bitung; (vii) the level of smooth of Non toll connecting road; (viii) Timeliness of Project Funding Disbursement; (ix) The Level of Potential Disputes or Legal Claims; (x) the efficiency of fuel use; (xi) The Level of Traffic Accident Risk (xii) The Level of Mobility of Goods, Services, and Toll Users; (xiii) Opportunities for Increasing Land Prices in the Area Traversed and Its Vicinity; (xiv) The Influence of the Toll Road's Existence on the Accessibility Level for the Local Community Surrounding the Toll Road; (xv) The Impact of the Existence of a Toll Road on the Use of Motor Vehicles for Accessing the Surrounding Areas; (xvi) The Influence of the Toll Road's Existence on Agricultural Land Area; and (xvii) The Impact of the Existence of the Toll Road on the Economy of Areas Not Served by the Toll Road (Existing Roads).

1.3.4.2. Internal Factors

The internal factors identified in the construction of the Manado-Bitung toll road are (i) the deregulation and/or issuance of regulations to support the construction of the toll road; (ii) the suitability of the project location for a toll road; (iii) compliance with spatial planning and land use; (iv) the availability of supporting infrastructure, such as primary roads for access to the toll road; (v) the decision of appointing PT JMB as the project implementer; (vi) support from the central government, provincial governments, and regency and/or city governments in financing; (vii) the ease of licensing procedures; (viii) the level of technical smoothness in construction development; (ix) use of technology in the toll road development; (x) timeliness in completing construction; (xi) the level of physical quality, including materials, the road contour, noise level, and comfort; (xii) level of harmony of the toll road construction with environmental sustainability; (xiii) supporting project facilities (signage, markings, rest areas, gates, lighting, etc.); and (xiv) toll road tariff costs.

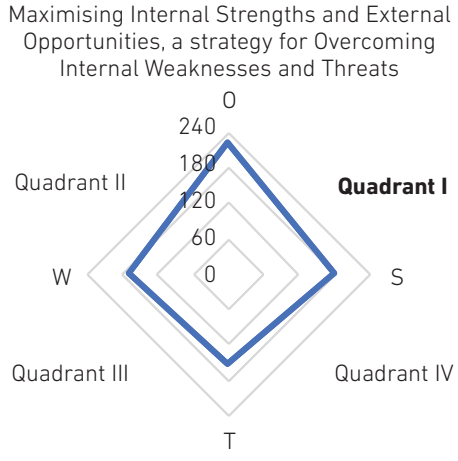
1.3.5. SWOT Results and Analysis

To ascertain the perception regarding the development of the PSN, a survey was conducted amongst individuals from within and outside the organisation. We collected data from stakeholders to measure respondents' perspectives. The participants include the central and local governments, academia, the business community, and users of Manado-Bitung Toll Road services. The internal

parties in this respondent were the project managers, namely the working unit of the North Sulawesi National Road Implementing Agency, the National Road Project working unit for the Manado–Bitung area, and PT Jasa Marga Manado Bitung. Respondents were from external parties, such as academics from Sam Ratulangi University in Manado, business actors in the cities of Manado and Bitung, and the Manado–Bitung toll road community users. Next, their perceptions of various internal and external factors – the perceived reality and the perceived importance – were collected and analysed. Perceived reality measures the stakeholders' perception of the facts observed, whilst the perceived level of importance scores factors that respondents feel are important to the success of the project.

The data is analysed with SWOT, where the results of data processing show:

Figure 3.11. SWOT Analysis Results



Categories		Values
S	**Strengths**	**211.10**
W	Weaknesses	149.78
O	**Opportunities**	**207.50**
T	Threats	198.19

Source: Authors, 2023.

The results of the SWOT analysis of internal and external respondents to the Manado–Bitung toll road project show that it is in quadrant I, and that internal strengths (S) and external opportunities (O) dominate internal weaknesses (W) and external threats (T) (Figure 3.11).

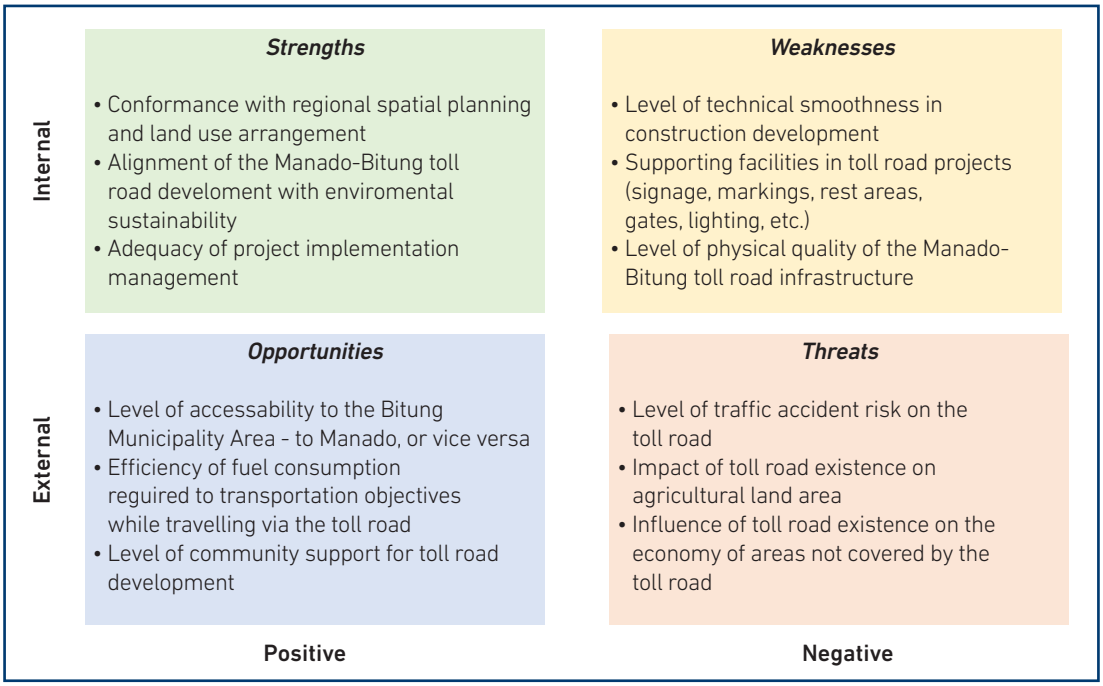
The results show that the internal strength factor has the highest points. The toll road project has solid internal strength to support the success of the project. Some strengths within the internal factors include the alignment of toll road construction with regional spatial planning and land use, the appointment of Toll Road Business Entities as project implementers, and the level of alignment with environmental sustainability in the surrounding area. Additionally, external opportunity factors also garnered a relatively high score, implying that toll road projects hold

significant potential to maximise their chances of success. Several opportunities stemming from external factors encompass the support of the local community towards toll road development, perceived fuel efficiency for toll road users, and the accessibility and smoothness of travel for toll road users.

Although internal weakness factors and external threats obtained lower scores compared to internal strengths and external opportunities, it remains imperative to mitigate these factors to minimise obstacles in the development and management of this toll road project. Internal weaknesses that require mitigation include the level of technical smoothness in toll road construction and development, as well as the physical quality of the toll road and its supporting facilities such as road signs, rest areas, gates, lighting, information boards, and others. External threats that necessitate mitigation may arise from the impact on the emergence of new businesses for the local community, affecting agricultural land areas, and the level of traffic accident risk.

The strategy can be used to maximise internal strengths and external opportunities to increase project effectiveness and efficiency. In contrast, internal weaknesses and external threats are managed not to hinder the project. Thus, toll road projects can increase the potential for success and achieve greater profits.

Figure 3.12. SWOT Analysis Priority Matrices



Source: Authors, 2023.

A summary of the three factors with the highest values identified as strengths, weaknesses, opportunities, and threats is presented in Figure 3.12 The observed factors are ranked based on the highest values of the average perceived reality and importance by the respondents. The higher the score obtained, the better the perception of respondents for the factor.

1.3.5.1. Main Challenges

a. Obstacles in land acquisition affected the target implementation time, so the project was halted with demands from the community to shift the project 200 metres from the Aerujang spring. Follow-up by the government and managers to resolve problems in the field was carried out by not installing toll road stakes in the Aerujang spring area.
b. Changes in land use and designation. The Manado–Bitung toll road project is part of a mega project comprising a special economic zone and an international hub port. The development of this mega project has changed land use in Bitung City, from plantation and agricultural land to industrial areas, residential areas, and the central business district (Lapatandau, Rumagit, and Pakasi, 2017). The development of this mega project will cause the temperature humidity index to become an uncomfortable category (Sanger, Rogi, and Rombang, 2016). Changes in land use around the corridor were from previously empty land into commercial, residential, and office buildings. Of course, the government needs to pay attention to land-use changes so that they can be controlled and follow regional spatial planning.
c. Competition amongst the roads linking the cities of Manado and Bitung is evident. Apart from the toll road, travellers can select the National Road or Ir Soekarno Road as alternative routes between the two cities. These access roads are commonly preferred over the toll road, potentially leading to lower-than-expected traffic volumes on the toll road. Additionally, the toll rates play a significant role in the decision-making process for the public, small and medium-sized enterprises, and industries when utilising the toll road. For illustrative purposes, the toll road vehicle volume in February 2023 averaged around 5,244 vehicles, generating an average revenue of Rp139.3 million. In March 2023, the average vehicle volume was 5,242 with an average revenue of Rp139.9 million, whilst in April 2023, the average vehicle volume reached 5,942, yielding an average revenue of Rp158.4 million (PT JMB, 2023).
d. The government needs to build and/or improve supporting infrastructure to support tourism in the vicinity, such as the Manado–Likupang access road, the Marinsow bridge, Malalayang SPAM, regional final processing facility Mamitarang, flood control, and others.
e. To facilitate the implementation of the project, adjustments and improvements in regulations are necessary to ensure the smooth technical progress of construction and timely completion. Additionally, enhancing the physical quality of the toll road, including materials, road contours, noise levels, and comfort, is crucial. Attention should also be directed towards improving supporting facilities such as road signs, markings, rest areas, gates, and lighting within the toll road project. Moreover, careful consideration and effective management of toll rates and access fees are essential aspects that require attention and oversight.

1.3.5.2. Main Benefits

a. Shortens the travel time between the city of Manado and the city of Bitung. With toll roads spanning 39.9 km, the average travel time is 1.5 to 2 hours via ordinary roads and arteries to about 35 to 45 minutes using the toll road.
b. As the primary access to the Bitung international hub port, this toll road provides easy access for goods and services to the Bitung port, one of the export and import gates for the eastern part of Indonesia. Logistics costs from Bitung port can also be reduced.
c. The direct connectivity to the Bitung Special Economic Zone (SEZ) presents an opportunity to stimulate and enhance the competitiveness of the fisheries, agriculture, and pharmaceutical sectors. The aim is to attract investments amounting to Rp32.89 trillion and provide employment opportunities for 34,710 individuals by the year 2025 (DNKEK, 2023).
d. Some tourist areas, both in Manado and in Bitung, are easier to reach. Several tourist areas in the city of Manado and its surroundings are the Ban Hin Kiong pagoda, ecotourism in the Bunaken National Park, one of the most beautiful marine parks in the world, the hinterland volcano area, the Rurukan agritourism village in Tomohon, Lake Tondano, and the Waruga Sawangan ancient park. In the city of Bitung and around it, there are several tourist areas such as underwater tours of World War II sunken ships, marine parks, ship stones, historical monuments, Japanese monuments, Trikora Mandalasakti, Bitung natural forest tours, and others. This toll road also supports the development of the Manado–Bitung–Likupang national strategic tourism area.
e. Reduces the burden on national arterial and regional roads whose conditions are increasingly congested due to the growth in the number of vehicles and economic activities supporting economic activities in North Sulawesi Province.
f. The increase in the local economy is directly correlated with the rising land prices and property values in the surrounding areas. Additionally, there has been a significant surge in the number of both domestic and international tourists visiting the North Sulawesi region. This, in turn, has led to the growth of small and medium-sized enterprises amongst the local communities. The construction of the toll road has also played a crucial role in the emergence of new economic growth points, particularly in the southern part of North Sulawesi Province. This positive impact is further bolstered by the development of the Gorontalo–Manado connecting road, which is strategically located in the southern route, connecting the cities of Manado and Gorontalo and linking with the Manado–Bitung toll road. Consequently, this development has contributed to the economic progress of the area, as well as the overall regional and national economic growth.

Conclusion

The Manado–Bitung toll road is located in the province of North Sulawesi, with the aim of establishing a vital transportation link between the cities of Manado and Bitung, covering a distance of 39.9 kilometres. Manado has earned a reputation as one of Indonesia's premier tourist destinations, offering a diverse array of attractions that appeal to domestic and international travellers alike. On the other hand, Bitung holds strategic significance as a prominent fish-producing centre and a maritime port city. Moreover, the city has been designated as a SEZ.

The analysis results indicate that the strong internal capabilities of the government and project managers greatly support the project's success, particularly when complemented by the development of supporting infrastructure. This can be further optimised by maximising the existing external potentials, such as expediting the development of the Bitung SEZ, establishing the Bitung international port, developing surrounding tourist areas, and providing investment facilitation facilities

The construction of the Manado–Bitung Toll Road as a National Strategic Project is relevant to its objective, which is to enhance interregional accessibility in the Province of North Sulawesi, facilitate transportation across the Sulawesi Island, stimulate economic growth in the eastern region, and promote equal development throughout Indonesia.

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1.4. Medan–Binjai Toll Road

1.4.1. Project Profile

The Medan–Binjai toll road is part of the Trans Sumatra toll road (Jalan Tol Trans–Sumatra, JTTS), which connects the City of Medan to the City of Binjai and is part of the connecting road for the Province of Nanggroe Aceh Darussalam and the Province of North Sumatra. The Medan–Binjai toll road section has a length of 17.42 kilometres (km) and is divided into three sections: (i) the Tanjung Mulia–Helvetia section of 6.97 km, (ii) the Helvetia–Semayang section of 6.175 km, and (iii) Semayang–Binjai section with a length of 4.275 km. Construction of the toll road began in 2015 and was fully completed in 2021.

The ground-breaking on the Medan–Binjai section took place on 27 January 2015 by the President of the Republic of Indonesia. On 27 March 2015, PT Hutama Karya (Persero) and the Toll Road Regulatory Agency (BPJT) carried out the signing of the Toll Road Concession Agreement (PPJT) for the Trans Sumatra toll road section of Medan-Binjai (PT Hutama Karya, 2016). The toll road project had a planned 3-year construction period, starting from 2015 to 2018 (KPPIP, 2018).

In accordance with Presidential Decree No. 62 of 2011 concerning Spatial Plans for the Medan, Binjai, Deli Serdang, and Karo Urban Areas, it has been designated as the Mebidangro urban area, a single urban area consisting of Medan City as the core urban area and the Binjai urban area in Binjai City, Hamparan urban area, Perak, Sunggal urban area, Tanjung Morawa urban area, Percut Sei Tuan urban area, Pancur Batu urban area, Lubuk Pakam urban area, and Galang urban area in Deli Serdang Regency, as well as Berastagi urban area in Karo Regency, as the surrounding urban areas. The core urban area and the surrounding urban areas have functional interrelationships linked to the regional infrastructure network system, including the transportation network, one of which is the construction of the Medan–Binjai toll road.

Apart from being one of the transportation networks and being part of the JTTS network, it is important to support the traffic of goods and people between Medan and Binjai. The construction of the Medan–Binjai toll road is also an alternative route for vehicles from Medan to Binjai and vice versa so that it can reduce the burden on Jalan Gatot Subroto and Jalan Medan–Binjai (roads which are the main route connecting Medan City with Banda Aceh City). Ultimately the construction of the Medan–Binjai toll road is expected to contribute to regional development and economic growth on the island of Sumatra.

1.4.2. Project Objectives

The construction of toll roads is carried out by the government to support the nawacita programme in the 2015–2019 National Medium Term Development Plan (RPJMN). Nawacita is an agenda of nine five-year development priorities, which is the vision of President Joko Widodo and Jusuf Kalla in the 2014 presidential election campaign. The nawacita agenda that must be realised includes developing Indonesia from the periphery by strengthening the regions (Agenda 3) and increasing people's productivity and competitiveness in the international market (Agenda 9). To realise this agenda, the government's strategy includes developing centres of economic growth and encouraging accelerated development of economic growth centres, as the main engines of growth, in each island outside Java, especially in the economic corridor area, by exploring regional potentials and advantages as well as developing national connectivity to achieve a balance of development. The development of these growth centres is accompanied by strengthening connectivity between economic growth centres and between economic growth centres and locations of economic activity and their supporting infrastructure. Links between regional growth centres and surrounding areas need to be facilitated by integrated and well-connected and integrated regional infrastructure, especially road and transportation infrastructure, both sea and air transportation, including information and communication networks, and energy supply, so as to create national connectivity, both domestically and internationally (locally integrated, internationally connected). Efforts to develop connectivity include the construction of 1,000 km of toll roads.

The main objective of the construction of the Medan–Binjai toll road is to increase transportation efficiency and reduce congestion in the region. With the toll road, travel time between Medan and Binjai is shorter, vehicle operating costs are reduced and productivity increased. The Medan–Binjai toll road is an alternative route to shorten travel time, where previously the travel time from Binjai to Medan took 1 to 2 hours using the Medan–Binjai road (Tarigan, 2021), with the toll road taking approximately 25 minutes. As an alternative, it can reduce the burden on the Medan–Binjai road. Before the existence of the toll road, traffic jams occurred on Jalan Medan–Binjai almost every day, especially in the mornings (Zulhijar, 2018). In the mornings the road, which should have four lanes, becomes only three lanes due to market activity that uses the road as a place to sell. In addition, the toll road is also expected to increase connectivity with surrounding cities, open access to remote areas, and strengthen economic integration between Medan and Binjai. Thus, the construction of the Medan–Binjai toll road is expected to provide long-term benefits for economic growth, social progress, and the quality of life for the people in the region.

The Medan-Binjai toll road has been designated as a national strategic project (Presidential Decree No. 3 of 2016) and is expected to support regional development on the island of Sumatra and national economic growth (Presidential Decree No. 100 of 2014). As part of a national strategic project, the Government is making efforts to accelerate the construction of the Medan-Binjai toll road by providing support in the form of toll road concessions carried out by the Government, the implementation of which is assigned to BUMN and its funding (Presidential Decree No. 100 of 2014), support for licensing and non-licensing aspects , adjustments to the Spatial and Regional Planning Plan, provision of land and resolution of problems and obstacles (Presidential Decree No. 3 of 2016 as last amended by Presidential Decree No. 109 of 2020).

1.4.3. Project Cost and Source of Fund

The total investment value for the construction of the Medan–Binjai toll road is Rp3.21 trillion (BPJT, 2023), through the assignment to PT Hutama Karya (Persero). Taking into account the low level of financial feasibility of the Medan–Binjai toll road section, the concession was assigned to BUMN PT Hutama Karya (Persero) through Presidential Decree No. 100 of 2014 concerning the Acceleration of Toll Road Development in Sumatra as last amended by Presidential Decree No. 131 of 2022.

The funding scheme is through the assignment of SOEs to PT Hutama Karya (Persero) in which the government provides State Equity Participation (PMN) for the equity portion and the loan portion will come from domestic funding as well as the direct lending. Funds for land acquisition are fully borne by the central government through the Ministry of Public Works and Public Housing (KPPIP, 2015). The funding structure for this segment consists of 70% of PT Hutama Karya's equity (fulfilment of which is supported by State Investment/PMN) and 30% is a loan from PT Sarana Multi Infrastruktur (PT SMI) (KPPIP, 2016, 2017).

1.4.4. External and Internal Factors

1.4.4.1. External Factors

The identified external factors support the construction of the Medan–Binjai toll road are (i) the level of mobility of goods, services, and people; (ii) the level of smooth flow of the Medan–Aceh provincial road; (iii) the level of accessibility to the northern part of Sumatra; (iv) the efficiency of fuel use; (v) the level of support from the surrounding community; (vi) level of potential for disputes or lawsuits in the land acquisition process; (vii) interest level of investors and operators; (viii) increase in tourists; and (ix) job creation.

1.4.4.2. Internal Factors

The internal factors identified in the construction of the Medan–Binjai toll road are (i) deregulation and/or issuance of regulations to support the construction of the toll road; (ii) compliance with spatial planning and land use; (iii) support from the central government, provincial governments, and regency and/or city governments in financing; (iv) use of technology in toll road development; (v) timeliness in completing construction; (vi) toll road tariff costs; and (vii) level of harmony of toll road construction with environmental sustainability.

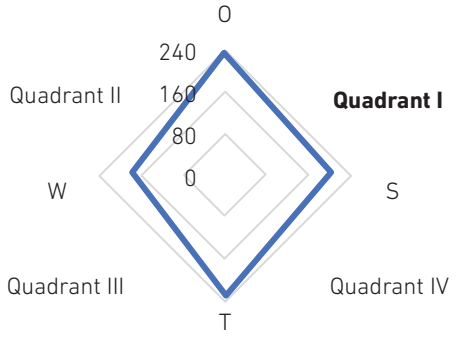
1.4.5. SWOT Analysis and Results

The construction of the Medan–Binjai toll road is one of the transportation infrastructure facilities built to support the development of the Medan–Binjai–Deli Serdang–Karo (Mebidangro) metropolitan area. The construction of this toll road is intended to support the traffic of goods and people between Medan and Binjai, it can be an alternative vehicle route to reduce the load on existing routes and facilitate access and improve connectivity. Ultimately the construction of this toll road will contribute to regional development and economic growth on the island of Sumatra (KPPIP, 2017).

To provide an overview of the possibility of achieving these objectives, a SWOT analysis was carried out by identifying strengths and weaknesses (internal factors) as well as opportunities and challenges (external factors). The SWOT analysis was carried out through a questionnaire to obtain the perceptions of various stakeholders: local government, academics, entrepreneurs, and the community. Perception is seen from two perspectives: reality and the level of importance, using a score of 1 to 6. Reality describes the respondent's perception of the facts observed or felt, where a score of 1 indicates a very bad perception while a score of 6 indicates a very good perception of the project. Importance describes how important each of the factors assessed is, where a score of 1 indicates that the perception is not very important, while a score of 6 indicates that the perception is very important to the project.

The results of the SWOT analysis show that the construction of the Medan–Binjai toll road has factors of opportunities (external) and weaknesses (internal) that are more dominant than factors of threats and challenges, as shown in Figure 3.13.

Figure 3.13. SWOT Analysis Result



Categories		Values
S	**Strengths**	**195.3179**
W	Weaknesses	176.2192
O	**Opportunities**	**230.9763**
T	Threats	209.8637

Source: Authors, 2023.

A summary of the three factors with the highest scores identified as strengths, weaknesses, opportunities and threats is presented in Figure 3.14. The observed factors are sorted based on the highest value of the average perceived reality and the importance of the respondents. The higher the score obtained, the better the respondent's perception of this factor.

Figure 3.14. SWOT Analysis Priority Matrix

Internal	***Strengths*** • There is deregulation/issuance of regulations to support the construction of the Medan-Binjai Toll Road • Compability with spatial planning and land use • The use of modern technology in the construction of the Medan-Binjai toll road	***Weaknesses*** • Timeliness in the construction of the Medan-Binjai toll road construction • Medan-Binjai toll road fees • The degree of harmony of toll road constrcution with enviromental sustainability
External	***Opportunities*** • The level of mobility of goods, services and people • The level of smooth flow of the Medan-Aceh provincial road after the existence of the Medan-Binjai toll road • Accessibility level to the northern part of Sumatra	***Threats*** • The level of potential for disputes or lawsuits in the land acquisition process • Interest level of investors/operators • Level of community support
	Positive	**Negative**

Source: Authors, 2023.

1.4.5.1. Main Challenges

External and internal factors identified as challenges in the construction of the Medan–Binjai toll road include:

a. Land Acquisition Process
   The construction of the Medan–Binjai toll road faced external challenges, including problems with land availability and the feasibility of toll road projects that are not fully commercial (Zuna and Retapradana, 2017). In accordance with PT Hutama Karya's report (2018), most of the toll road sections had challenges in the land acquisition process, such as land ownership disputes and disagreements overcompensation payments so that freed land tended to be spot-to-spot, not completed in one area so that the mobilisation of work was constrained.

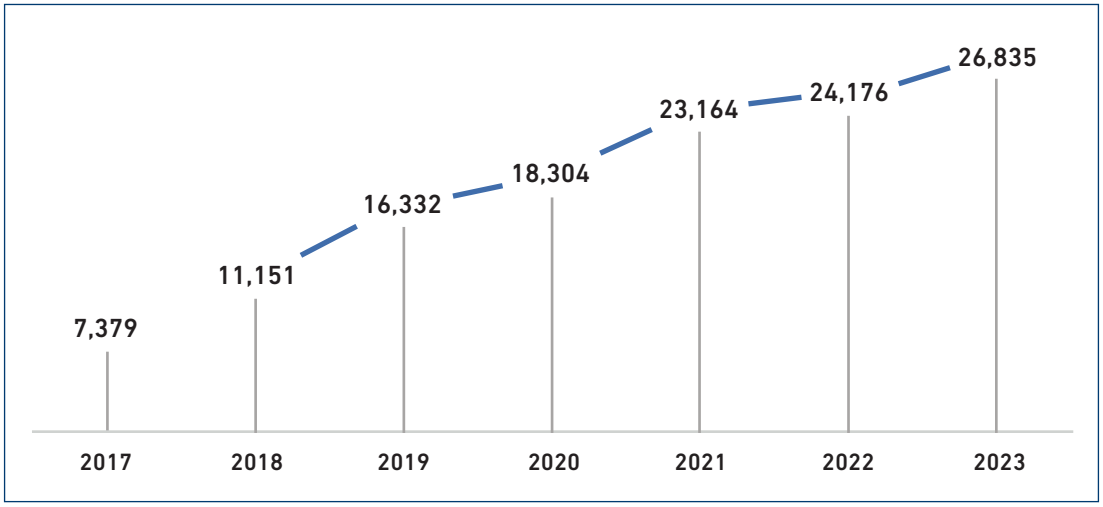
b. Toll Tariff
   Calculation of toll rates takes into account the ability of toll road users, so that it is not burdensome if calculated economically (Article 66 PP No. 15 of 2005; Riajaya, Orlando, and Samputra, 2019; Rangkuty, and Tarigan, 2022). The Medan–Binjai toll for sections 2 and 3 were set by the government at the time of operation in 2017 for class 1 vehicles an average of Rp971/km (processed from PUPR Ministerial Decree No. 804/KPTS/M/2017 of 2017). Based on the results of Panjaitan's research (2013), the public's ability to pay the toll rates (ATP) is Rp753.52/km (2013), if converted in 2017 taking into account the Medan City inflation rate in 2014–2017 (5.34%) (BPS, 2014–2017), then the ATP is Rp926.87/km. Based on these calculations, it shows that the toll road users' ability to pay is slightly below the toll rates set by the government.

c. Various geotechnical conditions
   JTTS has various geotechnical conditions ranging from soft soil, sand, peat, and rock so that special handling was required to be able to carry out construction (Hutama Karya, 2018). The development process passed through many special areas such as settlements, industrial forest areas, plantations, mines, and others so that special treatment and special communication procedures were needed that involved many stakeholders related to the acceleration of the construction of JTTS sections.

1.4.5.2. Main Benefits

Based on survey results and some research literature, the construction of the Medan–Binjai toll road as one of the infrastructure development areas for the urban area of Mebidangro, provides benefits to the people of Medan City, Binjai City, and the surrounding cities.

Figure 3.15. Daily Traffic Data for the Medan-Binjai Toll Road Year 2017-2023



Source: Tabulated from Ministry of Public Works and Housing, 2023.

a. Increase and accelerate the mobility of people and goods
   The use of the Medan–Binjai toll road can accelerate the mobility of people, goods, and services for the people of Binjai City, Medan City, and other communities. The travel time from Medan City to Binjai City and vice versa, which originally took 1 to 2 hours via the Medan–Aceh provincial road (Jalan Gatot Subroto), by utilising the Medan–Binjai toll road can be reached in approximately 25 minutes. The Medan–Binjai toll road also increases the mobility of people and goods. At the beginning of its operation in October 2017, the number of vehicles using the toll road was still 7,379 vehicles per day and in 2023 it will reach 26,835 vehicles per day, as shown in Figure 3.15. Since the start of operation, the number of vehicles using the toll road shows an average increase of 25.26% per year.

b. Improve accessibility
   The construction of the Medan–Binjai toll road is part of infrastructure development to support the metropolitan area known as Mebidangro. The results of research conducted by Lase (2019), the areas that experienced the greatest changes in the accessibility index due to the Medan–Binjai toll road were Binjai City (49%) and Deli Serdang Regency (29%).

c. Becoming an alternative to the Medan–Binjai vehicle route and vice versa, so as to reduce the burden on the existing lanes and reduce congestion on the Medan–Binjai arterial road (vice versa). Utilising the Medan–Binjai toll road as an alternative for Medan City residents who travel to Banda Aceh and vice versa can reduce congestion on the Medan–Binjai arterial road and vice versa. Girsang's research (2020) states that the traffic jams that occur in Medan City cause harm to road users, both in terms of time and wasted use of fuel. In terms of time, the loss of time due to traffic jams for motorcycles is 35.6 minutes per day, while the time loss for cars is 48.5 minutes per day. From the point of view of using fuel, wasteful fuel consumption for motorbike vehicles due to traffic jams every day is 0.189 litres/1,000 km/vehicle, whilst the amount of fuel wasted for cars is 0.95677 litres/1,000 km/vehicle. In absolute terms, congestion on several roads in Medan City, according to research results from Susanti and Magdalena (2017), the total cost of congestion on several roads in Medan City is around Rp85.36 million/day and Rp22.54 billion/year.

Table 3.3. National Economic Growth Rate, Province, City of Binjai, and East Coast Region from 2017–2020

Regency/City per Year	2017	2018	2019	2020
Langkat Regency	5.05	5.02	5.07	–0.86
Deli Serdang Regency	5.10	5.15	5.18	–1.78
Serdang Bedagai Regency	5.16	5.17	5.28	–0.44
Batu Bara Regency	4.11	4.38	4.35	–0.31
Asahan Regency	5.48	5.61	5.64	0.21
Lebuhanbatu Regency	5.00	5.06	5.07	0.09
North Lebuhanbatu Regency	5.11	5.20	5.15	0.27
South Lebuhanbatu Regency	5.09	5.27	5.35	0.80
Tanjung Balai City	5.51	5.25	5.20	–1.36
Tebing Tinggi City	5.14	5.27	5.15	–0.70
Medan City	5.81	5.92	5.93	–1.98
Binjai City	5.39	5.46	5.52	–1.83
Average East Coast Region	**5.16**	**5.22**	**5.24**	**–0.66**
Province of North Sumatra	**5.12**	**5.18**	**5.22**	**–1.07**

Source: BPS North Sumatra Province (2021).

d. The construction of the Medan–Binjai toll road will have an impact on the growth of economic activity in the areas through which the toll road passes. Tarigan's research (2021), shows that the construction of the Medan–Binjai toll road has changed economic conditions after the construction of the toll road including increased income, increased expenditure, ease of mobility, efficiency of travel time from home to work and increased employment. BPS data for North Sumatra Province in the RPJMD for Binjai City for 2021–2026, shows that the economic growth for Binjai City and Medan City in 2016–2019 is always higher than nationally and North Sumatra Province, as shown in Table 3.3.

Conclusion

The construction of the Medan–Binjai toll road began in 2015 and was fully completed in 2021 The Medan–Binjai toll road is part of the JTTS, not only connecting the cities of Medan and Binjai but also cities in North Sumatra Province and Aceh Province.

The construction of the Medan–Binjai toll road provides significant benefits for the people of Binjai City, Medan City, and the people of North Sumatra in general.

The SWOT analysis shows that factors that support the success of development include regulations to support the implementation of the Medan-Binjai Toll Road Development; compatibility with regional spatial planning and land use; and increased accessibility and the mobility of goods, services, and people. The inhibiting factors are the existence of disputes or legal claims in the land acquisition process and the accuracy of the completion time target for toll road construction.

The construction of the Medan–Binjai toll road has been able to increase and accelerate the mobility of people and goods from Medan City to Binjai City and vice versa, becoming an alternative access route from Medan City to Binjai City (and vice versa), thereby reducing the level of congestion on Medan–Aceh provincial roads, increasing the accessibility of the city of Binjai, and relatively higher economic growth for the City of Binjai and the City of Medan compared to surrounding cities.

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1.5. Manado–Gorontalo Connecting Road

1.5.1. Project Profile

The construction of the Manado–Gorontalo connecting road was part of a road infrastructure development programme that aimed to improve connectivity between the cities of Manado and Gorontalo. In addition, the construction of the connecting road was also expected to increase economic growth in northern Sulawesi by opening access to areas that were previously difficult to reach. By addressing disconnected road sections (dirt roads) and challenging elevation conditions that hinder smooth vehicle movement, it primarily targeted facilitating access to isolated areas like agricultural regions (cloves, paddy fields, nutmeg, corn, coconut plantations), fisheries, and tourism spots including Kema Beach, Abadi Beach, Tanjung Silar (North Sulawesi Province), Batu Barani Beach (Gorontalo Province) and Pulisan Beach as shown in Figure 3.16 The goal was to improve infrastructure to support business investments and overall accessibility in these areas and open new opportunities for economic and tourism development in the region.

Figure 3.16. Pulisan Beach Road Improvement

Source: Ministry of Public Works and Housing (MPWH), 2023.

Its status as a PSN is mandated from Presidential Regulation Number 3 of 2016 concerning the Acceleration of Implementation of PSNs, Presidential Regulation Number 58 of 2017 concerning Amendments to Presidential Regulation Number 3 of 2016 concerning Acceleration of Implementation of PSNs and Presidential Regulation Number 56 of 2018 Second amendment to Presidential Regulation Number 3 of 2016 concerning the Acceleration of Implementation of PSNs.

The Manado–Gorontalo national strategic project for the connecting road is a project under the Ministry of Public Works and Housing. The project is carried out by the National Road Implementation Agency for North Sulawesi Region (KPPIP, n.d.). The project is executed during the period from 2016 to 2022. The Manado–Gorontalo connecting road project has a different nature compared to Toll Roads. In the case of Toll Roads, cost calculations start from scratch, from the time the project doesn't exist yet until it is ready for use. For the connecting road project, prior to 2016, the road already existed, and costs had certainly been incurred for its construction. However, in terms of width and quality, improvements will be made. The cost calculation for the National Strategic Project (PSN) is calculated from 2016 to 2022.

1.5.2. Project Objectives

The objective of this project was to increase growth and equity in development in the context of community welfare and regional development (Ministry of Public Works and Public Housing, 2021). A well-constructed and smooth connecting road will improve efficiency, reduce logistic costs, and travel expenses, thereby contributing to the economic and social growth of both regions. It will create new investment opportunities and enhance the tourism potential of the area, particularly for the Likupang Special Economic Zone (KEK Likupang).

Figure 3.17. Widening of the Likupang Tourism Access Road

Source: National Road Implementation Agency for North Sulawesi Region (2023).

Referring to Figure 3.17 for the Likupang tourism access road that is located in North Minahasa Regency, technical specifications of the project involve road preservation and widening of a 6-kilometre stretch. The construction of the project started in 2019, which was also the year of its selection for construction. The areas affected by the project include Manado City, North Minahasa Regency, and Bitung City. As seen in the image, the access road prior to expansion appears rough, narrow, and lacks road signs and safety features. In contrast, after the expansion and being granted PSN status, the widened road is supported by facilities as per PSN standards, resulting in a faster and improved expansion process, as depicted in the image. With the completion of this road expansion, transportation and connectivity in the area improved significantly, offering enhanced access for tourists and investors to the KEK Likupang. Consequently, Likupang tourism can drive economic development, creating opportunities for socio-economic growth and well-being in the impacted regions.

1.5.3. Project Cost and Source of Fund

The implementing agency of the Manado–Gorontalo connecting road is a working unit of the National Road Implementation Agency for North Sulawesi Region, the Ministry of Public Works and Housing. Based on information obtained from Ministry of Public Works and Housing and the National Road Implementation Agency for North Sulawesi Region, the cost of constructing the Manado–Gorontalo connecting road was around Rp1.22 trillion, which came from APBN sources (see Table 3.4).

Table 3.4. PSN Manado–Gorontalo Connecting Road Cost

No	PSN support/works package	Unit	Length	Contract Value (Rp thousand)	Year	
					Start	Finish
	Manado – Gorontalo Connecting Road			1,219,737,915		
1	Preservation of Preventive Routine Maintenance for Jalan Girian-likupang-wori-manado	km	100.02	6,149,600	2016	2016
2	Widening of Girian-kema-rumbi Road (Continued MYC)	km	129.61	63,465,864	2015	2016
3	Preservation of Minor Rehabilitation for Airmadidi-bitung-girian-kema-rumbia-buyat Road	km	157.25	20,193,825	2016	2016
4	Preservation of Buyat-Molobog-Ongunoi Road	km	84.27	23,143,425	2016	2016
5	Preservation of Routine Maintenance of Ongunoi-Pinolosian, Matali-Torosik Road	km	133.33	5,661,750	2016	2016
6	Preservation of Kotamobagu-doloduo-molibagu-mamalia-taludaa Road	km	100.95	26,764,250	2016	2016
7	Routine Maintenance of Likupang – Wori Road	km	58.11	5,522,176	2017	2017
8	Preservation of Reconstruction of Rumbia - Buyat, Kema – Rumbia	km	129.61	7,314,019	2017	2017
9	Rumbia – Buyat Road Reconstruction	km		26,901,065	2017	2017
10	Preservation of the Buyat-Molobog-Ongunoi Road Rehabilitation	km	84	6,380,228	2017	2017
11	Preservation of the Ongunoi-pinolosian-molibagu Road Reconstruction	km	133	34,162,019	2017	2017
12	Maintenance of Mammalia-taludaa Roads and Bridges (Bts. Prov. Gorontalo)	km	58.88	6,657,384	2017	2017

No	PSN support/works package	Unit	Length	Contract Value (Rp thousand)	Year	
					Start	Finish
13	Preservation of Routine Maintenance of Wori - Bts.Kota Manado Road, Girian – Likupang	km	59.43	4,274,988	2018	2018
14	Preservation of Routine Maintenance of Likupang - Wori Road	km	58.11	7,576,303	2018	2018
15	Preservation and Rehabilitation of Kema - Rumbia – Buyat Road	km	129	4,811,002	2018	2018
16	Maintenance and Rehabilitation of PPK 09 Road	km		4,600,191	2018	2018
17	Replacement of Tumpaan Bridge	m	35	11,333,397	2018	2018
18	Preservation and Reconstruction of Buyat-molobog-onggunoi Road	km	84.27	25,773,430	2018	2018
19	Handling of Landslides in Buyat-molobog, Molobog-onggunoi	m		32,915,526	2018	2018
20	Replacement of Kayumoyondi Bridge	m	12	4,942,616	2018	2018
21	Preservation and Reconstruction of Onggunoi-pinolosian-molibagu-matali-torosik Road	km	133.33	47,795,326	2018	2018
22	Preservation, Rehabilitation, and Widening of Molibagu-mamalia-taludaa-doloduo Road	km	100.95	38,433,134	2018	2018
23	Replacement of Pakuku II Bridge	m		7,755,647	2018	2018
25	Preservation of Bts. Kota Manado - Wori – Likupang Road	km	72.56	10,300,352	2019	2019
26	Preservation of Girian - Kema - Rumbia – Buyat Road	km	129.61	16,486,666	2019	2019
27	Replacement of Maen I Bridge	m	10	2,464,280	2019	2019
28	Preservation of Girian (Bitung) - Likupang Road	km	44.98	58,211,985	2019	2019
29	Widening of Likupang Tourism Access Road	km	6	45,850,854	2019	2019
30	Preservation of Buyat - Molobog – Onggunoi Road	km	84.77	26,202,916	2019	2019
31	Preservation of Onggunoi - Pinolosian - Molibagu - Matali – Torosik Road	km	133.3	30,151,599	2019	2019
32	Preservation of Molibagu - Mamalia - Taludaa - Doloduo Road	km	100.95	31,500,000	2019	2019
33	Handling of Mamalia - Taludaa Landslide (Bts. Gorontalo Province)	m	85	3,619,146	2019	2019
34	Preservation of Manado City Border - Wori - Likupang Road	km	75.01	4,971,638	2020	2020

No	PSN support/works package	Unit	Length	Contract Value (Rp thousand)	Year	
					Start	Finish
35	Preservation of Girian Road (Bitung) - Likupang	km	42.92	20,524,050	2020	2020
36	Marinsow Bridge Replacement	m	13	4,477,700	2020	2020
37	Pulisan beach road improvement	km	2.8	35,860,921	2020	2020
38	Preservation of Girian - Kema - Rumbia - Buyat Road	km	129,64	13,581,502	2020	2020
39	Kaliakel Bridge Replacement	m	25	6,872,891	2020	2021
40	Preservation of Buyat - Molobog - Onggunoi Road	km	82.06	19,439,289	2020	2020
41	Tutuyan Bridge Replacement	m	20	3,934,576	2020	2021
42	Handling of Buyat-Molobog Landslide	m	120	1,087,687	2020	2020
43	Preservation of Onggunoi - Pinolosian - Molibagu - Matali - Torosik Road	km	130.38	14,997,884	2020	2020
44	Handling of Matali-Torosik and Onggunoi-Pinolosian Landslides	m	603	830,481	2020	2020
45	Preservation of Doloduo - Molibagu - Mamalia - Taludaa Road (Bts. Gorontalo Province)	km	98.34	12,764,394	2020	2020
46	Handling of Doloduo-Molibagu-Mamalia Landslide	m	1955	1,066,947	2020	2020
47	Handling of Sinandaka I, Sinandaka II Bridge Approaches and Pakuku I Bridge	m	110	1,669,968	2020	2020
48	Preservation of Roads Within Manado City, Kairagi - Mapanget, Manado City Border - Wori - Likupang, Access Road to Liwas Terminal	km	257.59	10,459,539	2021	2021
49	Road Preservation Jln. Girian (Bitung) - Likupang, City Border Manado, Ring Road, Kairagi - Airmadidi - Kauditan - City Border Bitung, Within Bitung City	km	117.33	31,063,880	2021	2021
50	Road Preservation Jln. Maesa (access to Liwas Terminal) (Manado), City Border Manado, Ring Road, Kairagi - Airmadidi - Kauditan - City Border Bitung, Within Bitung City (MYC Extension)	km	2.89	10,152,307	2020	2021
51	Road Preservation Girian - Kema - Rumbia - Buyat	km	129	8,287,637	2021	2021
52	Road Preservation Buyat - Molobog - Onggunoi	km	80.26	5,742,696	2021	2021

No	PSN support/works package	Unit	Length	Contract Value (Rp thousand)	Year	
					Start	Finish
53	Road Preservation Buyat - Molobog - Onggunoi (MYC Extension)	km	4.3	14,511,820	2020	2021
54	Road Preservation Onggunoi - Pinolosian - Molibagu - Matali - Torosik	km		19,082,000	2021	2021
55	Landslide Onggunoi - Pinolosian; Matali - Torosik	m	220	53,010,556	2021	2021
56	Road Preservation Doloduo - Molibagu - Mamalia - Taludaa (Border of Gorontalo Province)	km	98	30,592,397	2021	2021
57	Permanent Natural Disaster Handling of Sinandaka CS Bridge (MYC)	m	130	32,392,890	2021	2022
58	Road Preservation Within Manado City, Kairagi - Mapanget, City Border Manado - Wori - Likupang, Access Road to Liwas Terminal	km	25.92	10,831,152	2022	2022
59	Road Preservation Jln. Girian (Bitung) - Likupang, City Border Manado, Ring Road, Kairagi - Airmadidi - Kauditan - City Border Bitung, Within Bitung City	km	15.10	7,079,018	2022	2022
60	Road Preservation Wori-Likupang-Girian Road, W. Monginsidi Bitung (SBSN)	km	112	106,522,316	2022	2024
61	Road Preservation Girian - Kema - Rumbia - Buyat	km	57.82	13,720,097	2022	2022
62	Preventive Treatment of Rumbia - Buyat Road (Slurry Seal) (E-catalog)	km	5.79	2,970,938	2022	2022
63	Road Preservation Buyat - Molobog - Onggunoi	km	13.40	15,020,445	2022	2022
64	Slope Protection with Stone Embankment on Buyat-Molobog-Onggunoi Road (Self-managed)	km	1.5	1,350,000	2022	2022
65	Road Preservation Onggunoi - Pinolosian - Molibagu - Matali - Torosik	km	38.30	12,857,810	2022	2022
66	Road Rehabilitation Onggunoi-Pinolosian; Matali-Torosik; Buyat-Molobog-Onggunoi (E-catalog)	km	5.75	16,968,400	2022	2022
67	Road Preservation Doloduo - Molibagu - Mamalia - Taludaa Road (Border of Gorontalo Province))	km	35.48	27,727,126	2022	2022

km = kilometre; m = metre.

Source: Ministry of Public Works and Housing (2023).

Based on information obtained from the Ministry of Public Works and Housing and the National Road Implementation Agency for North Sulawesi Region, for the Manado–Gorontalo connecting road spanning 566 km, from 2016 to 2022, there were 67 projects with a total funding value of Rp1.219 trillion. The funding source for these 67 projects came from the APBN.

1.5.4. External and Internal Factors

In order to ascertain the perception regarding the development of the PSN, a survey was conducted amongst individuals from within and outside the organisation. We collected data from stakeholders to measure respondents' perspectives. The participants include the central and local governments, GCA, IBE, and the local community. The internal party respondent is the project manager, namely the working unit of the North Sulawesi National Road Implementing Agency. Respondents were from external parties, such as academics from Sam Ratulangi University in Manado, business actors from the city of Manado, and the Manado–Gorontalo connecting road users.

1.5.4.1. External Factors

The external challenges encompass non-compliance with the agreement's absorption terms (as stipulated in the cooperation agreement between GCA and IBE) and a lack of commitment from the offtaker in establishing a funding distribution network (downstream). Additionally, several road sections and segments that had extremely elevated contours required extra attention and there were land problems in several locations.

The identified external factors are the level of support from the local community for the PSN; the level of interest of entrepreneurs and/or the community in the utilisation of the project; level of opportunities for private and/or community businesses to become more advanced with the development of this National Strategic Project; opportunities in job creation; the impact level of the National Strategic Project on the opening of access for other areas around the project location; opportunities to boost tourism; opportunities for increasing state and regional revenues; reduction in the level of congestion and travel time from Manado to Gorontalo; reduction in the level of fuel consumption required to reach the destination; the increased level of risk of traffic accidents; acceleration in the rate of mobility of goods, services, and people; the opportunity to increase land prices in the area traversed and its surroundings; the level of impact of the National Strategic Project on the emergence of new businesses for the community; the timely disbursement of funding from investors in providing funds for the project; and the level of potential disputes or lawsuits in the implementation process.

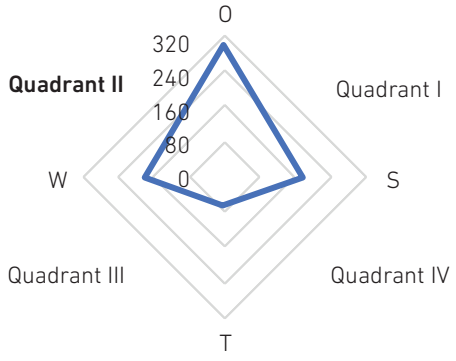
1.5.4.2. Internal Factors

The identified internal factors are the suitability of the location for a connecting road; financial support from central and/or regional governments for the implementation of the National Strategic Project; level of use of modern technology in the development of the project; level of concern of the National Strategic Project toward environmental sustainability; deregulation and/or issuance of regulations to support the implementation of the project; compatibility of the development of the project with regional spatial planning and land use; availability of infrastructure to supported the National Strategic Project, such as connecting roads; the level of ease of licensing in the process of preparing for the National Strategic Project implementation; level of technical ease of construction; timeliness of the National Strategic Project development; the physical quality level of the National Strategic Project; adequacy of supporting facilities for the project (signage, markings, rest areas, etc.); and increased felling of trees, thereby affecting the production of oxygen and increasing pollution.

1.5.5. SWOT Results and Analysis

To complete the writing related to the Manado–Gorontalo connecting road, we present a SWOT analysis of the project (Figure 3.18).

Figure 3.18. PSN Manado–Gorontalo Connecting Road SWOT Analysis Results



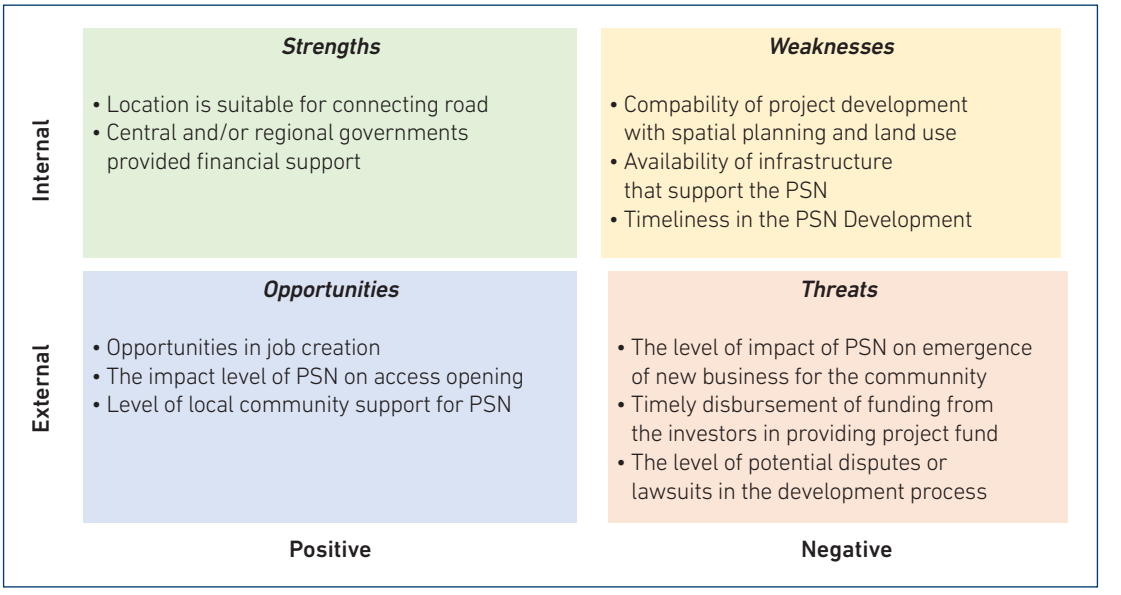
	Categories	Values
S	Strengths	179.25
W	**Weaknesses**	**193.08**
O	**Opportunities**	**313.75**
T	Threats	65.92

Source: Authors, 2023.

Based on the results of the SWOT analysis in Figure 3.18, the Manado–Gorontalo Connecting Road is in quadrant II, for which the value of the weaknesses is greater than the value of the strengths, and the value of the opportunities/potential is greater than the value of the threats/challenges. In this case, the weakness–opportunity (W–O) strategy that can be applied to support this condition is supporting internal weaknesses to take advantage of external opportunities. From the SWOT analysis, it is evident that the suitable strategy for the Manado–Gorontalo connecting road is the weakness–opportunity strategy. This strategy can be implemented by capitalising on existing opportunities whilst addressing existing weaknesses.

A summary of the three factors with the highest scores identified as the strengths, weaknesses, opportunities and threats are presented in Figure 3.19. The observed factors are sorted based on the highest value of the average perceived reality and the importance of the respondents. The higher the score obtained, the better the respondent's perception of the factor.

Figure 3.19. SWOT Analysis Priority Matrix



Source: Authors, 2023.

1.5.5.1. Main Challenges

The challenges of this project include the availability of supporting infrastructure for the PSN, such as connecting roads as access to the PSN, adequacy of supporting facilities for the PSN project (signage, markings, and rest areas), alignment of PSN development with regional spatial planning and land use, and the level of physical quality of the PSN.

There are two optional routes to access Gorontalo from Manado. One is via the northern route and the other is through the southern route. The northern route is an old route, and it is also an old distribution route as it passes through cities or areas with large populations. Unlike the northern route, the southern route is less familiar and passes through an area that is still only slightly populated. Therefore, it is rare for people from Manado to go to Gorontalo via the southern route. Moreover, the southern route is longer in length than the northern route. Hopefully, since this PSN has opened the southern access route from Manado to Gorontalo, the cities or settlements that are passed through will become more populated and there will be an even distribution of the development process.

The existence of the PSN, which passes through the southern route, is part of the process of equitable development and opens up opportunities for the community to increase their business. Agricultural and fishery products will find it easier to transport goods with the opening of this access road. Tourism destinations, such as Likupang Beach and Tomini Bay, will gain tourist traffic. Of course, support from the central and regional governments is needed so that these tourist areas can develop better and catch up with the long-known fame of Bunaken. Tourism areas require supporting facilities in order to develop properly. Tourism is also a locomotive in the development process and is able to increase the level of people's welfare.

1.5.5.2. Main Benefits

The external factors presenting opportunities for this PSN include the level of support from the local community; interest of entrepreneurs and the community in utilising the PSN; the private sector and/or the community's potential to advance with the development of the PSN; employment generation opportunities through the PSN; impact of the PSN on opening access to other surrounding areas; potential increase in tourism due to the PSN; contribution of the PSN to national and/or regional revenue enhancement; reduction in traffic congestion and the travel time between Manado and Gorontalo; decreased fuel consumption required to reach the destination; acceleration of goods, services, and people mobility; and the potential for increasing land prices in the areas traversed and nearby. The combination of weaknesses and opportunities, or the weakness–opportunity strategy, focuses on addressing internal weaknesses to take advantage of external opportunities.

As a corridor across the middle of the island of Sulawesi, the Manado–Gorontalo connecting road, which previously had several unconnected segments (dirt roads), is well connected and the surface layer is asphalt. This means that there is a significant difference – where before the southern route could not be accessed because some roads were still dirt roads, with this project, there is an alternative from Manado to Gorontalo via the southern route.

There are several bridges that had an initial width of only 4.5 metres and now are 7 metres in width (Tutuyan Bridge, Kaliakel Bridge, and Marinsow Bridge). This adds comfort to road users so that they can still pass each other when crossing the bridge without having to take turns, which can hold up the pace of travel.

Initially, there were frequent landslides at several points on the road, but now there will not be any as they have been handled. This condition adds comfort to users of the Manado–Gorontalo connecting road.

Improving connectivity with better and more efficient connecting roads, accessibility between Manado, Gorontalo, and surrounding areas can be sped up and facilitated. This will facilitate the mobility of people and goods, as well as open up new opportunities for business and industrial development. The benefits of National Strategic Projects are felt by the community. The following is the opinion of Liny, head of the Manado City Bapelitbangda regarding the National Strategic Project for Manado–Gorontalo connecting road:

> 'In my opinion it is equal access. Equal distribution of access because if we look at the distance traveled and time saved, with the toll road from Manado to Gorontalo it will actually be really fast via Bitung. If you go from Bitung to the good beaches, Kora 2, Ranowangko – that is pretty good. In my opinion, this is equal access. Access will be open because there is Likupang, Likupang National Strategic Project. It is faster if you go through the middle. In fact, there are already wide open roads, right? From North Minahasa, the access routes to Likupang are wide. The benefits of connecting roads can increase economic growth. The Manado–Gorontalo Connecting road can be a catalyst for economic growth in the region. The construction of connecting roads can open up access to areas that were previously difficult to reach, thereby opening up new opportunities for business and industrial development. In addition, connecting roads can accelerate the distribution of goods and services, by reducing costs or logistics, and increasing product competitiveness.'

One of the attractions of Northern Sulawesi is its tourist destinations. A tourism spot in northern Sulawesi which is famous is Bunaken. However, besides Bunaken there are several other destinations that are easy to reach with very good views, such as Likupang Beach. The route from Manado to Likupang with the existence of this PSNt will be much more comfortable with wide roads that are easy for cars to pass by. Around the beach area there are many guest houses with the same design. It seems that this is also assistance from the government so that tourists get the choice of where to stay if they want to enjoy Likupang Beach tourism. Likupang Beach can be reached in about 90 minutes from the city of Manado. There are not many hotel options around the location, but tourists can stay in guest houses managed by local residents. Tourists can enjoy the beautiful beach from the hills around the beach and interact with residents around the guest houses.

The Manado–Gorontalo connecting road project is a connectivity project, which aims to link two provincial capitals. This project seeks to maintain or even enhance economic growth, with the hope of boosting the gross regional domestic product (GRDP). The explanation in Table 3.5. is related to the GRDP of Manado City.

Table 3.5. GRDP and Per Capita GRDP of Manado City, 2018–2022

Details	2018	2019	2020	2021	2022
GDRP (Rp billion)					
At current price	34,200.43	37,386.74	36,618.40	39,531.00	43,920.44
At constant price 2010	24,126.54	25,585.61	24,778.18	26,053.89	27,523.56
Per Capita GRDP (Rp Thousand)	78,189.66	86,217.08	81,029.99	87,229.86	96,612.09
At constant price 2010 (%)	55,863.99	59,002.65	54,829.16	57,491.02	60,543.76
Growth					
Per Capita GRDP at constant price 2010	6.22	5.62	-7.07	4.85	5.31
Total population (person)	431,880	433,635	451,916	453,182	454,606
Growth (%)	0.41	0.41	4.22	0.28	0.37

GRDP = gross regional domestic product.

Source: Manado City Central Statistics Agency (2023).

GDRP can be used as a measure of 'productivity' because it demonstrates the region's ability to generate domestic products, which are calculated through three approaches: value-added, expenditure, and income approaches. From the GRDP expenditure data series, several measures related to GDRP and other supporting variables (such as households and the labour force) can be derived. For instance, to assess the level of equality, the per capita GRDP data can be examined (BPS Manado City Central Statistics Agency, 2023).

Conclusion

Roads as part of the national transportation system have an important role, especially in supporting the economy, social, and cultural development, as well as the environment. They are developed through a regional development approach to achieve balance and equal development amongst regions, to form and strengthen national unity for defence and national security, and to establish spatial structures to realise national development goals. The Government of the Republic of Indonesia, through the Ministry of Public Works and Housing, is constructing several infrastructure projects in the provinces of Gorontalo and North Sulawesi to support the improvement of local communities' welfare. The availability of infrastructure serves as a fundamental means of providing services to the community in supporting decent, productive, and sustainable development. The direction of infrastructure development policy aims to accelerate national economic recovery. Essentially, whatever the government does, its main goal is to create job opportunities to reduce unemployment and poverty rates. The 566-kilometre connecting road between Manado and Gorontalo is part of a national strategic project. This project connects the two provincial capital cities through the southern route. Previously, the flow of goods mainly passed through the northern route, and with the opening of the southern route, it provides additional options for the flow of goods. Moreover, this project provides access to the population living along this connecting road. Based on the SWOT analysis, the suitable strategy for the Manado–Gorontalo connecting road is the weakness–opportunity strategy. This strategy focuses on weaknesses and opportunities, which means the organisation concentrates on improving internal weaknesses to capitalise on external opportunities.

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1.6. Kalibaru Terminal

1.6.1. Project Profile

The Kalibaru Terminal project at Tanjung Priok Port, also known as the New Priok Container Terminal (NPCT), is a development project for the port. It is located at Jalan Terminal Kalibaru Raya, Cilincing, North Jakarta, Jakarta. This project was triggered by the capacity limitation of Tanjung Priok Port to accommodate the growth of logistics cargo flow, leading to congestion. The demand for container services at the port is continuously increasing, in line with Indonesia's economic growth. This demand includes cargoes originating from and destined for Jakarta, West Java, and Banten.

Recognising the needs and opportunities, PT Pelindo II initiated the expansion of container terminals in the Tanjung Priok Port area. As a result, the government, through Presidential Regulation No. 36 of 2012, assigned PT Pelabuhan Indonesia II (Persero) to construct and operate the Kalibaru Terminal at the port (Duffield, 2019). PT Pelabuhan Indonesia II (Persero), commonly referred to as PT Pelindo II, is a state-owned enterprise with a specialised focus on port operations and management. As one of the leading port operators in Indonesia, PT Pelindo II has played a pivotal role in facilitating the nation's maritime trade and logistics landscape. On 1 October 2021, PT Pelabuhan Indonesia I (Persero), PT Pelabuhan Indonesia III (Persero) and PT Pelabuhan Indonesia IV (Persero) were merged into PT Pelabuhan Indonesia II (Persero) concurrently accompanied by a name transformation to PT Pelabuhan Indonesia (Persero), abbreviated as Pelindo (PT Pelabuhan Indonesia [Persero], 2021).

Subsequently, based on Presidential Regulation No. 3 of 2016 regarding the Acceleration of National Strategic Project Implementation, the Kalibaru Terminal project was designated as one of the National Strategic Projects (PSN). The Kalibaru Terminal's PSN designation holds immense importance due to its strategic position along global trade routes and pivotal role in international trade. The PSN status accelerates its development, enhancing capacity, efficiency, and connectivity. The PSN status validates the Kalibaru Terminal's role in trade, economic growth, sustainable infrastructure, and operational efficiency, aligning with national and regional goals.

Starting in 2012, the construction and operation of the project were carried out in accordance with the provisions of laws and regulations, the Master Plan of the Tanjung Priok Port, and the technical design specified by the Ministry of Transportation. The Long-Term Master Plan for the Development of the Kalibaru Terminal accommodates the construction of the following terminals stated in Table 3.6.

Table 3.6. Terminals Accommodated in the Long-Term Master Plan

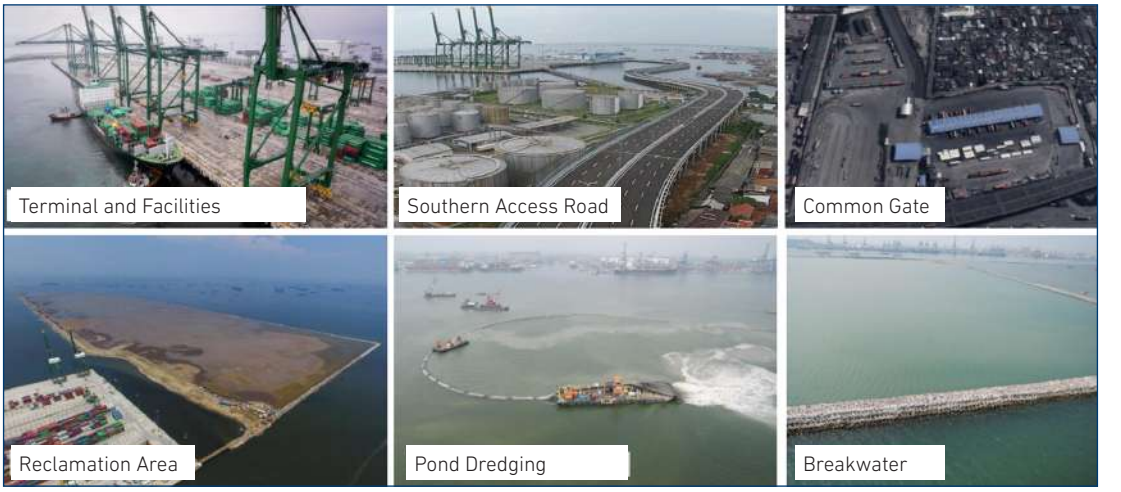
Terminal	Type of Product	Capacity	Draft	Terminal Length
Container Terminal 1	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 2	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 3	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 4	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 5	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 6	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 7	Container	1,500,000 TEU/year	16.0 m	800 m
Product Terminal 1	Oil Product	500,000 m^3	19.0 m	800 m
Product Terminal 2	Oil Product	500,000 m^3	19.0 m	800 m

m = metre, m^3 = cubic metre, TEU = twenty foot equivalent unit.

Source: PT Pelabuhan Indonesia (Persero) (2023).

From the Long-Term Master Plan, it is noteworthy that only Phase 1 of the project has been designated as part of the PSN. This project was undertaken to accommodate Container Terminal 1, Counter Terminal 2, Counter Terminal 3, Product Terminal 1, and Product Terminal 2. The development of Phase 1 was carried out in two stages, Phase 1A and Phase 1B. The construction of Phase 1A aimed to build Container Terminal 1 (CT 1), currently known as NPCT 1, as depicted in Figure 3.20. The Phase 1A project commenced in December 2012 and has been in operation since August 2016. According to data from Pelindo, the completed construction of Kalibaru Terminal Phase IA, NPCT1, includes a land area of approximately 32 hectares and a capacity of 1.5 million twenty-foot equivalent units (TEU) per year. The total quay length is 850 metres with a draft of 16 metres lowest water springs (LWS). The Phase 1B project is still ongoing. Upon the completion of Phase 1A and 1B development, the capacity of the container terminal in Tanjung Priok is expected to increase by 4.5 million TEUs per year, and the capacity of the product terminal is expected to increase by 10 million m^3 per year.

Figure 3.20. Terminals Accommodated in Development Phase 1



Source: PT Pelabuhan Indonesia (Persero), 2023.

The Long-Term Master Plan also includes the development of supporting infrastructure, such as toll roads to provide access from the eastern side of the port, as well as ensuring the supply of electricity, drinking water, and other water resources, and guaranteeing the disposal of wastewater and waste, which are appropriate to support and facilitate the expansion of the port.

As conveyed in the Press Release by the Coordinating Ministry for Economic Affairs of The Republic Of Indonesia, dated 8 December 2016, a total of 16 PSNs were officially announced as completed and subsequently removed from the list of designated PSNs. The Kalibaru Terminal was included in this group.

1.6.2. Project Objectives

Congestion, as defined by Widiyati and Ridwan (2014), refers to a situation where cargo or ships cannot enter or exit from warehouses or ports smoothly due to an unbalanced flow of goods. This congestion disrupts the national economy as it hinders the flow of goods. The Kalibaru Terminal project is aimed at enhancing the capacity of Tanjung Priok Port to support national logistics distribution. The development of the Kalibaru Terminal is expected to accommodate the growth in container throughput and cargo traffic in Tanjung Priok, catering to vessels with capacities exceeding 10,000 TEUs (PT Pelabuhan Indonesia II [Persero], 2016). This project also intends to address the demand for goods movement in the western part of Java, unlock the capacity of Tanjung Priok Port, attract foreign and domestic investments, and reduce the logistic costs associated with port services by minimising waiting time for cargo vessels.

The Kalibaru Terminal project represents the largest port construction project in Indonesia aimed at significantly strengthening the country's logistics chain. During the inauguration of the Kalibaru Container Terminal on Tuesday, 13 September 2016, President Joko Widodo of the Republic of Indonesia expressed the hope that the dwelling time at Tanjung Priok Port could be reduced to 2.5 days or even 2.2 days. The President aspired for this achievement to match that of neighbouring Singapore, which achieved a dwelling time of 1.5 days in early 2016 (Anita and Asmadewa, 2017). Dwelling time is the duration calculated from the unloading of imported container goods from the transport facility until the goods leave the port. When compared to several countries in Asia, the dwelling time at Tanjung Priok Port remains high. Based on data collected from March to September 2014, the average dwelling time at Tanjung Priok reached 6 days, while at Leam Chabang (Thailand) it was 5 days, and at Tanjung Lepas (Malaysia) it was 3 days, whereas Hong Kong and Singapore had already achieved less than two days (Ginting et al., 2015).

According to sources from Pelindo, the designation of the Terminal Kalibaru project as a National Strategic Project (PSN) has propelled the acceleration of its completion. This is attributed to the assurance of resolving both permit-related and non-permit-related obstacles, as well as political security guarantees.

1.6.3. Project Cost and Source of Fund

According to data from Pelindo, the overall construction of the Kalibaru Terminal Phase IA incurred a cost of Rp9.09 trillion. This funding was allocated for the construction of the quay, infrastructure, supporting access roads, and dredging of the basin. In accordance with the provisions of Presidential Regulation No. 36 of 2012, the funding for the construction and land acquisition of the Kalibaru Terminal was fully sourced and facilitated by Pelindo, without involving the state budget (APBN). To meet the financial need, Pelindo II utilised the mechanism of global bonds (Duffield, 2019). A global bond instrument was chosen as financial sources since it provides the issuer with access to a larger investor from various countries or regions.

1.6.4. External and Internal Factors

To assess the expected benefits and to identify the challenges and opportunities for future development, a survey was conducted through a questionnaire with various stakeholders. The total number of respondents was nine, consisting of (i) government and project implementers from the Tanjung Priok Customs Office and Pelindo, (ii) academics, (iii) the private sector and entrepreneurs, and (iv) the local community directly affected by the terminal's construction. Perceptions were examined from two perspectives: importance and reality, using a scoring system ranging from 1 to 6. The importance perception represents the significance of each

assessed factor, with a score of 1 indicating a perception of insignificance, whilst a score of 6 indicates a perception of high importance. The reality perception reflects respondents' views on observed or perceived facts, with a score of 1 indicating a perception of very poor, whilst a score of 6 indicates a perception of excellent.

The questionnaire addressed specific factors related to the development of Kalibaru Terminal, categorised into internal and external factors. These factors were obtained from prior research and secondary data related to the terminal development. Factors within the government's control were classified as internal factors, whilst factors beyond the government's control were categorised as external factors.

1.6.4.1. External Factors

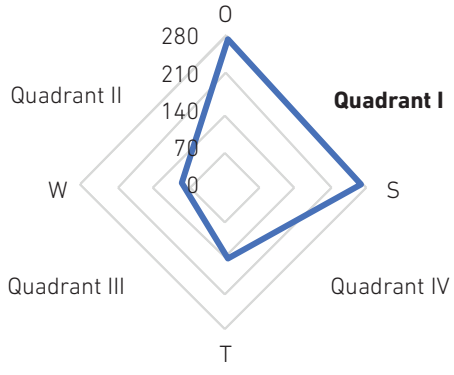
Based on the initial research conducted on secondary data, the external factors include: community support for project development (E_1); investor interest in the project (E_2); road accessibility between the terminal and industrial areas (E_3); impact on increasing port capacity (E_4); impact on operational cost savings in port operations (E_5); impact on smooth flow of goods in the port (E_6); impact on reducing dwelling time (E_7); impact on increasing land value around the port (E_8); impact on smooth traffic flow around the port (E_9); increase in export and import activities (E_{10}); impact on job creation (E_{11}); impact on improving community welfare (E_{12}); impact on increasing national and/or regional income (E_{13}); timely disbursement of financing from investors (E_{14}); availability of land for project development (E_{15}); and potential disputes or legal claims related to the project (E_{16}).

1.6.4.2. Internal Factors

Meanwhile, the identified internal factors include supportive regulations for project implementation (I_1); project location alignment with regional spatial planning and land use (I_2); availability of infrastructure supporting the project (I_3); appropriate appointment of project executor (I_4); support from the central and/or regional government in project financing (I_5); opportunities for private or public participation as project investors ($_6$); ease of gaining permit for project implementation (I_7); smooth technical construction of the project (I_8); utilisation of modern technology (I_9); timely project completion (I_{10}); physical project quality (I_{11}); project's commitment to environmental sustainability (I_{12}); and sufficiency of supporting facilities for the terminal (I_{13}).

1.6.5. SWOT Results and Analysis

Figure 3.21. SWOT Analysis Result



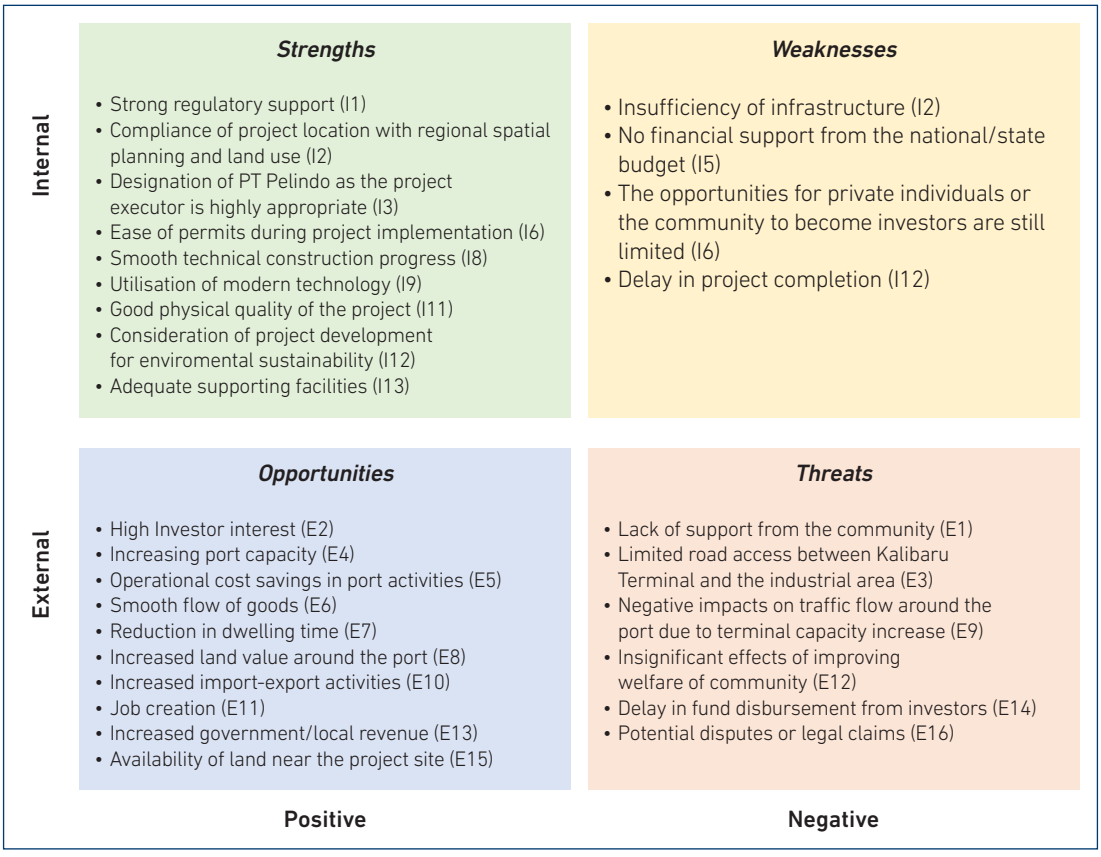
Categories		Values
S	**Strengths**	**248.408**
W	Weaknesses	89.222
O	**Opportunities**	**266.710**
T	Threats	144.358

Source: Authors, 2023.

The initial data obtained from respondents' perceptions regarding the internal and external factors mentioned above were subsequently subjected to analysis using the SWOT analysis method. This analysis was conducted to clearly map out the strengths, weaknesses, opportunities, and threats inherent in this project. By multiplying the scores obtained from the perceptions of importance and reality for each factor, a score was derived, indicating which factors are dominant in the development of this project. The outcome of the SWOT analysis revealed that the PSN Kalibaru Terminal development project falls within Quadrant 1, as it exhibits a greater dominance of opportunities (O) and strengths (S) in comparison to threats (T) and weaknesses (W). The results of this analysis are depicted in Figure 3.21.

To provide a clearer overview, Figure 3.22 presents a matrix illustrating the mapping of factors identified as strengths, weaknesses, opportunities, and threats.

Figure 3.22. SWOT Analysis Matrix



Source: Authors, 2023.

1.6.5.1. Main Challenges

Amongst the 16 external factors, six are identified as challenges (T), whilst the remaining are opportunities (O). The six challenges include the support from the surrounding community regarding the construction of the terminal. Initially, local fishers were concerned that the development would impact their livelihoods along the coastline of the port. Another challenge is the insufficient road access connecting the terminal to industrial areas (E3), resulting in traffic congestion around the port (E9). Currently, the entrance road to NPCT1 only has one access point, namely the southern access road. This road is still connected to the common gate access road, which serves as the entrance to several other terminals in the port area. This is the main factor contributing to congestion. However, this challenge has been mitigated with the construction of the new eastern access road (NPEA), as shown in Figure 3.23. NPEA will be connected to the Cilincing–Cibitung toll road, linking the Cikarang industrial area with Tanjung Priok Port, which

has been operational since 2023. With the NPEA, which is targeted to be operational by the end of 2024, the access road to Kalibaru Terminal will no longer have to pass through the main entrance of the port, thus alleviating congestion.

FIgure 3.23. Tanjung Priok Port with NPEA Development

NPEA = new eastern access road.

Source: Map data ©2021 Google in Source: PT Pelabuhan Indonesia (Persero) (2023).

Behind these challenges, Kalibaru Terminal still possesses numerous opportunities to function in line with its development objectives. Amongst the opportunities it holds is the high interest from investors (E2), particularly in meeting the supra-structural operational needs of the terminal. Currently, the terminal's operations are managed by PT NPCT1, a company owned by four shareholders: Pelindo, Mitsui & Co., Ltd., PSA International Pte Ltd, and Nippon Yusen Kabushiki Kaisha (NYK Line).

Several other opportunities include the increasing port capacity (E4), cost-saving in port operational expenses (E5), reduction in dwelling time (E7) leading to the smooth flow of goods (E6), and a boost in import–export activities (E10). Prior to 2016, the container throughput volume at Tanjung Priok Port was approximately 7,000,000 TEU per year. With the completion of the Kalibaru Terminal NPCT1 construction, the capacity of the port has risen to 8,500,000 TEU per year. This capacity enhancement is expected to mitigate the risk of congestion due to the high growth of container traffic at the port. Moreover, the port is presently capable of accommodating

large vessels above 10,000–15,000 TEU with a draft of 16 metres LWS, eliminating the need for export–import vessels to make stopovers in Singapore (Padliansyah, 2019). This improvement positions the terminal as the 'Port of Choice' for international and regional liner vessels. Once Phase 1B construction is completed, a dedicated terminal with a capacity of 10,000,000 cubic metres will be available for product terminals such as oil and gas. This will also serve as a national 'buffer stock' for the supply of petroleum and gas in western Indonesia. The existence of Kalibaru Terminal significantly benefits maritime transport, as vessels no longer need to endure long waiting times for entry into the port, thereby enhancing efficiency. Additionally, Kalibaru Terminal plays a vital role in reducing logistics costs by up to 30% (Kompas, 26 May 2016 cited in Padliansyah, 2019).

Another opportunity lies in the increase of national and/or regional revenue (E13) derived from government revenue sources, including taxes and non-tax revenue (PNBP). Under the concession agreement between the government and Pelindo II, Pelindo has been granted the right to manage Kalibaru Terminal for a duration of 70 years. As part of this concession right, Pelindo is obligated to pay an annual concession fee to the government, amounting to 0.5% of the gross revenue generated by Kalibaru Terminal, as a form of PNBP.

1.6.5.2. Main Benefits

The strong points of the project come from the government's support through regulatory measures (I1) and the ease of obtaining permits during the construction process (I5). Presidential Regulation 36/2012 serves as the legitimacy for the project and serves as the basis for the appointment of Pelindo as the project implementer.

Other strengths of the project derive from the appropriate selection of the project executor, resulting in good physical quality of the project (I11), smooth technical construction progress (I8), the use of modern technology in construction and port operation (I9), and sufficient supporting facilities (I13). The terminal is equipped with state-of-the-art information and communication technology (ICT) using the Cosmos System. The implemented ICT at the terminal is considered the most advanced and modern at the time (Padliansyah, 2019).

Another strength of the project stems from the project's location compliance with spatial planning and land use regulations (I2), as the project is an expansion of Tanjung Priok Port. Despite the compliance, the project development still considers the preservation of the surrounding coastal environment (I12). To maintain the coastline, the construction of the project (NPCT1) utilises the deck-on-pile foundation system, which is embedded into the seabed. The use of the deck-on-pile method aims to preserve the water circulation system around the Tanjung Priok Port basin. The construction of a new coastal reclamation method will be implemented in Phase 1B, which is still under construction.

However, the project's strengths still require the support of infrastructure availability (I2), such as highways and/or toll roads connecting the terminal to industrial areas, to prevent new traffic congestion around the Tanjung Priok Port. Respondents perceive this congestion as a challenge (E9). Another weakness arises from the project's funding provision, which is restricted from using state or regional budget funds (non-APBN) (I5). Pelindo is obligated to secure the project's funding, including land acquisition funds, on its own. In this project, Pelindo employs financing mechanisms through global bonds. The lack of government support in financing and the complexity of the building construction might contribute to delays in completing the project within the designated timeframe (I12).

Conclusion

The Terminal Kalibaru project is carried out under the government's assignment to the state-owned enterprise Pelindo, as stipulated in Presidential Regulation of the Republic of Indonesia Number 36 of 2012 concerning the Assignment to PT Pelabuhan Indonesia II (Persero) to Build and Operate Terminal Kalibaru. Phase 1 of the project was designated as part of the PSN according to Presidential Regulation Number 3 of 2016, aimed at accelerating the implementation of national strategic projects. Despite being a PSN, the project's funding did not use the state budget, but instead was sourced from global bonds. Currently, Phase 1B of the project is in the process of construction, involving coastal reclamation to build the dock. The project's accomplishments have yielded tangible benefits, including reduced dwelling time, increased capacity of Tanjung Priok Port, improved national logistic efficiency, and cost-saving in port operational expenses. Based on the SWOT analysis of respondent perceptions, the project received dominant perceptions regarding its strengths and opportunities. Consequently, the future strategy to adopt is the SO Strategy, which entails leveraging strengths to capitalise on existing opportunities. Several actions can be taken, including:

1. Maintaining investor confidence, especially to support the provision of operational terminal supra-structures such as container terminal equipment, product terminal equipment, electrical mechanical, and information communications technology.
2. Optimising the use of modern technology to expedite container handling activities, reducing dwelling time, and enhancing the flow of goods.
3. Accelerating the completion of Phase 1B while maintaining the good physical quality of Phase 1A to further increase port capacity. Currently, Pelindo data show that the utilisation of NPTC1 capacity, Phase 1A, has reached 90%, making the acceleration of overall Phase 1 construction a necessity.
4. Continuously considering environmental conservation factors, as well as the livelihoods of fishers and residents around the coast during the completion of Phase 1B, which involves coastal reclamation. This approach aims not only to address environmental concerns but also to mitigate potential legal risks in the future.

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1.7. Palu Ports Development

1.7.1. Project Profile

The Makassar Strait is one of the busiest straits in Indonesia due to its strategic location in the middle of Indonesian waters. It is an important chokepoint in Indonesia and is included in the Indonesian Archipelagic Sea Lanes (ALKI) II, which is the second alternative route in Indonesia after the Malacca Strait, connecting the Pacific and Indian Oceans. Tanker ships weighing over 200,000 tonnes from and to East Asia, Australia, and New Zealand prefer to use ALKI II instead of the Malacca Strait due to its shorter distance and the depth of the Makassar Strait, which reaches 6,200 metres, resulting in lower navigation safety risks such as shipwrecks (Anam and Wahyudin, 2020). One of the important ports in the Makassar Strait is Pantoloan Port in Palu. The port is the largest and busiest port in Central Sulawesi, designated as a national logistics and goods centre in 2014. Given its designation as a National Strategic Project (PSN), Pantoloan Port, supported by Donggala and Wani Ports plays a crucial role as a trading hub in the central Indonesian region, along with the traditionally established Donggala and Wani ports. Subsequently, Donggala and Wani ports were designated for local shipping, agricultural and livestock products, while Pantoloan Port focused on logistics transportation.

Figure 3.24. Pantoloan, Wani and Donggala Port Aftershock and Tsunami Wave

Source: Antara, 2018.

The development of Pantoloan, Donggala, and Wani ports was initiated in 2018 through the National Strategic Project scheme announced by President Jokowi, following the 7.5 Richter Scale earthquake that devastated Palu and its surroundings. The earthquake was accompanied by a 3.8 metre-high tsunami wave (Benazir and Luthfi, 2020), which destroyed the coastal areas of Palu Bay, including its vital ports of Pantoloan, Donggala, and Wani (Figure 3.23).
In detail, the initiative of the Palu Ports Development project aims to revitalise the main facilities of the Pantoloan cargo terminal, the Donggala Port pier, and the Wani Multipurpose Terminal, including the repair of damaged structures such as piers and quay container cranes. Simultaneously, the project aims to enhance the terminal's operational capacity from 300,000 twenty-foot equivalent units (TEU) to 5 million TEUs by expanding the container yard to a total area of 46,135 square metres. Additionally, the project involves extending the length of the pier by 522 metres and adding supporting infrastructure such as warehouses, tugboats, pilot vessels, container cranes, three rubber-tyred gantry cranes, reach stackers, terminal tractors, head trucks, and forklifts. The increased capability of the container terminal will effectively address the issue of long dwelling time. With a larger container yard and the availability of multiple cranes, combined with an integrated cargo management system, the loading and unloading activities can be carried out in parallel, resulting in a tenfold increase in efficiency compared to the previous conditions.

Figure 3.25. Pantoloan, Wani, and Donggala Ports After Development

Sources: Dewan Nasional Kawasan Ekonomi Khusus Republik Indonesia (2023), Pelindo (2023), Antara (2021).

The government has undertaken comprehensive efforts for revitalisation and improvement to stimulate economic circulation in Palu and its surrounding areas, which were previously disrupted by the earthquake on 28 September 2018. Figure 3.24 shows the development of the ports. Furthermore, the Palu Ports Development project is carried out to support the Palu Special Economic Zone (SEZ), which is divided into three zones: export zone, logistics processing zone, and industrial zone.

The status of the National Strategic Project (PSN) is highly essential, given the urgency to revitalize the Palu Bay ports as a critical gateway for aid and the sustained supply of essential goods to the local community. Simultaneously, this state of emergency is extended to harness the potential of the Palu Bay ports, aiming to enhance trade traffic in the Central Indonesia region.

1.7.2. Project Objectives

As a maritime nation, Indonesia seeks to enhance the effectiveness of logistics distribution by improving the functions and capacities of its national ports, including those in the central region. Sea ports play a vital role in facilitating more economical and competitive supply chain logistics compared to air transportation, which incurs higher costs (Elentably, 2015). The Indonesian government, through the National Medium-Term Development Plan (RPJMN), has planned policies and strategies for maritime economic development and port development, guided by Presidential Regulation Number 16 of 2017 on Indonesian Maritime Policy. The aim is to enhance the domestic transportation capacity that supports supply chain capabilities, including ports like Pantoloan, Donggala, and Wani, which are earmarked for development to achieve these objectives.

The revitalisation and capacity enhancement of the Pantoloan, Donggala, and Wani ports, as depicted in Figure 3.25, are expected to improve connectivity and fulfil the infrastructure requirements for logistics. Then, connectivity and supporting infrastructure are essential foundations for meeting the logistics needs of society and achieving the mission of equitable economic growth. Additionally, Indonesia's maritime shipping routes account for approximately 70% of cargo transportation between Europe and South Asia towards the Pacific region, and vice versa (Lis, 2021). As a result, Indonesia holds a strategic position in global trade, where the role of developing countries has become increasingly significant in the global market (UNCTAD, 2014). Furthermore, developing countries like Indonesia are attractive for development due to their high domestic consumption and manufacturing activities (Wiradanti et al., 2016).

However, Indonesia still faces significant challenges in achieving an efficient maritime logistics system. The Logistics Performance Index (LPI), the World Bank report for 2023 ranks Indonesia 61st in logistics performance globally (lpi.worldbank.org, 2023), placing it fourth in ASEAN, behind Singapore, Thailand, and Malaysia. Moreover, the high logistics costs, accounting for

26.03% of gross domestic product (GDP), are attributed to inefficiencies in the maritime logistics system (Amin et al., 2021). These inefficiencies result from factors such as underdeveloped port management systems for container handling, inter-port connectivity, and port access to land transport. These issues continue to impede efficient loading and unloading processes, weaken supply chains, increase product prices, and hinder local economic development (Jansen, Tulder, and Afrianto, 2018). To address and confront these challenges, Indonesia continues to optimise its geographical advantages by incorporating port development plans through the PSN scheme to elevate its ports into international trading hubs – one such PSN is the Palu Ports Development project.

Figure 3.26. Facility Works of Donggala, Wani, and Pantoloan Ports

Source: Komite Percepatan Penyediaan Infrastruktur Prioritas (2023).

The hub-and-spoke concept, utilised in the logistics industry since the 1970s (Nam and Song, 2011), encourages cargo shipping companies to consolidate shipments on a large scale at main hubs (e.g. Tanjung Priok in Jakarta and Tanjung Perak in Surabaya) and redistribute them on a smaller scale to ports on major islands in Indonesia, such as Pantoloan, Wani, and Donggala in Palu Bay, through spoke routes. Subsequently, these ports are encouraged to become branch hubs for other ports in the Sulawesi corridor and small ports in central, northern, and eastern regions of Indonesia. Currently, the spoke routes in Indonesia are reinforced through the Nusantara Belt Ships programme, managed by the Ministry of Transportation and PT PELNI since 2016.

The Ministry of Finance, as an integral component of the government, seeks to ensure the availability of funding for the port development. Given its status as a National Strategic Project, this infrastructure initiative is regarded as strategically pivotal and carries a high urgency for completion. Consequently, the project necessitates a funding framework that is swift yet maintains meticulous control over its utilisation. Therefore, a foreign loan arrangement has been chosen to expedite the project's implementation, recognising the pivotal role of port facilities in post-disaster recovery. In this context, the Ministry of Finance operates as a catalyst, entrusted with ensuring the provision of sufficient financing to ensure the successful revitalisation of the ports. Concurrently, the Ministry of Transportation contributes to upholding efficiency, effectiveness, and accountability throughout the project implementation process. As a result, the Pantoloan Port in Palu was reinstated for evacuation procedures and humanitarian aid cargo reception on 1 October 2018, a mere 3 days following the occurrence of the earthquake and tsunami. Furthermore, the gradual development of the capacity and capabilities of Pantoloan Port is an ongoing endeavour, alongside the simultaneous revitalisation and development of Donggala and Wani ports, collectively serving to foster enhanced logistics distribution within the central and eastern regions of Indonesia.

To achieve national self-sufficiency by 2025, the Indonesian government continues to accelerate economic transformation, with Sulawesi designated as an economic corridor in Indonesia under the Masterplan for the Acceleration and Expansion of Indonesian Economic Development (MP3EI). This plan focuses on meeting the demand for agricultural, plantation, fishery, oil and gas, and mining commodities (Martini et al., 2012). Palu, as one of the regions producing agricultural commodities, fisheries, forestry products, mining products, and their processed industries, as well as being the largest trading gateway in Central Sulawesi, plays a crucial role in ensuring the achievement of economic development targets in the Sulawesi, Central Indonesia, and eastern regions.

1.7.3. Project Cost and Source of Fund

In accordance with the directive of the President through Presidential Instruction Number 10 of 2018 concerning the Acceleration of Post-Disaster Earthquake and Tsunami Rehabilitation and Reconstruction in Central Sulawesi Province and Affected Regions, as well as the Regulation of the Coordinating Minister for Economic Affairs Number 7 of 2021 Regarding the Amendment to the List of National Strategic Projects, serving as the legal foundation and operational guideline for the implementation and financing support of the National Strategic Project (PSN) for the Development of Palu Ports. The financing of the implementation of the Palu Ports Development, designated as one of the National Strategic Projects, is acquired through the foreign loan scheme known as the Emergency Assistance for Rehabilitation and Reconstruction from the Asian Development Bank. The total investment, stipulated in the loan agreement, amounts to Rp957 billion, which is allocated for both the comprehensive rehabilitation and augmentation of the core terminal facilities of Pantoloan, Donggala, and the Multipurpose Terminal Wani. This multi-year undertaking commenced in September 2018, with the intended completion planned for the year 2024.

1.7.4. Internal and External Factors

The Palu Ports Development Project aims to revitalise the ports in Palu Bay, which were affected by the earthquake and tsunami, and prepare the necessary capacity to support the acceleration of economic growth in Palu, Sulawesi, and Central Indonesia. To assess the likelihood of achieving these objectives, a SWOT analysis was conducted to identify the strengths and weaknesses of internal factors and the opportunities and challenges posed by external factors. This analysis involved collecting perceptions from the local government, academics, entrepreneurs, and the community through a questionnaire.

The questionnaire addressed specific factors related to the development of Pantoloan, Donggala, and Wani Ports, categorised into internal and external factors. These factors were obtained from prior research and secondary data related to the terminal development. Factors within the government's control were classified as internal factors, whilst factors beyond the government's control were categorised as external factors.

1.7.4.1. External Factors

Based on the initial research conducted on secondary data, the external factors include community support for project development (E1); investor interest in the project (E2); road accessibility between the terminal and industrial areas (E3); impact on increasing port capacity (E4); impact on operational cost savings in port operations (E5); impact on the smooth flow of goods at the port (E6); impact on reducing dwelling time (E7); impact on increasing land value around the port (E8); impact on smooth traffic flow around the port (E9); increase in export and import activities (E10); impact on job creation (E11); impact on improving community welfare (E12); impact on increasing national and/or regional income (E13); timely disbursement of financing from investors (E14); availability of land for project development (E15); and potential disputes or legal claims related to the project (E16).

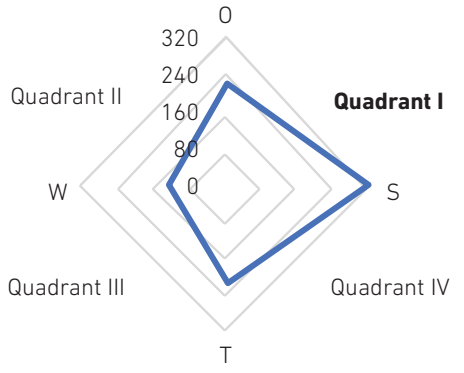
1.7.4.2. Internal Factors

Meanwhile, the identified internal factors include supportive regulations for project implementation (I1); project location alignment with regional spatial planning and land use (I2); availability of infrastructure supporting the project (I3); appropriate appointment of a project executor (I4); support from the government in project financing (I5); opportunities for private or public participation as project investors (I6); ease of gaining permits for project implementation (I7); smooth technical construction of the project (I8); utilisation of modern technology (I9); timely project completion (I10); physical project quality (I11); the project's commitment to environmental sustainability (I12); and the sufficiency of supporting facilities for the terminal (I13).

1.7.5. SWOT Results and Analysis

Perceptions were examined from two perspectives, importance and reality, using a scoring system ranging from 1 to 6. The importance perception represents the significance of each assessed factor, with a score of 1 indicating a perception of insignificance, whilst a score of 6 indicates a perception of high importance. The reality perception reflects respondents' views on observed or perceived facts, with a score of 1 indicating a perception of very poor, whilst a score of 6 indicates a perception of excellent.

Figure 3.27. SWOT Analysis the Palu Port Development Project



	Categories	Values
S	**Strengths**	**310.0021**
W	Weaknesses	122.4939
O	**Opportunities**	**218.1721**
T	Threats	20.0150

Source: Authors, 2023.

The results of the SWOT analysis indicate that the Palu Ports Development Project has more dominant strengths and opportunities than weaknesses and challenges, as shown in Figure 3.27.

To provide a deeper overview, a SWOT matrix are mapped in Figure 3.28.

Figure 3.28. SWOT Analysis Matrix

	Positive	Negative
Internal	***Strengths*** • The implementation of PSN is based on comprehensive regulatory support (I1) • Compliance of project location with trade zones, regional spatial planning and land use (I2) • Designation of PT Pelindo IV as the project executor is highly appropriate (I3) • Ease of permits during project implementation (I6) • Utilization of modern technology (I9) • Consideration of project development is based on the urgency of high demands and for enviromental sustainability (I12) • Adequate supporting facilities such as Special Economic Zone and access road (I13)	***Weaknesses*** • Low utilization of infrastructure (I12) • No financial support from the national/state budget (I5) • The opportunities for private individuals or the community to become investors are still limited (I16) • Delay in project completion (I12)
External	***Opportunities*** • High Investor interest (E2) • Increasing port capacity (E4) • Operational cost savings in port activities (E5) • Smooth flow of goods (E6) • Reduction in dwelling time (E7) • Increased land value around the port (E8) • Increased trading activities (E10) • Job creation (E11) • Availability of land near the project site (E15)	***Threats*** • Natural disaster risks such as earthquake, tsunami and storm (E3) • Negative impacts on traffic flow around the port due to terminal capacity increase (E9) • Negative environment impacts including air and water pollutions from ships, and fisheries habitat damage (E9) • Insignificant effects on improving welfare of community (E12) • Potential disputes or legal claims (E16)

Source: Authors, 2023.

1.7.5.1. Main Challenges

Opportunities are external factors that can drive the achievement of goals, while challenges are external factors that can hinder goal attainment. If these opportunities and challenges are effectively managed, they can become strengths for the Palu Ports Development project. The survey results identified factors perceived as opportunities, with perception scores ≥5.42 out of the highest score of 6. Nevertheless, the challenge factors require greater attention as they significantly influence the current project implementation and long-term run.

Within the context of the 16 external factors under consideration, it is notable that six of these factors are categorized as challenges (denoted as T"), while the rest are characterized as opportunities (denoted as "O"). These challenges encompass a spectrum of concerns, including the vulnerabilities posed by natural disasters such as storms, earthquakes, and tsunamis. Environmental issues represent another facet of these challenges, with a specific focus on potential damage to fisheries habitats (E9) and the prospect of disputes and legal claims (E16). Furthermore, the challenge of traffic congestion around of ports (E9) is identified as a significant concern, though it is important to note that effective measures have been implemented to tackle this issue, primarily through the expansion of access roads.

1.7.5.2. Main Benefits

The survey sampling indicates that the Palu community fully supports the Palu Ports Development project. During the earthquake and tsunami in Palu, those ports ceased operations as the tsunami waves destroyed port facilities, especially piers and cranes. This disruption hindered the distribution of aid and regular cargo shipments. The rapid revitalisation of the port was key to the post-disaster recovery and revitalising the local economy in Palu and its surrounding areas. The Palu Ports Development project also opens opportunities for the community to establish supporting businesses such as cargo transportation services, shipping agents, and trading with more affordable shipping costs.

The development of Pantoloan, Donggala, and Wani ports also contributes to job creation, both directly and indirectly. Directly, there is employment absorption during the construction of main physical facilities, supporting port facilities, and the need for additional operator and cargo handling personnel due to increased port capacity. Indirectly, the Palu Ports Development project will support the Palu Special Economic Zone (SEZ), which is expected to create additional job opportunities in the three zones of the SEZ: industrial zone, export processing zone, and logistics zone, projected to employ 97,500 workers by 2025 (kek.go.id, 2023). The impact of the Palu Ports development has accelerated the economic recovery and trade in Central Sulawesi Province, as evidenced in Table 3.7.

The direct output of the implementation of the Palu Ports development can be measured in terms of job creation, increased economic opportunities, and infrastructure development. Meanwhile, the outcomes include positive impacts such as the establishment of new businesses, increased trade, and improved connectivity between regions in Palu, Central Sulawesi, and its surroundings, which have revived the economic pulse that was once halted by the earthquake and tsunami.

Table 3.7. The average annual growth rate of Gross Regional Domestic Product (GRDP) at constant 2010 prices in Central Sulawesi from 2017 to 2021

Regencies/Muncipalities		2017	2018	2019	2020*	2021**
(1)		(2)	(3)	(4)	(5)	(6)
01	Banggai Kepulauan	6.00	4.11	4.02	-2.36	5.07
02	Banggai	8.71	6.17	5.94	-4.79	1.86
03	Morowali	14.08	112.20	20.26	28.51	25.31
04	Poso	6.10	6.16	6.20	-3.94	4.86
05	Donggala	5.31	2.56	4.45	-4.26	4.64
06	Tolitoli	5.08	5.28	4.79	-3.39	4.36
07	Buol	4.00	2.89	2.14	-2.89	4.88
08	Parigi Moutong	5.27	2.52	2.21	-4.95	4.72
09	Tojo Una-una	5.62	2.71	4.74	-3.17	4.25
10	Sigi	6.13	3.87	3.62	-1.50	5.05
11	Banggai Laut	6.26	4.85	3.50	-3.97	4.37
12	Morowali Utara	6.02	16.92	5.18	-0.23	10.47
13	Palu	5.53	5.00	5.65	-4.43	5.97
Sum of 13 Regencies/Municipalities		**7.16**	**19.82**	**8.42**	**4.83**	**11.51**
Central Sulawesi [1)]		**7.13**	**20.56**	**8.83**	**4.86**	**11.70**

* = provisional figures, ** = preliminary figures, GRDP = Gross regional domestic product.

Notes: [1)]. The variation in GRDP figures amongst regencies/municipalities is attributed to statistical discrepancies.

Source: Central Sulawesi BPS (2022).

The development of Pantoloan, Donggala, and Wani ports has made positive contributions to society, starting from the construction process, which involved gender-sensitive civil workers' recruitment and equal payment practices as required by the Asian Development Bank's Gender Action Plan (Ministry of Transportation, 2021). After Pantoloan Port resumed operations, the project was able to stimulate industrial and trade activities through an 80,000 TEUs cargo handling capacity for inbound and outbound shipments in Central Sulawesi throughout the

year. Additionally, over 100,000 jobs were created for the people of Palu and its surrounding areas, which is indicated by the increased gross regional domestic product (GRDP) of Palu city from Rp20.4 million in 2017 to Rp26.1 million in 2021. Overall, the GRDP growth rate of Central Sulawesi reached 11.70% year-on-year in 2021 (Central Sulawesi BPS, 2022).

Although the development of the Palu ports offers significant investment opportunities within the port area, the Palu SEZ, and Palu City, as well as Central Sulawesi in general, the commitment from investors, particularly foreign direct investment data, has not shown an increase. On the contrary, domestic investment recorded a significant increase of 571.5% compared to the previous year, reaching Rp12.69 trillion in 2018 (Tobondo, Nurdin, and Jokolelono, 2021). Another challenge is that until 2023, the container port capacity of 5 million TEUs has not been optimally utilised, necessitating breakthroughs from PT Pelindo IV and government policy support to optimise all port facilities to ensure the sustainability of the ports in Palu Bay, especially Pantoloan Port as a trading hub in the central region of Indonesia.

From the SWOT analysis, it can be concluded that the Palu Ports Development project is a highly strategic project dominated by strengths and future utilisation opportunities. Therefore, the Ministry of Transportation, PT Pelindo IV, and/or the government can employ an expansion strategy to utilise the available capacity and capitalise on external opportunities by remaining focused on completing the Palu Ports Development process in 2023 according to the plan. This should be complemented by leveraging government support to encourage synergy amongst shipping entrepreneurs, cargo services, and investors with the local community in various sectors such as local industries, essential commodity trade, and commodity exports and imports, handicrafts, and natural resources. Furthermore, the support of entrepreneurs and investors can be utilised to cover the financial aspects that cannot be solely addressed by the government. Effective communication and collaboration amongst port operators, local government, the community, and entrepreneurs are crucial to establish a shared perception and prepare Palu Bay as an international trading hub in Indonesia.

Conclusion

In conclusion, the Palu Ports Development Project stands as a crucial initiative with the primary objective of revitalising the Palu Bay ports, as stipulated in Presidential Instruction Number 10 of 2018 as the legal foundation for the implementation and financing support of the National Strategic Project (PSN) for the Development of Palu Ports. This endeavour is part of Indonesia's broader strategy to enhance its maritime logistics capabilities, thus supporting economic growth and trade in the central region. Through comprehensive efforts and strategic planning, the project has demonstrated a dominance of strengths and opportunities, outweighing weaknesses and challenges, as revealed by the SWOT analysis.

The significance of the project lies in its ability to stimulate economic growth, create job opportunities, and bolster infrastructure development in Palu and its surroundings. The rapid restoration of the ports following the natural disaster played a pivotal role in post-disaster recovery and local economic revitalisation. It has not only reinvigorated economic activities in the region but also facilitated the establishment of various supporting businesses, further enhancing community welfare and trade. The positive impact on the gross regional domestic product (GRDP) growth rate in Central Sulawesi is a testament to the project's far-reaching effects. Nonetheless, there remain challenges to be addressed, including the need to attract foreign direct investment (FDI) and fully optimise the increased container port capacity. Collaboration and communication amongst various stakeholders, including government authorities, port operators, entrepreneurs, investors, and the local community, will be instrumental in ensuring the project's long-term success.

In light of the overwhelmingly positive strengths and opportunities identified, it is imperative for the project's stakeholders to remain committed to its completion, capitalising on the available capacity and external opportunities. Leveraging government support and encouraging synergy amongst various sectors will be essential in positioning Palu Bay as an international trading hub in Indonesia. Ultimately, the Palu Ports Development Project represents a significant step towards enhancing Indonesia's maritime logistics system and fostering economic growth in the central region.

The Palu Ports Development Project is expected to expedite the economic recovery process of Palu post-earthquake, whilst simultaneously serving as a conduit between supply and demand for goods, trade commodities, and natural resources in the Sulawesi region and the covered area, aligning with the government's development agenda aimed at fostering a competitive natural resources market. Thus, the Pantoloan, Donggala, and Wani ports are envisaged to constitute a pivotal solution to bridge the missing link in logistics distribution within the central and eastern regions of Indonesia, simultaneously ensuring the availability of cargo handling capacities for the long term. The tripartite collaboration amongst the government, private sector, and the community holds paramount significance in preserving the sustainability of the strategic national project for the development of Pantoloan, Wani, and Donggala ports, which in turn provides a solution for economic stabilisation and growth. Through a robust economic landscape, the enhanced economic activities are poised to elevate societal well-being, ultimately maintaining social stability across Sulawesi and its surroundings.

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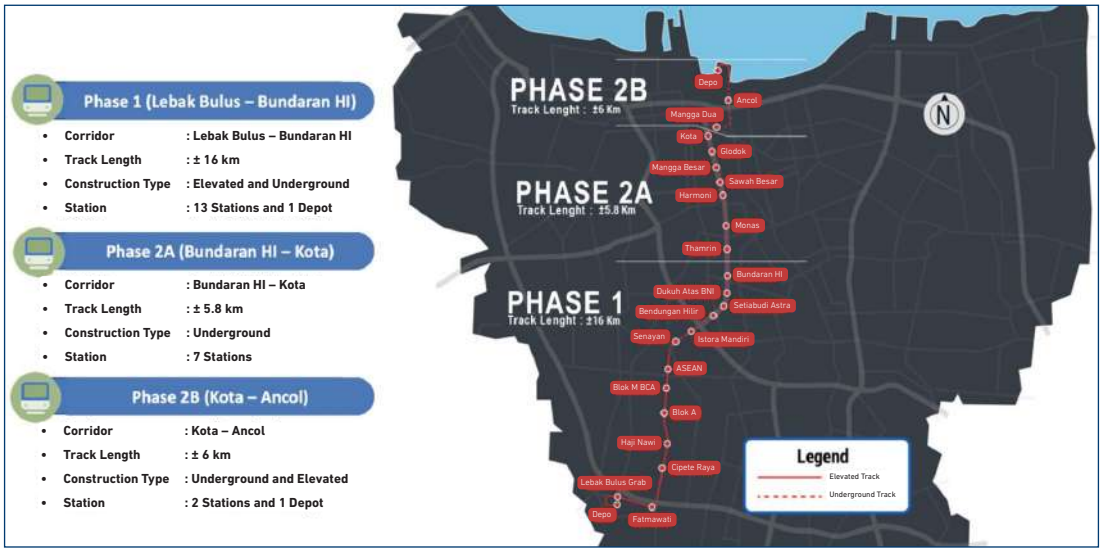
1.8. Ratangga, Jakarta Mass Rapid Transportation

1.8.1. Project Profile

This showcase discusses and analyses the challenges and benefits of Mass Rapid Transportation (MRT) Jakarta, which is based on a survey from the perspective of respondents, and stakeholders from MRT Jakarta. The findings obtained from the results of the discussion and analysis can be used as general input and evaluation material in the construction of MRT Jakarta in general.

Figure 3.29. MRT Jakarta Development Plan



Source: PT MRT Jakarta (2023).

The MRT Jakarta north–south corridor project has a total route length of 27.8 kilometres (km) (PT MRT Jakarta, 2023), stretching from Lebak Bulus where the first train depot is located, and to Ancol Barat where the second depot is planed (Figure 3.29). It has 16 train sets consisting of 96 cars (PT MRT Jakarta, 2017) and is named Ratangga, derived from Kakawin Arjunawijaya and Sutasoma, symbolising a strong and dynamic horse-drawn carriage. It provides a total of 142 daily round trips from Lebak Bulus to Bundaran Hotel Indonesia (HI), the current operational route, and vice versa. Ratangga can carry around 332 passengers in each coach, or approximately 1,950 passengers each trip and reduces travel time from Lebak Bulus to Bundaran HI to 30 minutes.

The first phase spans approximately 16 km from Lebak Bulus to Bundaran HI (PT MRT Jakarta, 2013). Around 10 km consists of elevated tracks passing through seven MRT stations (PT MRT Jakarta, 2015). The remaining 6 km passes through six underground stations and used four tunnel boring machines (TBM) (PT MRT Jakarta, 2016). It should be noted that this is the first time Indonesia is using the TBM technology in its infrastructure projects (KPPIP, 2019). The technology minimises disruptions to the soil as it avoids vibrations and cracks on the roads above. It also produces smooth tunnel walls, which reduces the cost of tunnel lining and is suitable for use in urban areas.

The second phase, from Bundaran HI to Ancol Barat, began construction in 2019 and should be completed in 2029 (Coordinating Ministry of Economic Affairs, 2023). With a length of about 11.8 km, the second phase of the MRT is further divided into Stage 2A (Bundaran HI–Kota) and Stage 2B (Kota–Ancol Barat). Unlike the first phase, stations for the second phase will be completely underground.

Table 3.8. MRT Jakarta Phase 2A Development

Contract Package	Contractor	Work Details	Contract Value[1] (Excluding VAT)		Realisation		
			Yen	Rp	Weight	Plan	Realised
CP 200	PT Trocon Indah Perkasa	• Diapraghm Wall and RSS in Taman Monas		± 21.77 B[2]		100,00%	100.00%
CP 201	Shimizu–Adhi Karya Joint Venture Corporation	• Bundaran HI – Harmoni, Tunnel Construction 2,7 km length • Thamrin and Monas Station Construction	± 3.74 B[2]	± 4.04 T[2]	23.82%	46,66%	49.41%
CP 202	Shimizu–Adhi Karya Joint Venture Corporation	• Harmoni – Mangga Besar, Tunnel Construction, 1,8 km length • Harmoni, Sawah Besar, and Mangga Besar Station Construction	± 8.34 B[3]	± 7.15 T[3]	21.54%	8,15%	8.44%
CP 203	Sumitomo Mitsui Construction Co. Ltd – Hutama Karya Joint Operation	• Mangga Besar – Kota Tunnel Construction, 1,3 km length • Glodok and Kota Station Construction	± 8.96 B[2]	± 3.40 T[2]	19.24%	22,89%	23.39%

Contract Package	Contractor	Work Details	Contract Value[1] (Excluding VAT)		Realisation		
			Yen	Rp	Weight	Plan	Realised
CP 205	To be announced	• Railways and Tracks			16.96%	-	-
CP 206	To be announced	• Rolling Stock			15.93%	-	-
CP 207	To be announced	• Automatic Fare Ticketing			2.50%	-	-
Realisation			**± 21.04 B**	**± 14.60 T**	**100%**	**17.28%**	**18.09%**

B = billion, km = kilometre, T = trillion.

[1] The contract consists of financing using yen and rupiah currencies.

[2] Inclusive of taxes.

[3] Exclusive of VAT.

Sources: Data tabulated from PT MRT Jakarta Annual Report (2019–2022).

Spanning 5.8 km, Stage 2A is expected to be operational by 2027, and passes through seven stations. The contract package, contractor, job details, contract value, and completion are illustrated in Table 3.8. Stage 2B of the north–south corridor is the continuation of the construction towards the final station, Ancol Barat, with a length of 6 km, is expected to be completed by 2029 (Coordinating Ministry of Economic Affairs, 2023). The construction of the route has yet to begin and is in the process of funding application to the Japan International Cooperation Agency (JICA). At the same time, PT MRT Jakarta is processing environmental permits, preparing the necessary documentation, and planning for stage 2B land clearance (PT MRT Jakarta, 2022a).

1.8.2. Project Objectives

The proposal for the MRT Jakarta was based on several infrastructure-related studies, and it was believed to be an alternative solution to alleviate congestion and address the mobility challenges of Jakarta's population (Pambudi and Hidayati, 2020). One of the main causes of congestion in Jakarta is the preference of the population to use private transportation over public transportation (Tamin, 2000). The unreliability of travel time and the inadequacy of public transportation options have led people to choose private vehicles (Mukti and Prambudia, 2018). The development of mass public transportation systems like the MRT is expected to support the provision of efficient, environmentally friendly urban transportation and reflect an advanced civilisation (DJKA, 2018).

The general objectives of implementing the MRT system are to enhance current mass transportation services, provide a dedicated rail line with high carrying capacity, ensure scheduled and predictable travel time, and improve the comfort, safety, and security of public transportation users (DKI Jakarta, 2008). According to a study from Khorunnurrofik, et. al (2021), it is estimated that during peak hours, the availability of the MRT allows an increase of 3% in driving speed, and the economic value from the congestion savings amounts to about Rp1.9 billion per year over the lifespan of the project. The same study also reports that on average an MRT commuter would save around 17.8 minutes of travel time. Figure 3.30 illustrates the Ratangga car in operation.

Figure 3.30. Ratangga, Jakarta MRT Train

Source: Performance Report of Government Agencies, DJKA (2019).

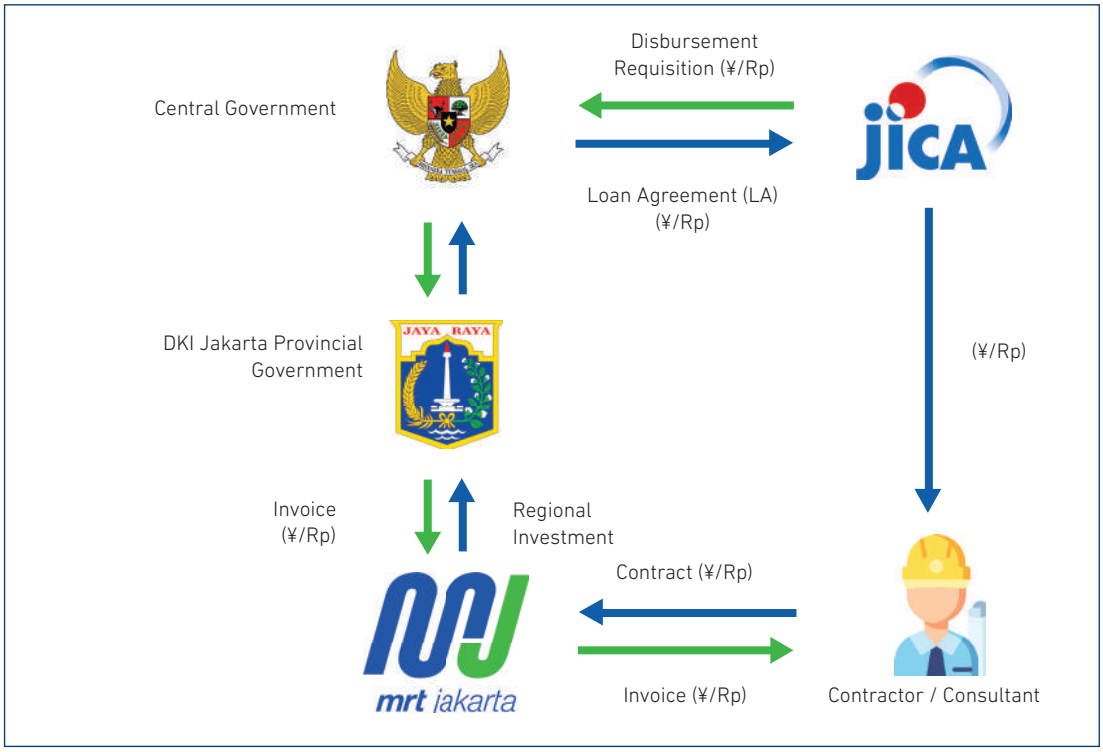
By holding the status of a PSN, MRT Jakarta has reaped many benefits (KPPIP, 2020). In 2015, the KPPIP accelerated the exchange notes through intensive coordination between the Ministry of Finance, National Development Planning Agency (Bappenas), and the Ministry of Foreign Affairs, which was needed for the signing of the project loan agreements. Furthermore, in 2016, the KPPIP facilitated a discussion on the Land Acquisition and Resettlement Action Plan for 27 land plots and debottlenecks the challenges of relocating gas pipes that cross over with the MRT routes. Next, in 2017 the committee mediated the allocation of repayments for the financing loan for the project, resulting in a repayment scheme shared between the DKI Jakarta provincial government (51%) and the central government (49%). Finally, in 2019, the KPPIP facilitated the relocation of the final station and depot previously planned in Kampung Bandan to Ancol Barat.

1.8.3. Project Cost and Funding

The total investment required to build the north–south corridor is Rp45.4 trillion (KPPIP, 2022), with Rp17 trillion allocated for the first phase (KPPIP, 2020). It is financed through the state budget (APBN), the regional budget (APBD) of DKI Jakarta Province, and foreign loans sourced from the Japan International Cooperation Agency's (JICA) official development assistance (PT MRT Jakarta, 2014).

The financing has a tenor of 40 years from the contract date, with a 10-year grace period. Repayment begins after 10 years from the signing of the contract with an interest rate of 0.02%, significantly lower than the commercial rates ranging from 3% to 4% (Rahayu, 2019). The financing from JICA is disbursed gradually, not all at once, as a control measure to ensure the seriousness of the Indonesian Government in implementing the construction. To date, five disbursements have been made, consisting of four packages for the first phase (¥197.04 billion) and one package for additional financing for the first phase (¥21.5 billion) and the commencement of the second phase (¥48.5 billion).

Figure 3.31. MRT Jakarta Financing Scheme



JICA = Japan International Cooperation Agency, MRT = mass rapid transportation.

Source: PT MRT Jakarta (2022a).

The financing scheme is a three-tier sub-loan agreement, the first of its kind in Indonesia (PT MRT Jakarta, 2022). It involves the lender (JICA) along with the central government, the regional government, and the regional state-owned enterprise (PT MRT Jakarta). After receiving funds from JICA, the central government transfers them to the Directorate General of Railways (Direktorat Jenderal Perkeretapian, DJKA) as the executing agency of the central government and to the DKI Jakarta provincial government as the implementing agency. The construction is then carried out by PT MRT Jakarta as the sub-implementing agency for the project. The flow of the financing scheme for MRT Jakarta can be seen in Figure 3.31.

1.8.4. External and Internal Factors

We collected data from stakeholders to measure respondents' perspectives. The participants include the central and local governments, academia, the business community, and users of MRT Jakarta services. Next, their perception of various internal and external factors – the perceived reality and the perceived importance was collected and analysed. Perceived reality measures the stakeholders' perception of the facts observed, whilst the perceived level of importance scores factors that respondents feel are important to the success of the project. Both are scored on a scale of 1 to 6 where 1 indicates a very negative perception, whilst a score of 6 is a very positive reception.

1.8.4.1. External Factors

The identified external factors are the level of support from the local community for the project (E_1); the level of investor interest in the development of MRT Jakarta (E_2); the level of opportunity for the private sector/community to become investors for supporting facilities in the project area (E_3); opportunities in job creation (E_4); level of impact of the project on road congestion around project locations (E_5); project impact in new business creation for the community (E_6); the potential increase of passengers (E_7); MRT Jakarta can be used by the community as a mode of transportation to and from the city centre (E_8); opportunities of the project in improving people's welfare (E_9); opportunities for the project in increasing state and/or regional revenues (E_{10}); availability of land for project development (E_{11}); timely disbursement of funding from investors (E_{12}); potential for disputes or lawsuits in the implementation process (E_{13}); and ease of obtaining business licenses at project locations (E_{14}).

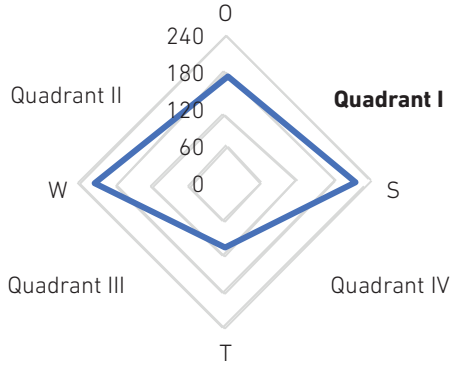
1.8.4.2. Internal Factors

The identified internal factors are deregulation or enactment of regulations (I_1); access to public transportation (I_2); compatibility of project development with regional spatial planning and land use (I_3); access to infrastructure that supports the project (I_4); appropriateness of PT MRT Jakarta appointment as the project operator (I_5); support from central and/or regional government in project financing (I_6); ease of licensing in project preparation and implementation process (I_7); level of technical smoothness of project construction (I_8); level of use of modern technology in project development (I_9); timeliness in construction (I_{10}); project physical quality level (I_{11}); suitability of project development results (I_{12}); level of concern for the development of the project for environmental sustainability (I_{13}); adequacy of supporting facilities (I_{14}); reasonableness of the price of MRT tickets (I_{15}); and number of stations or stops on the route traversed by the MRT Jakarta for transits (I_{16}).

1.8.5. SWOT Results and Analysis

The survey results were analysed using a SWOT approach to illustrate the perceived challenges and benefits. The SWOT analysis findings were then presented in a radar chart, as shown in Figure 3.32.

Figure 3.32. MRT Jakarta SWOT Analysis Results



Categories		Values
S	**Strengths**	**248.408**
W	Weaknesses	89.222
O	**Opportunities**	**266.710**
T	Threats	144.358

Source: Authors , 2023.

From Figure 3.32, it can be observed that the SWOT analysis of the MRT Jakarta project falls into Quadrant I. Although there is a slight difference in value between the strength and weakness axis, the strength category dominates the internal factors. On the other hand, the external factors are represented by the opportunity and threat axis, where the value of opportunities is higher. The SWOT position in Quadrant I indicates the strategies that can be adopted by the government to optimise the existing conditions, which is an aggressive growth policy. This policy emphasises the optimisation of strengths to maximise opportunities.

A summary of the three factors with the highest values identified as strengths, weaknesses, opportunities, and threats is presented in Figure 3.33. The observed factors are ranked based on the highest values of the average perceived reality and importance by the respondents. The higher the score obtained, the better the perception of respondents for the factor.

Figure 3.33. SWOT Analysis Priority Matrix

	Positive	Negative
Internal	***Strengths*** • Deregulation or enactment of regulation • Support from central and regional government in financing • Ease of permission in PSN preparation and implementation process	***Weaknesses*** • Suitability of PSN development • Access of public transportation such as train station • Access of infrastructure to support MRT
External	***Opportunities*** • PSN Impact in new business creation • Timely disbursment of fundings • Potential Increase of passangers	***Threats*** • Ease of doing business in PSN location • Potential increase of revenue for central regional government from PSN • Potential congestion from PSN construction

Source: Authors, 2023.

1.8.5.1. Main Challenges

Survey results show that the ease of business permits in the PSN location needs to be improved. Kompas (2023) reported that there are currently 16 micro, small, and medium-sized enterprise (MSMEs) stalls in three stations offering various products. Nevertheless, only selected tenants that have passed the selection process are allowed to open and operate a shop in the MRT stations. Shops that sell culinary, fashion, and handicraft products are encouraged to apply in the selection. However, applicants are notified that they are not allowed to franchise the operation and do not have a shop branch in a class A shopping mall (UKMIndonesia.id, 2021). Although PT MRT Jakarta continues to provide opportunities for MSME enthusiasts to participate in the MRT station locations, these prerequisites limit the number of potential tenants to participate in the location.

The next factor is related to a potential increase in revenue for the central and regional governments from the MRT. Due to COVID-19, revenue from MRT Jakarta passengers' farebox declined drastically from Rp191.6 billion in 2019, to Rp82.03 billion in 2020. It again dropped around 25% to Rp60.37 billion in 2021. It should be noted that non-farebox revenue contributes higher revenue than farebox revenue. The revenue from non-farebox continued to grow from Rp207.61 billion in 2019 to Rp503.17 in 2022. However, the main part of the revenue of PSN MRT Jakarta is from subsidy revenue, which amounted to Rp808.20 billion in 2022. Nevertheless, the considerable amount of subsidies for the MRT should be taken with caution.

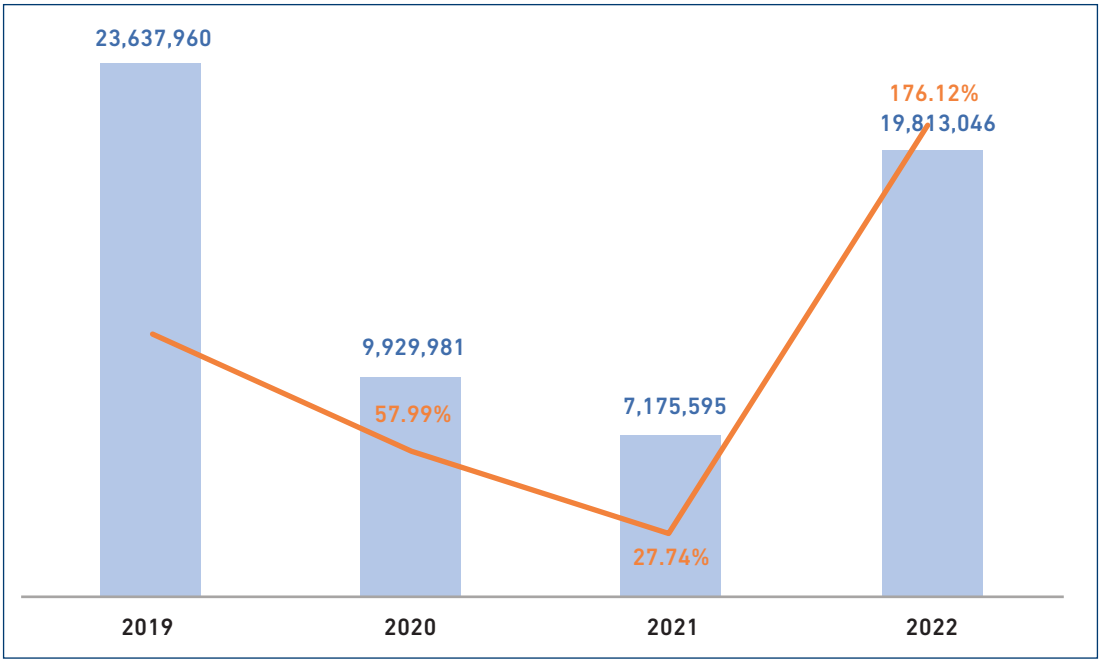
Currently, MRT Jakarta's operational route is limited to the Lebak Bulus–Bundaran HI, which means passenger mobilisation is dominated by commuters from the mentioned area. At present, residents from the northern, eastern, and western areas of Jakarta have limited access to the mode of transport. This aligns with the factors of PSN location and supporting infrastructure to access MRT Jakarta. Albeit connected to the busway network and the Soekarno–Hatta Airport express train, the interconnectivity and the number of MRT stations are currently limited to the operational route.

1.8.5.2. Main Benefits

The survey pointed out several benefits of MRT Jakarta's existence, such as the potential increase in passengers, the suitability of MRT outcomes, and its impact on new business creation. These benefits are in line with the objectives of MRT Jakarta, which are to provide a dedicated rail line with high carrying capacity and ensure scheduled and predictable travel time.

The maximum capacity of one MRT is around 1,950 people per trip, comparable to commuter lines' maximum passengers of 2,000 per trip. Moreover, at full capacity, the MRT should be able to carry 173,400 passengers daily. However, due to the pandemic, the daily passenger realisation has yet to reach its full potential. This is in line with the survey results where participants highlight the passenger growth opportunities. Nevertheless, the number of passengers is still massive. Despite being relatively new, the average number of users in 2019 has reached approximately 89,000, exceeding the target of 65,000 passengers. Data from DJKA show in 2019 passengers reached 23.84 million and this drastically dropped to 7.18 million in 2021 due to the pandemic. However, with the relaxation of the Community Activity Restrictions Enforcement (Pemberlakuan Pembatasan Kegiatan Masyarakat, PPKM) policy in 2022, there has been a significant increase in users to 19.81 million (DJKA, 2022). The massive number of passengers helps reduce the number of people using private transportation. Figure 3.34 illustrates Ratangga passengers growth from 2019 to 2022 according to DJKA.

Figure 3.34. Ratangga's Passenger Growth, 2019–2022



Source: Data tabulated from Performance Report of Government Agencies, DJKA (2019–2022).

For the past 4 years, Ratangga has reliably served its passengers by creating scheduled and predictable travel times. The MRT passenger service performance in 2022 which measures arrival, dwelling, and travel time is close to perfect with a score of 99.95%, 99.98%, and 99.94%, respectively (PT MRT Jakarta, 2022a). It also has an index of 88.32% on its customer satisfaction index, which indicates high passenger satisfaction with the mode of transportation. This is further supported by a survey done in 2021, by LPEM UI.

The construction of the MRT is accompanied by the development of transit-oriented development (TOD) areas, which are part of urban revitalisation efforts integrating transit area functions with individuals, buildings, and public spaces. The TOD area creates around 10 million m2 of new mixed development area and potentially increases property value around MRT stations to Rp242 trillion (PT MRT Jakarta, 2018). The rejuvenation of public facilities through TOD revitalises economic development in the impacted areas. Currently, there are six TOD areas managed by PT MRT Jakarta located in the first phase of the north–south corridor, including providing affordable housing, revitalising the Blok M Plaza area, and developing the Martha Tiahahu Literacy Park (PT MRT Jakarta, 2022a).

Conclusions

The project aims to improve public transportation facilities, reduce traffic congestion, enhance population mobility, decrease carbon emissions, and create new job opportunities in Jakarta. With TOD aimed at revitalising and rejuvenating transit areas, the PSN accommodates job creation in Jakarta. Furthermore, by holding the status of PSN, MRT Jakarta has reaped benefits such as loan facilities, land acquisition, and project debottlenecking with the assistance of the KPPIP. As shown in the analysis, the government may opt for an aggressive growth policy emphasising the optimisation of strengths to maximise opportunities. Despite the challenges in the construction of MRT Jakarta's PSN and its relatively young age, the benefits of the development are already being felt.

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1.9. Skouw Integrated Cross-Border Post

1.9.1. Project Profile

The Skouw Integrated Cross-Border Post (the Skouw PLBN), as shown in Figure 3.35, is a land border marker between the Republic of Indonesia and Papua New Guinea (PNG). The Skouw PLBN is situated in Muara Tami District, Jayapura, Papua Province. The distance is about 48 kilometres from Jayapura City, Indonesia, or 66 kilometres from Vanimo, the nearest city in PNG. After the construction of the Youtefa Bridge, the travel time from Jayapura City to the Skouw PLBN was shortened to around 1 hour from the previous 2.5 hours.

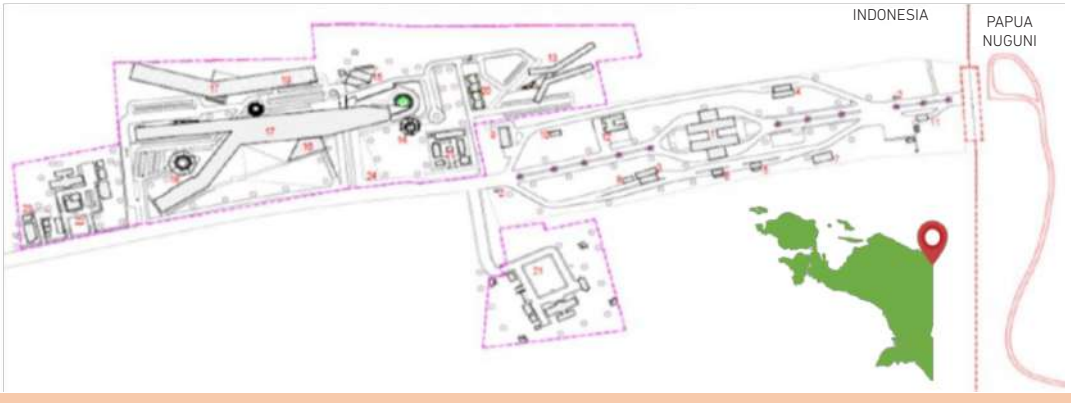
Figure 3.35. Skouw Integrated PLBN

Sources: (a) Directorate General of Cipta Karya (2019), (b) BNPP (2022), and (c) authors (2023).

Muara Tami District is the largest and farthest district from Jayapura City but has the lowest population compared to other districts. The number of poor people in Jayapura City is one of the highest amongst other regencies and cities in Papua Province, but the Human Development Index is the highest (BPS, 2020). Muara Tami District has several basic service facilities, but it still lags in terms of numbers compared to other districts.

Aligned with global geo-political and geo-economic shifts, border area developments are now more economically driven, focusing on productive endeavours to enhance the living standards of border residents. This also supports the enduring effort to bolster national defence and security. This new approach laid the foundation for the Skouw PLBN construction in the Muara Tami District through a cooperation contract between the government (Ministry of Public Works and Public Housing) and PT Nindya Karya. Initiated in December 2015, the construction of the Skouw border project received a significant boost when it was classified as one of the PSN projects in 2016, under the directive of Presidential Regulation No. 3 of 2016 on the Acceleration of the Implementation of National Strategic Projects. This project reached its completion in 2016 and was officially launched by President Joko Widodo on 9 May 2017. Its purpose is multifaceted: a transit point for people and goods, an economic hub, and a tourist attraction. These intentions are in line with the implementation of duties and functions at the PLBN: (C) customs, (I) immigration, (Q) quarantine, which includes fish quarantine, agriculture quarantine, and health quarantine, and (S) security, which includes the Indonesian Army, the Indonesian National Police, and civil security from members of the National Border Management Agency (BNPP).

Figure 3.36. Skouw PLBN Master Plan



Legend:

- National Borders
- Fence Around the PLBN Area
- Road
- Supporting Zone Borders

Core Zone:

1. PLBN Main Building
2. Check Point Post/Integrated Security Post
3. Integrated Arrival Inspection Building
4. Integrated Departure Inspection Building
5. Weight Bridge Building
6. Truck Scanner Building
7. Ground Water Tank
8. Consfiscated Warehouse
9. Utility Building
10. Kennel
11. Car Wash Building
12. Clinic Building

Supporting Zone:

13. Employee Mess
14. Church
15. Mosque
16. Food Court
17. Market
18. Function Room
19. Power House
20. Service House
21. Indonesian Army Post
22. Police Post
23. DANINTEL
24. Statue of Soekarno

Source: Directorate General of Cipta Karya (2019).

To realise the Skouw border area as a new growth centre based on the development of food clusters and the border tourism belt, the President instructed 10 ministries and agencies to implement programmes to accelerate economic development in the Skouw border area through Presidential Instruction (*Inpres*) Number 1 of 2021. To encourage the development of the agricultural, fisheries, and tourism sectors in the Skouw border area, it needs support for electricity infrastructure, development of trade centres, and arrangement of tourism areas. Thus, 19 main programmes were instructed, as quoted from the Deputy for Coordination of Regional Development and Spatial Planning (2021), which can be grouped into several programmes as follows:

(i) Development of rice warehouses and revitalisation of the agribusiness sub-terminal
(ii) Rehabilitation of ponds for cultivator groups
(iii) Revitalisation of people's markets
(iv) Facilitating the provision of Floating Village Homes Stay
(v) Arrangement of traditional villages (Skouw Yambe, Skouw Mabo, Skouw Sae) as a supporter of 'border tourism'
(vi) Increasing access to electricity, internet, and drinking water
(vii) Road capacity and quality improvement

1.9.2. Project Objectives

The Skouw border is a border area at the eastern end of Indonesia that was initially synonymous with the image of being scary, vulnerable, and insecure. Indonesia's border areas have long been neglected and received little attention, many of which are deplorable (Directorate General of Cipta Karya, 2019). Those conditions cause the condition of Indonesia's border areas to be far behind compared to the border areas of neighbouring countries. This backwardness is not only in terms of infrastructure but also in the socio-economic aspects of the people, which triggers the emergence of various problems and social vulnerabilities to security. Therefore, the Skouw PLBN was built to answer this challenge. Based on the (Directorate General of Cipta Karya, 2019), the two main objectives of developing the Skouw PLBN are (i) maintaining the territorial integrity of the Republic of Indonesia through the establishment of the sovereign rights of the Republic of Indonesia, which are guaranteed by international law; and (ii) improving the welfare of the local community by exploring economic, social and cultural potential, and utilising a very strategic geographical location to connect with neighbouring countries.

The Skouw PLBN is a critical and strategic infrastructure not only in the field of politics and sovereignty as a gateway for connecting Indonesia with neighbouring countries that gives a first impression about the Republic of Indonesia, but also as an embryo centre for regional economic growth in border areas. The Skouw PLBN was also built to create a new economic growth centre whose impact can be immediately felt by border communities in improving their welfare and

standard of living. The development of supporting zones in the PLBN area is expected to provide economic benefits for the surrounding community and bring the business world (micro and small and medium-sized enterprises, MSMEs) closer to consumers to promote local products. Due to its designation as a PSN, the government provided extensive support, including expedited development, quick land allocation, political stability assurances, and access to facilities that simplified project execution, ensuring the Skouw Border project progressed on target.

The government's commitment to advancing border areas is a manifestation of one of President Joko Widodo's nine priority programmes known as 'Nawacita'. The third point of Nawacita: developing Indonesia from the periphery by strengthening regions and villages within the framework of a unitary state, is realised one way through the development of infrastructure in the country's border areas simultaneously and in an integrated manner. This programme began with the construction of seven integrated PLBNs (Seven Borders of Indonesia), one of which is the Skouw PLBN in Papua, which was built based on the mandate of Presidential Instruction (*Inpres*) Number of 2015 concerning the Acceleration of Development of Seven Integrated State Cross-Border Posts and Supporting Infrastructure in Border Areas. The Skouw border area is of concern to the government for constructing a Type-A Integrated PLBN due to the relatively high number of border crossings from PNG (Directorate General of Cipta Karya, 2019). This condition creates opportunities to trigger regional economic growth and improve the welfare of border communities.

1.9.3. Project Cost and Source of Fund

Project financing comes from the State Budget (Directorate General of Cipta Karya, 2019). The Skouw PLBN development process and its funding are divided into three stages as shown in Figure 3.37. The cost of construction of each phase are Rp165.94 billion, Rp246.59 billion and Rp129.17 billion.

Figure 3.37. Stages of Development and Financing of the Skouw Integrated PLBN

PHASE I: CORE ZONE Land Area: 10.7 Ha Building Area: 7,619 m^2 Work Duration: 23 December 2015 – 16 December 2016 (360 days of work + 720 days of maintenance) Project Costs: Rp165,944,300,000	1. Main Building 2. Arrival Cargo Inspection Building 3. Clinic Building 4. Carwash/Disinfectant Building 5. Weight Bridge Building 6. Truck Scanner Building 7. Departure Cargo Inspecion Building 8. Confiscated Warehouse Building 9. Kennels 10. Utility Buildings 11. Check Point Building 12. Tasbara Monument
PHASE II: CORE AND SUPPORTING ZONE Land Area: 5.43 Ha Building Area: 9,921 m^2 Work Duration: 16 December 2016 – 15 December 2018 (729 days of work + 360 days of maintenance) Project Costs: Rp246,585,600,000	1. Office House 2. Wisma Indonesia 3. Multipurpose Building 4. Mosque 5. Church 6. Market Building 7. Rest Area 8. Army Pamtas Post 9. Police Post
PHASE III: FACILITIES AND SUPPORTING INFRASTRUCTURE Work Duration: 13 August 2019 – July 2020 Project Costs: Initial Contract: Rp117,564,030,000 Addendum: Rp129,168,089,000	1. Infrastructure and Regional Arrangement 2. Employee Mass 3. Market Building 4. Management Office 5. Mosque Renovation 6. Multipurpose Building Renovation 7. Link Bridge 8. Statue of Soekarno 9. Gate Ornament 10. Videotron 11. Signage, Sclupture, and Sitting Group

Source: Directorate General of Cipta Karya (2020).

1.9.4. External and Internal Factors

As a gateway to guarding the Republic of Indonesia's sovereignty and as an embryo of regional economic growth in border areas, the Skouw PLBN has various benefits, potentials, and opportunities, and challenges in the development and management process. This analysis was carried out descriptively based on perceptions of internal factors (strengths and weaknesses) and external factors (opportunities and threats), which were viewed from two perspectives: the reality and the important aspects of the observed factors related to the Skouw PLBN. Perception data were obtained from questionnaires and interviews with all elements who were part of the development process or felt the impact of the Skouw PLBN development: the government (BNPP and CIQS elements), academics, entrepreneurs, and the surrounding community.

1.9.4.1. External Factors

External factors that can be identified consist of: (E_1) the level of support from the local community for the PLBN; (E_2) the level of public and/or investor interest in construction and/or development activities in the PLBN area; (E_3) the level of opportunity for the public and/or private sector to become investors in construction and/or development activities in the PLBN area; (E_4) PLBN opportunities in job creation; (E_5) the level of PLBN impact on open access and connectivity for other areas around the PLBN location; (E_6) the level of PLBN impact on the emergence of new businesses for the community; (E_7) the opportunities to increase tourists with the existence of the PLBN; (E_8) opportunities for the PLBN to be recognised by other countries and internationally with the existence of facilities or national and/or international activities held in the PLBN area; (E_9) opportunities for the PLBN in improving people's welfare; (E_{10}) PLBN opportunities in increasing state and regional incomes; (E_{11}) PLBN land availability; (E_{12}) the level of potential disputes or lawsuits in the PLBN implementation process; (E_{13}) the level of convenience in obtaining business permits at the PLBN locations; (E_{14}) the current level of security in the PLBN area; and (E_{15}) closing the unofficial roads access (rat routes) in the border area that connects Indonesia–PNG in the PLBN area.

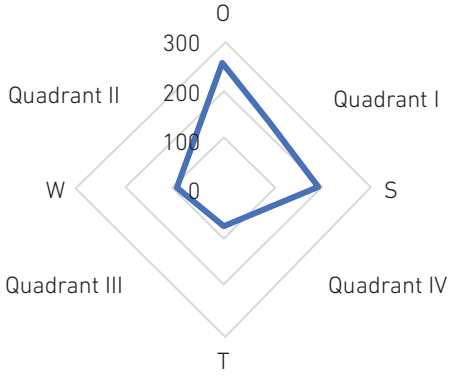
1.9.4.2. Internal Factors

Internal factors that can be identified consist of: (I_1) the existence of deregulation and/or issuance of regulations to support the PLBN project; (I_2) the suitability of the location of the PLBN for a national border cross post area; (I_3) conformity of the PLBN development with spatial planning and land use; (I_4) availability of infrastructure that supports the PLBN, such as roads, bridges, electrical installations, clean water installations; (I_5) the accuracy of the appointment of PT Nindya Karya as the executor of the PLBN project; (I_6) central and/or regional government support in financing the PLBN project; (I_7) the ease of licensing in the process of preparing PLBN project; (I_8) level of technical smoothness of the PLBN construction; (I_9) the level of use of modern technology in the PLBN construction; (I_{10}) timeliness in the PLBN construction; (I_{11}) the PLBN physical quality level; (I_{12}) the level of suitability of the designation of the PLBN development results; (I_{13}) the level of concern for the PLBN development towards environmental sustainability; and (I_{14}) adequacy of the PLBN supporting facilities.

1.9.5. SWOT Results and Analysis

A SWOT analysis is used to analyse survey results and identify strengths and weaknesses from the internal factors as well as opportunities and challenges from the external factors. Furthermore, the survey was assessed using the Internal Factors Analysis Summary (IFAS) and External Factors Analysis Summary (EFAS). The IFAS and EFAS assessments are then grouped into four quadrants based on the assessment results of each SWOT component.

Figure 3.38. SWOT Analysis Results



Categories		Values
O	Opportunities	250.80
S	Strengths	194.27
T	Threats	77.91
W	Weaknesses	98.37

Source: Authors, 2023.

Based on the results of the SWOT analysis in Figure 3.38, the Skouw PLBN is in quadrant I, on which the value of strengths is greater than the value of weaknesses, and the value of opportunities/potential is greater than the value of threats/challenges. Quadrant I is a very favourable condition because the Skouw PLBN area has more dominant opportunities and strengths, which can be utilised for further development of the border area. In this case, the strength–opportunity (S–O) strategy that can be applied to support this condition is growth-oriented strategy.

Figure 3.39. SWOT Analysis Priority Matrix

Internal	***Strengths*** • Availability of infrastructure (roads, bridges, electricity, clean water) • Location suitability for PLBN area • Suitability of the designation of PLBN development results	***Weaknesses*** • Adequacy of PLBN supporting facilities • The level of concern for PLBN development towards environmental sustainability
External	***Opportunities*** • Job creation • Increase in tourists • The emergence of new business for the community	***Threats*** • Increase in state/regional income • Unofficial roads access (rat routes) in the border area
	Positive	**Negative**

Source: Authors.

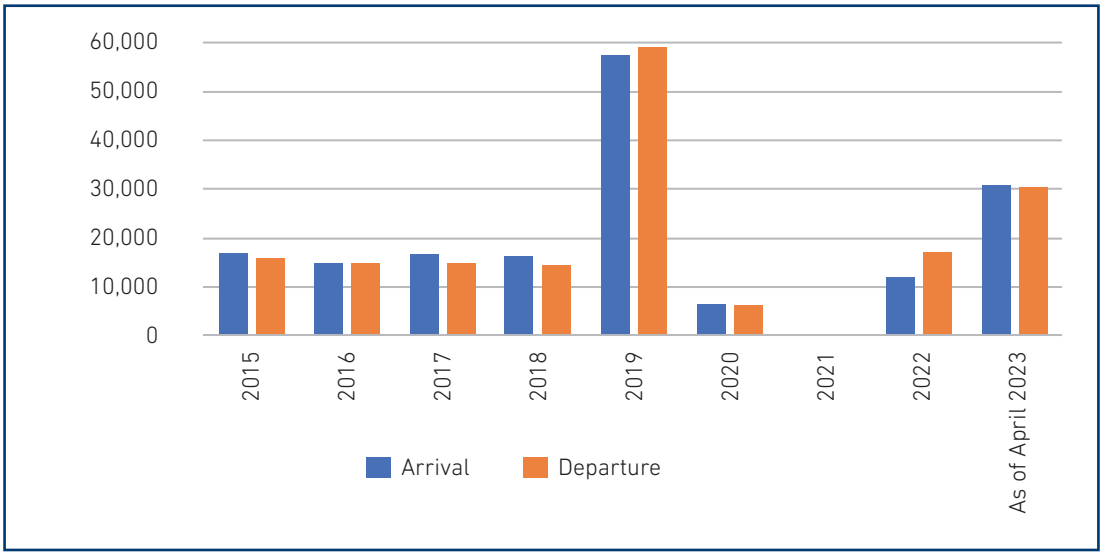
In Figure 3.39 it can be seen the priority factors for each SWOT element. The priority factors are the highest score from the survey results, which indicates that respondents perceive this factor as more dominant than other factors. The explanation of the SWOT priority analysis matrix is outlined in the form of challenges and benefits for the Skouw PLBN project, which are explained in the following section with a focus on a growth-oriented strategy.

1.9.5.1. Main Challenges

Based on the IFSA and EFSA assessment results, the Skouw PLBN has potential opportunities from an economic and social welfare standpoint. The Skouw PLBN has the potential to create jobs, increase the number of tourists, and create new businesses for the community. The presence of the PLBN is expected to optimise all the potential in the border area through the significance of developing Priority Locations in Muara Tami District.

Based on BNPP (2022), the Skouw border area has several potentials, including (i) agricultural potential as a rice-producing area; (ii) livestock potential is mostly in the form of purebred chickens; (iii) potential handicraft products in the form of *Noken Bags* produced by Papuan women and recognised by UNESCO as world heritage, as well as bead crafts in the form of necklaces, earrings, bracelets, brooches; and (iv) tourism potentials such as bird-of-paradise breeding, cuscus breeding, Papuan orchid cultivation, sea cliff tourism, and Mosso hot springs. The Skouw border area's development also provides an economic attraction that can be a driving force for job creation. The construction of the Skouw PLBN involved the surrounding community by recruiting 62 workers from Papua (18.2%) out of a total of 340 workers, with details of five experts, 18 skilled workers, and 39 workers (Public Communication Bureau of the Ministry of Public Works and Public Housing, 2017).

Figure 3.40. Number of Passers



Source: Class I Immigration Office TPI Jayapura (2023).

The number of tourist visits to Skouw increased dramatically after the Skouw PLBN was inaugurated (KPPIP, 2023). Every day, 300–500 people cross the Skouw PLBN, border crossers and tourists, local and foreign. Meanwhile, on holidays or weekends, more city residents come for a tour to see the border. This number increases 100% when there are celebrations or market days every Tuesday, Thursday, and Saturday, where visitors can reach 1000–1500 people daily (Directorate General of Cipta Karya, 2019). Of the 116,000 border crossers recorded in 2019 (see Figure 3.40), almost 90% were PNG citizens who came to shop at the Skouw PLBN market (Class I Immigration Office TPI Jayapura, 2023), as shown in Figure 3.41.

Figure 3.41. Trading Activities at the Skouw Integrated PLBN

Sources: (a) Directorate General of Cipta Karya (2020), and (b) authors (2023).

The border crossing visit has a positive impact on the surrounding community's economy, especially for traders, as well as being a magnet for the emergence of food stalls and souvenirs in the Skouw PLBN area. Economic transactions at the Skouw market could reach Rp3 billion–Rp5 billion monthly (KPPIP, 2023). Export and import activities (see Table 3.9) are also active through the Skouw PLBN daily and increase on market days (Directorate General of Cipta Karya, 2019). The Ministry of Tourism and Creative Economy is also paying attention to the potential and development of tourism in the Skouw border area and promoting the border area with its integrated PLBN through a routine agenda in the form of the Wonderful Indonesia Cross Border Festival, which is expected to increase tourist visits to Indonesia.

Table 3.9. Trade Between Indonesia and Papua New Guinea Through the Skouw PLBN

Year	Export Foreign Exchange (Rp)	Import Levies (Rp)	Export Commodities (PEB)	Import Commodities (PIBK)
2018	40,807,824,733	66,493,901,000	Grocery goods, food, spare parts, electronics, building materials, office stationery, caskets, medical devices	Vanilla, masohi bark, coffee beans, human remains, foodstuffs, snacks, processed meat, batteries, food
2019	29,946,353,934	56,780,171,000		
2020	2,059,492,050	7,262,985,000		
2021	590,524,964	8,414,165,411		
2022	949,780,629,415	7,061,082,000		
As of March 2023	3,663,511,162	405,589,000		

Source: KPPBC Type Madya Pabean C Jayapura (2023).

However, several challenges need attention, including increasing awareness of goods smuggling as well as outreach and enforcement of cross-border regulations for border residents with many unofficial roads access (rat routes) to enter and leave Indonesian territory, which can be detrimental to the state and affect the opportunities of PLBN in increasing state and regional revenue (Directorate General of Cipta Karya, 2019). In addition, another challenge is in terms of management and maintenance of the Skouw PLBN area in connection with the transfer of management status of the Skouw PLBN Market from the BNPP to the Provincial Government of Papua since 10 September 2020.

1.9.5.2. Main Benefits

The development of the Skouw border area brings benefits in terms of increased connectivity and infrastructure provision. The road to the border has been paved and is in excellent condition, and the need for electricity and clean water facilities has also been fulfilled, although it is still relatively limited (Directorate General of Cipta Karya, 2019). The border road was also developed for approximately 1,100 kilometres (km) from Jayapura to Merauke. Until 2016, 886 km of border roads had been connected, and in 2017 the construction of a new border road was continued. The remaining 204 km of border road were completed in 2019 (Public Communication Bureau of the Ministry of Public Works and Public Housing, 2017). In addition, the construction of good communication infrastructure can also help people in border areas to gain access to good information or to get convenience in trading their local commodities (KPPIP, 2023).

The Skouw border community now has an integrated PLBN, which is not only magnificent in its construction, but also equipped with various complete immigration service facilities under one roof. With the Skouw PLBN, the flow of people and goods at the border, which was previously without orderly rules, is now slowly being regulated through the correct procedures so that people who cross borders and carry goods will feel comfortable and at the same time be able to contribute to the country. This improvement aligns with the increasing number of Skouw PLBN crossers, especially since the Indonesia–PNG border reopened in October 2022 after being closed for 2 years due to the COVID-19 pandemic.

The Skouw border area is suitable for PLBN construction because it has affordable accessibility, there are customs, immigration, quarantine, and security (CIQS) activities, as well as potential crossing counterpart points in neighbouring countries (Directorate General of Cipta Karya, 2020). The Indonesia–PNG border area in Skouw is the only border area within the administrative area of the provincial capital in Indonesia, namely Jayapura City, so it is strategic for development as an interstate trade area. This can be seen from the existence of the Skouw PLBN market as a PLBN supporting facility that is a magnet for visitors and border crossers, as well as being a centre for cross-border trade between Indonesia and PNG. A total of 304 kiosks (blocks A, B, C), 152 kiosks (block D), and 50 stalls for Papuan women (*mama-mama Papua*) are available for use by traders in the Skouw border area (BNPP, 2022).

However, several issues of the adequacy of PLBN supporting facilities still need attention. Stable and adequate provision of electricity, clean water, and communication infrastructure are necessary to maintain activities at the Skouw PLBN. In addition, optimising the utilisation of various facilities at the Skouw PLBN is also influenced by bilateral regulations with the government of PNG. Several facilities in the core zone of the Skouw PLBN, such as arrival and departure cargo inspection, carwash/disinfectant, weighbridge, truck scanners, and checkpoints, are still pending operationalisation due to the lack of readiness on the PNG side.

Conclusions

With its status as a PSN, a project that is considered critical and strategic, the construction of the Skouw PLBN gains several advantages in accelerated development, accelerated time for land provision, political security guarantees, and obtaining facilities for ease of project implementation. This is as mandated in Presidential Instruction (Inpres) Number 6 of 2015 and Presidential Regulation Number 3 of 2016. The construction of the Skouw PLBN provides hope and opens the way for the people at the easternmost gate of Indonesia to improve their quality of life and achieve prosperity. The gateway to a bright future is wide open for Skouw to free himself from remoteness, alienations, backwardness, and other limitations that have shackled and hindered the progress of potential development in Skouw.

The SWOT analysis shows that there are several challenges and benefits of the Skouw PLBN. Certain pressing issues require immediate focus. These include raising awareness about illicit goods trafficking and enhancing the dissemination and enforcement of rules for border that not only pose risks to the nation but also hamper the potential revenue generation for PLBN (Directorate General of Cipta Karya, 2019). The various strengths that create benefits in the Skouw PLBN need to be accompanied by excellent and effective border management and governance to be able to take advantage of the opportunities or potentials, as well as respond to challenges that arise in the management and development of the Skouw border area.

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1.10. Palapa Ring

1.10.1. Project Profile

The Palapa Ring Project is the construction of a national-scale fibre optic backbone network infrastructure, which is one of the national strategic projects regulated in Presidential Regulation Number 3 of 2016 concerning the Acceleration of Implementing National Strategic Projects (PSN). The choice of the name Palapa on the 'Palapa Ring' was inspired by the Palapa Oath delivered by Patih Gajah Mada who was determined to unite the archipelago of Indonesia. This spirit was adopted by the Palapa Ring to connect Sabang to Merauke and Miangas Island to Rote Island by building digital connectivity (Ministry of Communication and Information Technology, 2019). The project, initiated in 1997, only gained traction in 2016 after it was designated as a PSN. In the presidential regulation, the Palapa Ring Project was divided into two major projects: Palapa Ring Broadband in 457 districts and/or cities and Palapa Ring Broadband (eastern part) in 57 districts and/or cities.

The Palapa Ring Broadband in 457 districts and/or cities was successfully completed in 2018. PT Telekomunikasi Indonesia (Tbk), as the executor, has completed all construction of this project in 457 districts and/or cities, with the details shown in Table 3.10.

Table 3.10. Total Number of Palapa Ring Broadband Projects and Location

Number	Region	Number of Points
1.	Sumatra	150 Districts/Cities
2.	Java	119 Districts/Cities
3.	Bali	9 Districts/Cities
4.	West Nusa Tenggara	10 Districts/Cities
5.	East Nusa Tenggara	20 Districts/Cities
6.	Kalimantan	54 Districts/Cities
7.	Sulawesi	68 Districts/Cities
8.	Maluku	8 Districts/Cities
9.	North Maluku	7 Districts/Cities
10.	Papua	5 Districts/Cities
11.	West Papua	7 Districts/Cities
TOTAL		**457 Districts/Cities**

Source: Indonesia Baik, 2018b.

In addition to the construction in 457 districts and/or cities, the Palapa Ring Project also continues to reach every area of Indonesia, especially the Terdepan, Terluar, and Tertinggal (3T) areas. The Palapa Ring Broadband (eastern part) project connects 57 districts in the 3T areas using a 12,148 kilometre (km) fibre optic network. The implementation of this project is divided into three work packages: West Palapa Ring (5 districts), Central Palapa Ring (17 districts), and East Palapa Ring (35 districts) (BAKTI, 2021). The locations for the construction of the Palapa Ring network are in the 3T areas, which are not financially feasible due to their low population, low per capita income, purchasing power, and challenging geographical environment for development.

Overall, the Palapa Ring Broadband (eastern part) project is divided into 17 projects with the details shown in Table 3.11.

Table 3.11. Section of The Palapa Ring Broadband (Eastern Part)

WEST PALAPA RING	
Project 1	Dumai, Siak, Bengkalis, Tebing Tinggi, Karimun , Batam
Project 2	Batam, Tarempa, Ranai, Singkawang
Project 3	Kuala Tungkal, Daik Lingga, Batam
CENTRAL PALAPA RING	
Project 4	Sendawar, Long Bangun
Project 5	Kendari, Wanggudu, Petasia, Tentena
Project 6	Kendari, Wawoni, Raha, Sawerigadi, Lakudo, Raha, Buranga, Baubau
Project 7	Luwuk, Salakan, Banggai, Taliabu, Sanana
Project 8	Manado, Ondong Siau, Tahuna, Melonguane, Morotai Selatan, Tobelo
Project 8A	Ternate, Tidore, Sofifi
CENTRAL PALAPA RING	
Project 9	Waingapu, Sabu, Baa, Kupang
Project 10	Alor, Wetar, Tiakur, Saumlaki, Tual, Dobo, Timika
Project 11	Manokwari, Ransiki, Rasiei, Nabire, Botowa, Serui, Biak, Sorendiweri, Numfor, Manokwari
Project 12	Tangguh, Teminabuan, Aifat, Sorong, Fef
Project 13	Tangguh, Bintuni, Ransiki, Anggi, Manokwari
Project 15A	Timika, Tiga, Enarotali, Kigamani, Nabire, Raisei, Manokwari
Project 15B	Timika, Tiga, Enarotali, Kigamani, Nabire, Botowa, Serui, Biak
Project 16	Jayapura, Waris
Project 17	Merauke, Tanah Merah, Waropko

Source: Telecommunication and Information Accessibility Agency (BAKTI), 2021.

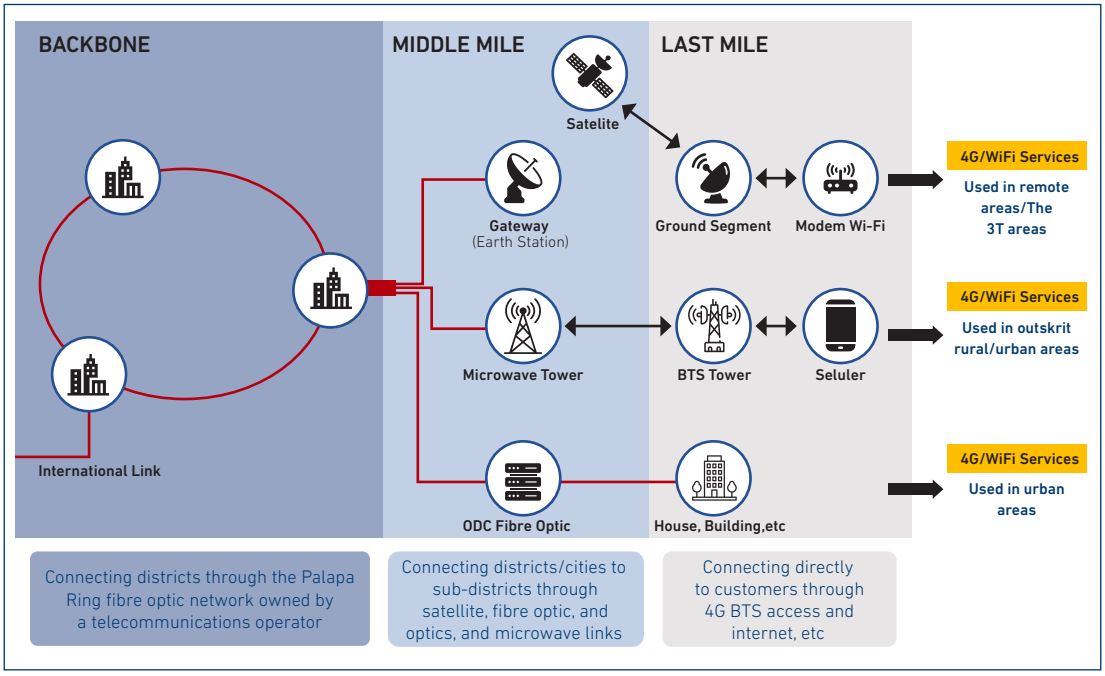
1.10.2. Project Objectives

Indonesia is an archipelagic country consisting of 17,499 islands with an area of 5,180,053 km^2 (Alfari, 2022), with these geographical conditions, providing infrastructure becomes a challenge in terms of both technical aspects and costs. The 3T areas are often the last priority for development. As a result, these areas are often isolated from access to information, making them susceptible to potential geopolitical and economic issues. In response, the government is committed to unifying all of Indonesia's regions through digital connectivity as outlined in the National Medium Term Development Plan (RPJMN) 2015–2019 and Presidential Regulation Number 96 of 2014 concerning the Indonesian Broadband Plan 2014–2019. This commitment aims to provide quality and equitable broadband access across the country. The government's efforts are manifested in the Palapa Ring Project, which serves as the backbone infrastructure for information and communication technology and is integrated with telecommunication operator networks.

The Palapa Ring Project started with the Nusantara-21 project that was inaugurated in 1997, which was a long-term programme promoted by the government to prepare for the development of communication technology in Indonesia. However, the project did not progress due to the economic crisis that Indonesia experienced in 1998. At the Infrastructure Summit I, for the first time the idea of the National Fibre Optic Ring (CSO-N), which is a ring-shaped submarine cable network containing integrated broadband frequency bands throughout the Indonesian region. This plan was chosen so that telecommunication operators with similar networks can play a more significant role in extending this backbone network to the middle mile and last mile, which are the end users (Figure 3.42).

After being delayed for 2 decades, the Palapa Ring Project, initiated in 1997, finally experienced significant progress after being designated as one of the National Strategic Projects (PSN). Gradually, from 2016 to 2019, the project successfully connected all regions of Indonesia. Government support in various forms of regulation and financing through a public–private partnership (PPP) financing scheme serves as evidence of the government's commitment to providing affordable internet access throughout Indonesia. Palapa Ring Project serves as backbone telecommunication network which connects the middle mile and last mile network, integrated with satellite project as middle mile network (also National Strategic Projects) especially for the distant area in Indonesia (see Figure 3.42).

Figure 3.42. The Telecommunication Infrastructure Layers in Indonesia



3T = *Terdepan, Terluar, and Tertinggal*, BTS = Base Transceiver Station, NOC = Network Operations Centre, ODC = Outdoor Connector.

Source: N. Christian (personal communication, 2 August 2023).

With the completion of the Palapa Ring Project, it is expected that all areas of Indonesia will have affordable internet access, enhancing digital literacy, reducing digital divides and information access gaps, opening opportunities for internet-based businesses and job opportunities, boosting economic growth, and enabling competitiveness in the global market (Indonesia Baik, 2018a).

1.10.3. Project Cost and Source of Fund

The funding sources for the implementation of the Palapa Ring Project are divided into two schemes: the Palapa Ring Broadband in 457 districts and/or cities, carried out by PT Telekomunikasi Indonesia (Telkom) with a private financing scheme and Palapa Ring Broadband (Eastern Part) in 57 districts and/or cities executed by Badan Aksesibilitas Telekomunikasi dan Informasi (Telecommunication and Information Accessibility Agency, Ministry of Communication and Information) as the responsible party for project implementation, using the PPP financing scheme.

The West Palapa Ring project was the first project in the communications sector that utilises the PPP financing scheme (CNN, 2019), with a total financing of Rp1.2 trillion for this project. Meanwhile, for the Central Palapa Ring Project total financing for the project reaches Rp1.3 trillion and for the East Palapa Ring Project, the total is Rp5.13 trillion. The concession period for all three projects is 15 years. The Palapa Ring project serves as evidence of the collaboration between the government and the private sector to achieve the interconnection of telecommunication networks in 514 regencies and/or cities across Indonesia.

1.10.4. External and Internal Factors

We collected data from stakeholders to measure respondents' perspectives. The participants are categorised into four categories: government and/or project implementers, academics, communities, and entrepreneurs. All participants who filled out the survey were those directly impacted by the Palapa Ring Project. Next, their perceptions of various internal and external factors – the perceived reality and the perceived importance – were collected and analysed. Perceived reality measures the stakeholders' perception of the facts observed, whilst the perceived level of importance scores factors that respondents feel are important to the success of the project. Both are scored on a scale of 1 to 6, where 1 indicates a very negative perception, whilst a score of 6 is a very positive reception.

1.10.4.1. External Factors

The identified external factors are the level of support from the local community for the Palapa Ring Project (E_1); the opportunity for private individuals/communities to become development investors (E_2); the potential of the Palapa Ring Project in job creation (E_3); the impact of the Palapa Ring Project on opening up access to the surrounding areas (E_4); the impact of the Palapa Ring Project on the emergence of new businesses for the community (E_5); the impact of the Palapa Ring Project on improving the welfare of the community (E_6); the impact of the Palapa Ring Project on increasing regional income (E_7); the availability of land for the Palapa Ring Project (E_8); timeliness of the funding disbursement for the Palapa Ring Project to investors (E_9); and the level of potential disputes in the implementation of the Palapa Ring Project (E_{10})

1.10.4.2. Internal Factors

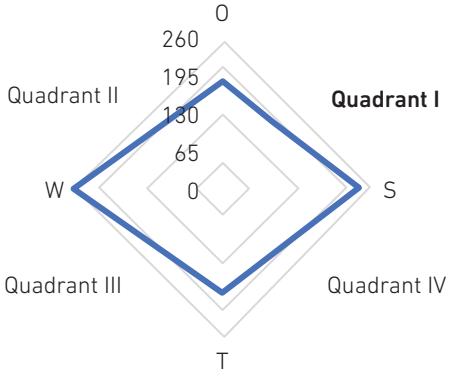
The identified internal factors are the deregulation or enactment of regulations (I_1); the availability of infrastructure supporting the Palapa Ring Project (I_2); the accuracy of the appointment of the Palapa Ring Project implementer (I_3); government support in financing (I_4); the level of ease of licensing for the Palapa Ring Project (I_5); the level of modern technology utilisation in the Palapa Ring Project (I_6); timeliness in the construction of the Palapa Ring Project (I_7); appropriateness of the allocation of the results of the Palapa Ring Project (I_8); and the availability of supporting facilities for the Palapa Ring Project (I_9).

1.10.5. SWOT Results and Analysis

Building digital connectivity in an archipelagic country like Indonesia presents its own challenges for the implementation of the Palapa Ring Project. In addition, Indonesia's geography, which consists of mountains and oceans, added to the challenges in implementing the construction of the Palapa Ring Project.

To evaluate the implementation of the Palapa Ring Project, as well as to analyse the strengths and weaknesses including analysing the opportunities and threats that might be faced from the Palapa Ring Project, a SWOT analysis was carried out on the Palapa Ring Project. The SWOT analysis was carried out by distributing questionnaires to four category groups: government and/or project implementers, academics, communities, and entrepreneurs. Based on the results of the SWOT analysis, the strengths and opportunities are the dominant factors when compared to the weaknesses and threats (Figure 3.43).

Figure 3.43. SWOT Analysis

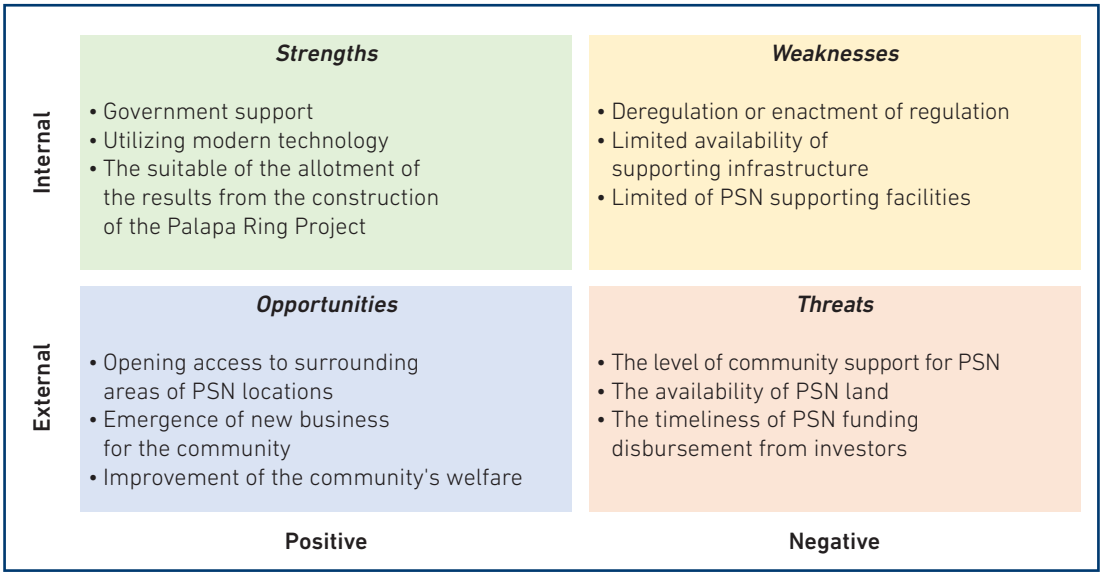


Categories		Values
O	**Opportunities**	**221.17**
S	**Strengths**	**248.31**
T	Threats	170.19
W	Weaknesses	155.64

Source: Authors, 2023.

A summary of the three with the highest values identified as strengths, weaknesses, opportunities, and threat is presented in Figure 3.44.

Figure 3.44. SWOT Analysis Priority Matrix



Source: Authors, 2023

Based on the questionnaire data, the three main factors that are the strengths of the Palapa Ring Project are government support, the use of modern technology in the development of this project, and the suitability of the allotment of the results from the construction of the Palapa Ring Project. Government support can be seen through various actions taken to support the implementation and utilisation of the Palapa Ring Project. During the development phase, the government has provided various facilities for both permit and non-permit activities in crossing marine conservation areas and protected areas. The government also provided support during the operational period.

1.10.5.1. Main Challenges and Benefits

The weaknesses of the Palapa Ring Project include the adequacy of supporting facilities, concern for the development of the Palapa Ring Project for environmental sustainability, as well as the availability of supporting infrastructure for the project. In addition to an analysis of the strengths and weaknesses of the Palapa Ring Project, an analysis of the opportunity and threat factors of the project was also carried out. The opportunities from the Palapa Ring Project include opening access to the area around the project location, creating new businesses for local communities, increasing regional income, and improving the welfare of the people around the project. The threats that must be watched out for include investor interest in the project.

To attract investors who are internet service providers or telecommunications operators to utilise the Palapa Ring, government support is needed to be able to provide convenience in the collaboration process. At present, the permit process is still difficult to grant to the executors of the construction of the Palapa Ring Project. It is hoped that this support will be able to optimise the use of the Palapa Ring to integrate digital connectivity in Indonesia. The existence of the project is proof of the government's commitment to developing Indonesia in a fair and equitable manner. The internet network is not only enjoyed by urban communities but can be enjoyed throughout the country.

1.10.5.1.1. West Palapa Ring

The West Palapa Ring Package was the first package to be built from the entire series of Palapa Ring projects. On 22 January 2016, the Ministry of Communication and Informatics (Kominfo) announced the winner of the West Palapa Ring Package tender, PT Palapa Ring Barat, which is a consortium of Moratel-Ketroden Triasmitra with the composition of PT Moratelematika Indonesia 90% and PT Ketrosden Triasmitra 10%. The signing of the West Palapa Ring Package Project was held at the Office of the Ministry of Finance on 29 February 2016. The agreement signed was a guarantee agreement between PT Penjaminan Infrastruktur Indonesia and PT Palapa Ring Barat. In addition, at that moment a regress agreement was also signed between PT Indonesia Infrastructure Guarantee with the Ministry of Communication and Information (PT Penjaminan dan Infrastruktur Indonesia, 2016).

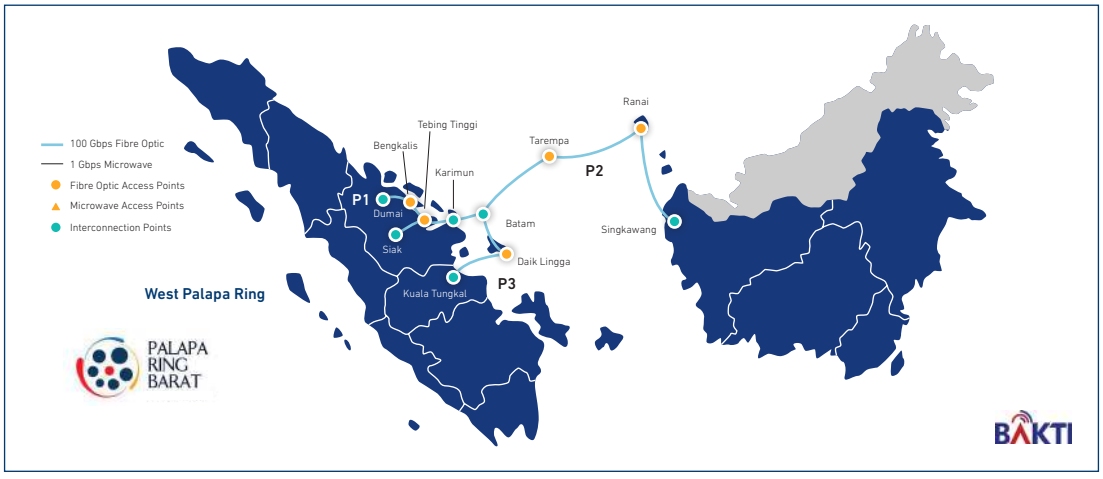
On 17 October 2016, the Palapa Ring West Package project officially started. The start of the project was marked by the ground-breaking by the Minister of Communication and Information (as the person in charge of collaboration projects) at Pasir Panjang Beach, Singkawang, West Kalimantan. In Figure 3.45, it can be seen that the West Palapa Ring Project consisted of three projects connecting Sumatra, Riau Islands, and Kalimantan. The total length of fibre optic cables for the West Palapa Ring Project reaches 2,255 km, consisting of 1,724 km of submarine fibre optic cables and 531 km of terrestrial fibre optic cables.

The West Palapa Ring Project officially started operating on 2 March 2018. The existence of The West Palapa Ring Project can assist internet service providers or telecommunication operators in providing affordable internet services. This is because the project has significantly reduced the investment burden in infrastructure development.

Various benefits have been felt by the community in the West Palapa Ring Project development area. One of the areas affected by the construction of the West Palapa Ring Project is Natuna Regency in the Riau Archipelago Province. Access to quality communication lines is the main thing for Natuna Regency, considering that Natuna Regency is a border area. In addition, the presence of the West Palapa Ring Project has had a positive impact on economic growth in Natuna Regency. Before the West Palapa Ring existed, economic growth in Natuna Regency was only 3%, but after the operation of the West Palapa Ring it increased to 5.8%. Apart from Natuna Regency, Lingga Regency has also felt the positive impact of the West Palapa Ring Project. The tourism sector, education sector, and economic sector in Lingga Regency have developed significantly and provided positive impact on the people of Lingga Regency (PalapaRing.id, 2018).

In 2019, a land fire occurred in Bunguran Selatan District (Natuna Regency), which caused the fibre optic cables of the Palapa Ring Project to catch fire. The impact of the fire resulted in a 9-hour internet disruption in Natuna Regency. To prevent similar incidents, the Department of Communication and Information, Department of Public Works and Spatial Planning, Fire Department, and local authorities have educated the surrounding communities to actively protect national assets (Liputan 6, 2019).

Figure 3.45. Points of the West Palapa Ring



Source: Telecommunication and Information Accessibility Agency (BAKTI), 2021.

1.10.5.1.2. Central Palapa Ring

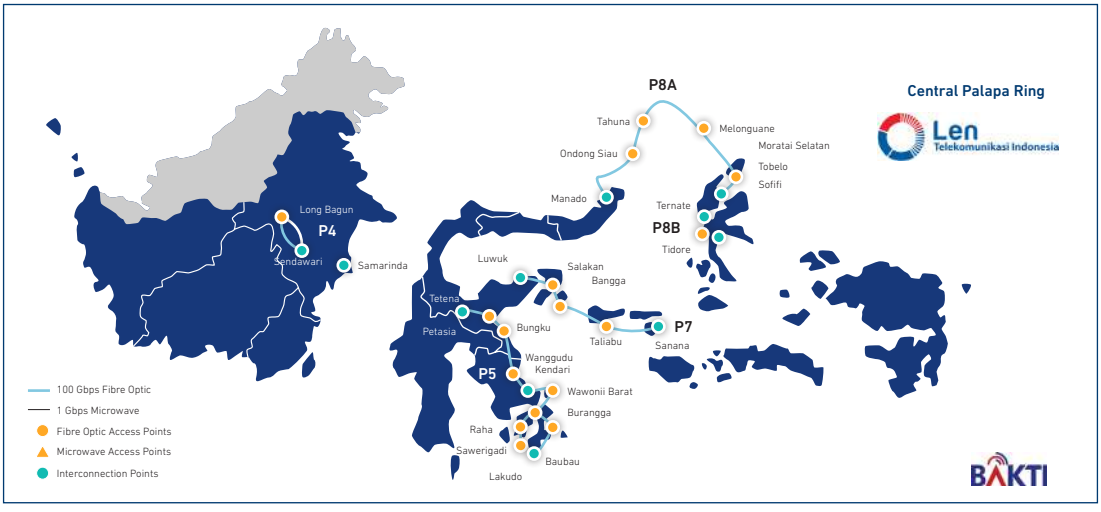
After the West Palapa Ring Project began running, the next stage was the construction of the Central Palapa Ring Project. The announcement of the winning bidder for the Central Palapa Ring Project was delivered simultaneously with the winner of the West Palapa Ring Project, on 22 January 2016. The winning bidder, who was determined as the implementing entity for the Central Palapa Ring Project is the Pandawa Lima Consortium, consisting of (Ministry of Communication and Information Technology, 2016b):

a. PT. LEN Telekomunikasi Indonesia (Ketua Konsorsium), 51%;
b. PT. Teknologi Riset Global Investama (TRG), 34%;
c. PT. Sufia Technologies, 5%;
d. PT. Bina Nusantara Perkara (BNP), 5%; and
e. PT. Multi Kontrol Nusantara, 5%.

The signing of the Cooperation Agreement, Guarantee Agreement, and Regress Agreement was held on 4 March 2016 in Jakarta.

As a milestone in the implementation of the Central Palapa Ring Project, the Minister of Communication and Informatics laid the ground-breaking in South Morotai, North Maluku Province. The Central Palapa Ring Project consists of six projects connecting Kalimantan, Sulawesi, and the Maluku Islands. The total length of fibre optic cables for the Central Palapa Ring Project reaches 3,196 km, consisting of 2,110 km of submarine fibre optic cable and 1,086 km of terrestrial fibre optic cable. The Central Palapa Ring Project officially commenced on 21 December 2018.

Figure 3.46. Points of The Central Palapa Ring Project



Source: Telecommunication and Information Accessibility Agency (BAKTI), 2021.

1.10.5.1.3. East Palapa Ring

The East Palapa Ring Project was the last package of the entire series of the Palapa Ring Project. The auction for the East Palapa Ring Package was separated from the two previous projects due to the complex characteristics of the eastern part of Indonesia, requiring in-depth research. On June 17, 2016, the winner of the East Palapa Ring Project tender was announced: PT Palapa Timur Telematika, which is a consortium of Moratelindi–IBS–Smart Telecom. The signing of the Cooperation Agreement, Guarantee Agreement, and Regress Agreement was held on 29 September 2016 at the Presidential Palace and witnessed by the President of the Republic of Indonesia (Ministry of Communication and Information Technology, 2016a).

The East Palapa Ring Project consisted of 10 projects connecting East Nusa Tenggara, Maluku, West Papua, and Papua. The total length of fibre optic cables for the East Palapa Ring Project reached 7,003 km, consisting of 4,557 km of submarine fibre optic cable and 2,446 km of terrestrial fibre optic cable. In addition, because the geographical conditions in the Papua region are characterised by mountains and highlands, 52 towers and 49 radio microwave hops were also built (as depicted in Figure 3.47).

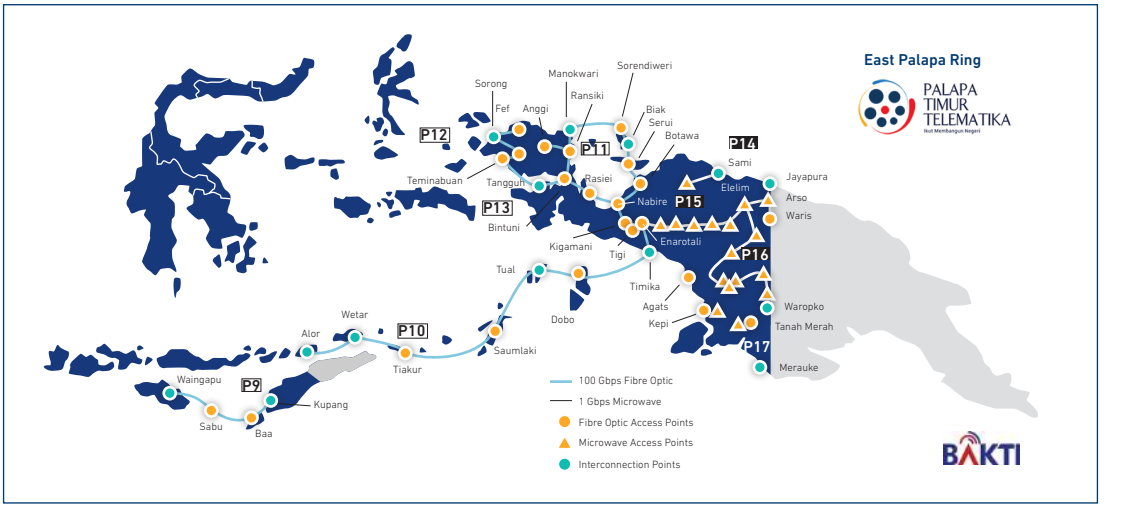
Specifically for the East Palapa Ring Project, there are points that utilise microwave fibre technology including:

a. Project 14, covering Sarmi, Burmeso;
b. Project 15, covering Timika, Tigi, Enarotali, Sugapa, Ilaga, Kota Mulia, Karubaga, Tiom, Kobakma, Elelim, Jayapura;
c. Project 16, covering Jayapura, Elelim, Wamena, Kenyam, Sumohai, Dekai, Oksibil, Waropko; and
d. Project 17, covering Timika, Agats, Kepi, Tanah Merah, Merauke or Timika, Agats, Kepi, Tanah Merah, Waropko.

The East Palapa Ring Project officially started operating on 14 October 2019. The government's commitment to continue to carry out equitable distribution of development throughout the country, is evidenced by the construction of access roads and telecommunications infrastructure in eastern Indonesia. Various benefits have been felt by the people in eastern Indonesia, one of which is South Sorong Regency. The East Palapa Ring Project provides access to quality communications, thus accelerating economic growth in the Regency. This is also felt by the people in Keerom Regency, where 80% of the area can already enjoy the internet network through the East Palapa Ring Project. The hope is that the reach of the East Palapa Ring will be expanded, so that it can reach all areas in Keerom Regency which is directly adjacent to Papua New Guinea.

Apart from natural factors, on 9 January 2021, tower B4-B5 located in Puncak Regency (Papua) was vandalised and set on fire by unknown individuals. To minimise the impact of vandalism, the Ministry of Communication and Information quickly took action by utilising satellite technology (VSAT) as a backup. Additionally, to prevent similar incidents, the Ministry of Communication and Information collaborated with the Indonesian national armed forces, the national police, and local governments to secure the Palapa Ring infrastructure (Liputan 6, 2021). Then, on 2 March 2022, eight workers from the Palapa Ring Project and national armed forces soldiers were shot by an armed criminal group in Papua (Kompas, 2022).

Figure 3.47. Points of The East Palapa Ring Project



Source: Telecommunication and Information Accessibility Agency (BAKTI). 2021.

Conclusions

The completion of the Palapa Ring network construction complements the entire infrastructure layers in Indonesia, in addition to other infrastructure developments such as multi-functional satellites, base transceiver station towers, internet access provision, and ecosystem services carried out by Badan Aksesibilitas Telekomunikasi dan Informasi (Ministry of Communication and Information). The next task is related to its utilisation, considering that the utilisation of the Palapa Ring network can still be improved. This is understandable as the construction of the Palapa Ring network is still in the peripheral and the 3T areas where the user base is not as extensive as in urban areas. Initiated in 1997, the project finally experienced significant progress after being designated as one of the National Strategic Projects (PSN). In addition, government support in various forms of regulation and financing through a PPP financing scheme serves as evidence of the government's commitment to providing affordable internet access throughout Indonesia.

In 2045, coinciding with the 100th anniversary of Indonesia's independence, Indonesia is targeting to become 'Indonesia Emas' (Golden Indonesia). By that year, Indonesia is expected to have become a developed country and on par with superpower countries. One of the pillars in realising this vision is through equitable development and economic transformation based on technology. The government has built the Palapa Ring network as the backbone of information and communication technology infrastructure throughout Indonesia, providing internet connectivity even to remote areas. The government's commitment to accelerate the implementation of the Palapa Ring Project was realised through its designation as one of the National Strategic Projects, as stated in Presidential Regulation Number 3 of 2016 concerning the Acceleration of National Strategic Project Implementation. By being recognised as a National Strategic Project, the stalled Palapa Ring Project was successfully completed within 3 years.

The next task and duty of the people in Indonesia is to safeguard and maintain the built infrastructure. Furthermore, they should maximise the benefits of IT infrastructure for the creative economy, improve productivity, and integrate it with other connectivity infrastructure. The operation of the Palapa Ring Project is a significant milestone in realising Indonesia Emas in 2045.

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1.11. Soekarno–Hatta International Airport Express Train

1.11.1. Project Profile

The Soekarno–Hatta International Airport (SHIA) express train project is considered one of Indonesia's National Strategic Projects. It entails the development of an alternative transportation mode connecting the Soekarno–Hatta International Airport with Manggarai Station, located in the South Jakarta Administrative City. The objective of the SHIA express train project is to improve railway transportation services, particularly for passenger transport to the Soekarno Hatta International Airport via Tangerang, by the mandate of the President of the Republic of Indonesia as stipulated in Presidential Regulation Number 83 of 2011. This regulation assigns PT Kereta Api Indonesia (Persero) the responsibility of managing the infrastructure and facilities of the Soekarno–Hatta International Airport Railway and the Jakarta–Bogor–Depok–Tangerang–Bekasi circular line. PT Kereta Api Indonesia (Persero) prepares and implements the necessary infrastructure and facilities for the SHIA railway. As mentioned, the company is authorised to take the necessary measures to realise the railway infrastructure. The implementation period of this project was from 2015 to 2017, and it was included in the National Strategic Project programme, starting in 2016, based on the Republic of Indonesia Presidential Regulation Number 3 of 2016, which was amended by Republic of Indonesia Presidential Regulation Number 56 of 2018 concerning the Acceleration of National Strategic Project Implementation.

Figure 3.48. Soekarno–Hatta International Airport Train Station and BNI City Station

Sources: Left, PT Angkasa Pura II (Persero) (2018), and right, KAI Bandara (2022).

The SHIA express train project passes through stations within the city that are easily accessible by road and other modes of transportation. These stations are located near commercial centres and densely populated residential areas. Furthermore, they connect with Jakarta's mass raid transit (MRT) system and other railway lines. The airport station expects to be situated near the airport's passenger terminals, allowing travellers to conveniently walk from the train station to the departure terminal or from the baggage claim area to the arrival terminal.

The express train will be a fast and convenient transportation alternative to and from the Soekarno–Hatta International Airport. According to the infographic by Indonesiabaik.id. (2017), this train will consist of 10 carriages and has a capacity of 274 passengers. Initially, the Soekarno–Hatta International Airport express train only served 80 trips per day, but over time, the total number of trips increased to 124 per day. The airport train will operate every 15 minutes, resulting in a total available seating capacity of 33,976 seats daily (Jamil, 2016).

The SHIA express train is located in DKI Jakarta and Banten. The express train departs from Manggarai Station and stops at Sudirman Baru Station (BNI City Station) and Duri Station, located in DKI Jakarta. It then continues to Batu Ceper Station and Soekarno–Hatta International Airport Station in Banten. According to Rahayu (2018), the total length of the train route is 36.3 km, consisting of 24.2 km of existing tracks between Manggarai Station and Batu Ceper Station and 12.1 km of new rails between Batu Ceper Station and Soekarno–Hatta International Airport Station. Both Soekarno–Hatta International Airport Station and Sudirman Baru Station (BNI City Station) are new stations explicitly built for this project. The express airport train passengers benefit from a particular dedicated platform building when boarding or disembarking at Manggarai Station, Duri Station, and Batu Ceper Station. At these three stations, Soekarno–Hatta International Airport express train passengers can transfer to commuter trains at separate platforms to continue their journey.

To ensure the success of the Soekarno–Hatta International Airport express train, the government has undertaken renovation and refurbishment projects at several stations along its route. These stations include Manggarai Station, Sudirman Baru Station (BNI City Station), Duri Station, and Batu Ceper Station. Manggarai Station is being prepared as the most significant transit station, serving as a hub for integrating electric rail line commuter services, long-distance train departures, and the Soekarno–Hatta International Airport express train. The Soekarno–Hatta International Airport express train is anticipated consistently operate on schedule, providing swift transportation to and from Soekarno–Hatta International Airport at competitive ticket prices compared to other ground transportation modes.

1.11.2. Project Objectives

The development activities of the railway system in Jabodetabek are based on the Presidential Regulation of the Republic of Indonesia Number 83 of 2011 concerning the assignment to PT Kereta Api Indonesia (Persero) of the management of the infrastructure and facilities of the SHIA Railway and the Jakarta–Bogor–Depok–Tangerang–Bekasi Loop Line. Planning for the development of the Soekarno-Hatta International Airport railway began in 2013, with the initial route from Soekarno Hatta International Airport to Halim Perdana Kusuma Airport. Subsequently, changes in the transportation landscape, including the development of the LRT, online taxi, and other technical considerations, necessitated adjustments to the project plan. As a result, the route was modified to extend to Manggarai Station without passing through Pluit Station and Angke Station.

In accordance with the Republic of Indonesia Presidential Regulation Number 3 of 2006, which was amended by the Republic of Indonesia Presidential Regulation Number 56 of 2018 regarding the Acceleration of National Strategic Project Implementation, the development of the Soekarno-Hatta International Airport Express Train became one of the National Strategic Projects. The primary goal is to expedite the construction of infrastructure and facilities along the train's route. This involves the creation of a new track segment between Batu Ceper Station and Soekarno-Hatta International Airport Station, spanning 12.1 kilometres, which requires accelerated processes for permits, land acquisition, and physical construction. The expedited development process is a notable feature of the Soekarno-Hatta Airport International Express Train Project compared to projects that are not part of the National Strategic Projects.

This project is carried out with the objective of enhancing railway transportation services to facilitate passenger transport to and from the Soekarno–Hatta International Airport in Tangerang. The project expects to accommodate the access needs to and from the airport, support economic growth in the vicinity, and stimulate local and national economies. The economic benefits of this project include promoting increased commercial and industrial activities along the route and generating employment opportunities for the local population. The operation of the Soekarno–Hatta International Airport express train is expected to bring traffic congestion reduction, and there will be a 30% decrease in the volume of vehicles heading to Soekarno Hatta International Airport (Indonesia baik.id., 2017).

1.11.3. Project Cost and Source of Fund

According to the Committee for the Acceleration of Priority Infrastructure Provision (KPPIP, 2023), the SHIA express train project requires an investment cost of Rp24.5 trillion. The funding sources for this project are derived from state-owned enterprises (BUMN). The construction works of the airport express railway include the development of tracks, construction of bridges, establishment of Sudirman Baru Station (BNI City Station), Duri Station, and Batu Ceper Station, procurement of railway switches, acquisition and installation of railway tracks with concrete supports, installation of digital radio communication devices, procurement and installation of overhead electrification systems and electrical substations along the railway line, construction of telecommunication infrastructure, and signal works on the railway line.

1.11.4. External and Internal Factors

Based on the successful development of the SHIA express train project, there are also benefits for stakeholders and challenges that need to be managed to ensure the success of this railway project. Challenges represent external factors from the central and regional governments that are beyond control (opportunities and threats), while benefits represent internal factors that can be controlled (strengths and weaknesses) and can either support or hinder the achievement of a goal.

We have gathered data from stakeholders, including government and/or project implementers, academics, entrepreneurs, and service users, to gauge respondents' perspectives. The perceptions of internal and external factors from these respondents were collected and analysed. Perceived reality measures stakeholders' perceptions of observed facts, while the perceived importance assesses factors that respondents consider crucial for project success. Both aspects are scored on a scale of 1 to 6, where a score of 1 indicates a highly negative perception, and a score of 6 signifies a highly positive acceptance.

1.11.4.1. External Factor

Several external factors identified include land acquisition issues for the new railway infrastructure (community support level towards the project), investor interest in developing the circuit in the project area, opportunities for private and community investment in the project, potential job creation by the project, the impact on traffic congestion in the project vicinity, emergence of new businesses for the local community, opportunities for increased air passenger usage of the railway transportation mode, public use of the railway as a mode of transport to SHIA, potential enhancement of community welfare, potential revenue generation for the state/region, project land availability, timeliness of project funding disbursement from investors, the likelihood of disputes or legal challenges in the project execution process, and the ease of obtaining permits for the project location.

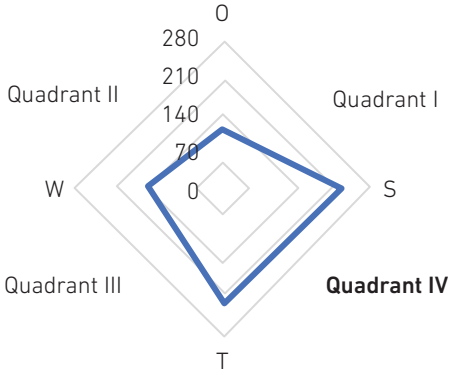
1.11.4.2. Internal Factor

The internal factors identified in this project include the issuance of regulations to support project implementation, the suitability of the project location for the railway line, alignment of the project development with regional spatial planning and land use, availability of supporting infrastructure, the appropriate selection of PT Railink as the project executor, support from the central and/or regional government in project financing, the ease of obtaining permits during the project preparation process, smoothness of technical construction development, utilisation of modern technology in project construction, adherence to project timelines, the quality of physical project outcomes, alignment of project development with intended purposes, consideration of environmental sustainability in project development, adequacy of supporting facilities, reasonable train ticket prices, and the number of stations or stops along the railway line to facilitate passenger boarding and disembarking.

1.11.5. SWOT Results and Analysis

Based on the SWOT analysis results, the SHIA express train project falls within Quadrant four (Figure 3.49) indicating that internal factors, characterised as strengths, have the highest value, whilst external factors, represented as threats, have the second highest value. The SWOT position in Quadrant four signifies strategies that the government can undertake to optimise the prevailing conditions, including ensuring the sufficiency of project support facilities to mitigate existing threats.

Figure 3.49. SHIA Express Train SWOT Analysis Results

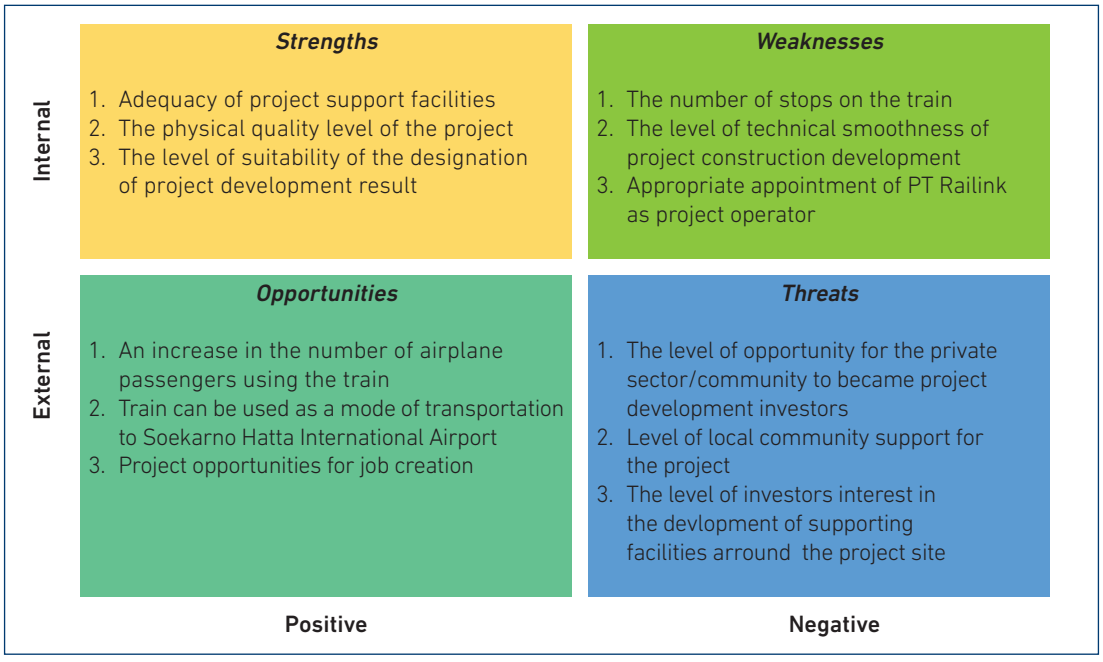


Categories		Values
S	**Strengths**	**240.58**
W	Weaknesses	144.49
O	Opportunities	107.77
T	**Threats**	**234.76**

Source: Authors, 2023.

A summary of the three highest-rated factors identified as strengths, weaknesses, opportunities, and threats is presented in Figure 3.50.

Figure 3.50. Results of SWOT Analysis on the SHIA Express Train



Source: Authors, 2023.

1.11.5.1. Main Challenges

The weaknesses of the SHIA express train project include its limited stops along the route. The train departs from Manggarai Station and only stops at Sudirman Baru (BNI City) Station, Duri Station, Batu Ceper Station, and ends at SHIA Station, and vice versa. It does not stop at all stations along the way, making it a specialised commuter train. Another weakness is related to land acquisition issues for the new 12.1 km railway track between Batu Ceper Station SHIA Station. According to Jamil (2016), land acquisition for this express train project was carried out gradually due to challenges with local residents. PT KAI (2016) mentioned that land acquisition for the construction of infrastructure for the SHIA express train project was accelerated through gradual payments. PT KAI collaborated and coordinated with the National Land Agency in Tangerang City for the issuance of Handover Certificate for the land acquisition. PT KAI also expedited the construction on the lands that were gradually and continuously freed. The construction started on a 6 km stretch of land owned by PT Angkasa Pura II (Persero), followed by other lands that were gradually and continuously released.

Regarding the opportunities of this project, PT Railink, as the initial operator of the express train, aims to carry 33,000 passengers daily. PT Railink operates 10 train sets consisting of 6 to 10 carriages. Initially, the SHIA express train only served 80 trips per day, but over time, the total number of trips increased to 124 per day, with a seating capacity of 274 seats per trip. The airport train will operate every 15 minutes, resulting in a total available seating capacity of 33,976 seats daily (Jamil, 2016). Consequently, the number of passengers transported by the airport express train is expected to increase, leading to more passengers choosing this mode of transportation for air travel. Another opportunity of this project is that the SHIA express train can be utilised by the public as a comfortable and punctual mode of transportation to and from the airport, thus creating job opportunities for the affected communities. As part of their corporate social responsibility, in 2016, the company provided job opportunities for community members affected by the land acquisition for the construction of the SHIA railway. A total of 128 individuals successfully passed the recruitment process and became new employees of PT KAI for the year 2016 (PT KAI, 2016).

As for the threats to this project, they include the level of interest from the private sector and/or community as potential investors in the project, the level of community support for the project, and the level of interest from investors in developing supporting facilities around the project site. The expansion and increased coverage of DAMRI bus services at SHIA also pose a threat to the project. Currently, there are 28 DAMRI bus routes operating at the airport, with a fleet of 180 buses. From January to August 2022, DAMRI buses served a total of 1,650,000 customers at SHIA (DAMRI, 2022). Furthermore, on 23 June 2023, DAMRI added another route for transportation services from SHIA to Mega City Bekasi (DAMRI, 2023).

Another threat comes from PT Transportasi Jakarta (Trans Jakarta), which is planning to expand its services to SHIA in the near future (CNN Indonesia, 2023). Initially, the Trans Jakarta buses to SHIA were intended to serve the mobility needs of employees working in various institutions within the airport area, totalling 40,000 to 50,000 people. According to Sutrisna (2023), Trans Jakarta buses are expected to operate on specific routes to SHIA during certain hours, such as in the morning from 6:00 am to 9:00 am and in the evening from 6:00 pm to 9:00 pm. The Trans Jakarta buses underwent a trial service to SHIA starting in July 2023, with 15 buses operating from Kalideres Terminal in West Jakarta to the airport. There is a high possibility that Trans Jakarta buses will also serve the general public and air passengers. If Trans Jakarta buses cater to the general public and air passengers, it will provide many transportation options for the public and undoubtedly pose a threat to the SHIA express train. Thus, the express train needs to consistently provide top-notch services to avoid losing its customers to competing alternatives.

1.11.5.2. Main Benefits

To address the existing weaknesses and threats, this project also possesses strengths, including the adequacy of supporting facilities, the physical quality level of the project, and the alignment with the designated outcomes of the project. In 2023, the operation of this express train, which was previously managed by PT Railink, was transferred to PT Kereta Commuter Indonesia (PT KCI). There will be an addition of train carriages that will operate to increase the seating capacity and operational efficiency of the train. The express train will make stops at several stations operated by PT KCI, leading to the addition of new stops to accommodate more passengers and facilitate easy boarding and alighting according to the desired locations of the passengers. According to Sandi (2023), the government, through the Ministry of Transportation, has plans to extend the operations of the Soekarno Hatta International Airport express train to Bekasi. The travel route of the Soekarno Hatta International Airport express train from Bekasi to the airport will pass through stations such as Jatinegara, Pasar Senen, Kampung Bandan, Duri, and Batu Ceper, and vice versa. The expansion of the service to include the route from Soekarno Hatta International Airport to Bekasi is possible because the express train is now managed and operated by PT Kereta Commuter Indonesia (PT KCI), allowing for the synchronisation of departure and arrival schedules with the commuter trains. To facilitate air passengers heading to Soekarno Hatta International Airport, counter check-in and baggage services will be provided at each station where the express train stops. Additionally, the carrying capacity of this express train will be increased by adding more train carriages, increasing the total from the current 40 trainsets to 56 trainsets.

Figure 3.51. Soekarno Hatta International Airport (SHIA) Express Train Series

Source : KAI Commuter (2023).

Conclusions

The SHIA express train project is an alternative transportation development project connecting Manggarai Station to SHIA with a track length of 36.3 km, consisting of 24.2 km of existing track between Manggarai Station and Batu Ceper, Station and 12.1 km of new track between Batu Ceper Station and Soekarno Hatta International Airport Station. The project is undertaken with the aim of improving the railway transportation service to cater to passenger transport to and from the Soekarno Hatta International Airport, with the hope of reducing congestion and decreasing the volume of vehicles heading to the airport by 30%. The project's implementation period was from 2015 to 2017, and starting from 2016, this express train project became a part of the National Strategic Project programme. The objective was to expedite the development of the infrastructure and facilities for the Soekarno-Hatta International Airport train and the Jakarta–Bogor–Depok–Tangerang–Bekasi circular rail line, in accordance with the Presidential Regulation of the Republic of Indonesia Number 83 of 2011. In 2023, PT Kereta Commuter Indonesia (PT KCI) took over as the operator of this train, replacing PT Railink. PT KCI will increase the number of trains and train carriages to enhance seating capacity and the operational efficiency of the train. The train will make stops at several stations operated by PT KCI. Continuous improvement of the train service is essential to ensure that railway transportation becomes a preferred choice for passengers traveling to the Soekarno Hatta International Airport.

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