



Investment decision analysis of heavy equipment at PT Mandrosa Sukses

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ABSTRACT

Excavators are one type of heavy equipment that enables a variety of tasks such as digging, trenching, excavating, and loading trucks. It also helps move, lift, and place materials, such as stone and drainage products. Therefore, excavators are considered the most important heavy equipment in road construction projects. This research analyzed the feasibility of investment by calculating financial indicators in PT Mandrosa Sukses. This research aimed to determine and assess the feasibility of the excavator investment quantitatively from the financial aspect. This research used the quantitative approach to fulfill the research objectives. The parameters used to review these investments are the Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PP), and Benefit Cost Ratio (BCR) methods. The analysis generates an NPV of IDR 1,008,469,227, an IRR of 35.05%, and a Payback Period of 3.08 years. Based on the cost benefit analysis, the purchasing option results in a BCR of purchasing option 1.16 and the renting option is 1.02. It can be concluded that purchasing an excavator is a better option than renting an excavator.

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1. INTRODUCTION

Infrastructure development plays a very important role in spurring economic growth, both at the national and regional levels, as well as reducing unemployment, alleviating poverty, reducing income inequality, and increasing welfare (Nugraha et al., 2020). Infrastructure spending in Indonesia has increased significantly under the current government, from less than 10 percent of the total national budget in 2013 to 19 percent of the total national budget in 2017 (Salim & Negara, 2018; Sulistyowati & Wibowo, 2022). The existence of roads encourages economic growth because it creates greater access to productive resources and markets. In addition, goods and services can be moved to their destination faster (Turok & McGranahan, 2013).

Heavy equipment can provide a reliable solution to facilitate the road construction process (Simatupang & Hendarman, 2012). Excavator allows a variety of tasks including digging, trenching, excavating, and truck loading. It can also help move, lift, and place materials, such as rock and drainage products (Mokoagow & Anondho, 2023). Massive

use of excavators can result in good and bad impacts for contractors, which are increasing the costs of the operations because of the non-ideal condition of excavators or minimizing costs and creating profits because of the high productivity (Zakri et al., 2014).

PT Mandrosa Sukses (PT MDS) has several considerations in choosing the renting option instead of buying. First, the acquisition cost is quite high and requires a large amount of capital for initial investment (Souza & Lunkes, 2016). The company considers its financial ability to make a purchase. Second, management believes that if it buys excavators, the company will deviate from its core business. In practice, there is a gap between the expectations and reality in terms of the cost related to the usage of excavators in the field (Ridwan et al., 2022). There is a difference between the expected and reality of the excavator productivity rate. The company sometimes has to rent excavators in poor conditions because it does not have the right to choose rented excavators. Excavators in poor condition may need frequent repair and it may take some time and affect the working process (Aribowo & Kurniati, 2019). The typical productivity of an excavator based on the company's experiences when working on a road base course is 16 m³ per hour (Fahmi & Ghuzdewan, 2023). But, with the delays, it can go down to 12 m³ per hour, a 25% decrease in productivity. Second, the excavator can cause higher operating costs because there is a difference between the expected and reality of the excavator fuel consumption. The previous study by Abuk & Rumbino (2020) analyzed Investment feasibility study using Net Present Value (NPV), Internal Rate of Return (IRR) Payback Period (PBP) indicator to justify the stone crusher replacement for the company. With the same method but different object this study is conducted. Analyzing heavy equipment investment will benefit the company to help with rational and reasonable consideration in decision making whether to buy or rent the heavy equipment.

2. RESEARCH METHOD

This research is using the quantitative approach. Quantitative research is a means for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, and the numerical information can be examined analytically (Creswell, 2007). This research analyzed the feasibility of investment by calculating financial indicators. In this matter, the feasibility was seen from the point of view of the contractor business actors (Wiratama, 2020). The methods used to collect information fall into two categories, primary data and secondary data. Primary data are intentionally and originally collected for a specific research study, and it is a prior planned primary data analysis. Secondary data are initially collected for other purposes, and these existing data are subsequently used for a research study and its secondary data analysis (Hox & Boeije, 2005).

The data collection method are interview and documentation. Interviews were conducted to get the information needed about the general description of the company, the number of services it provides, the number of existing employees, and the challenges the company faces currently. The interview process is done in a group discussion activity involving several members of the company, such as the board of directors, project managers, site managers, and a heavy equipment rental place (Gill et al., 2008; Kabir, 2016). Data collected from documents enable researchers to obtain the language and words of participants (Taherdoost, 2021). The documents that are useful for this research, include excavator financing information and historical project data. Moreover, books and public journals are used as comparisons or to support information relating to research problems, mainly focuses on the financial feasibility of a company purchasing an excavator as company equipment to support projects. This is done to get input in the form of related concepts, principles, and theories, related to the research (Siziba & Hall, 2019).

The data analysis process involves making sense of text and image data. This involves preparing data for analysis, conducting various analyses, digging deeper into the data, representing the data and interpreting the larger meaning of the data (Creswell, 2009). In this research, the process involves calculating and analyzing data obtained from the company's spending history. Observations from this data serve as the basis for carrying out a proper feasibility study by combining it with related theories and concepts. The data analysis requires two methods. The first method is using several capital budgeting methods, such as NPV, IRR, and Payback Period (Brijlal, 2009; Tariq, 2019). The second method uses cost benefit analysis to compare the benefit cost ratio of purchasing and renting the excavator to determine the most preferable option for excavator procurement (Chriswahyudi & Darma, 2021).

The analysis began with collecting the data needed for the analysis, such as the cost related to the excavator, the productivity rate of the excavator, and the financial related data. The data is used to calculate the cost that the company would spend, such as the acquisition cost, maintenance cost, operator cost, and fuel cost. These costs combined with depreciation cost become the cash outflow section of the analysis. The productivity rate of the excavator is used to project the income that the excavator will earn. The income becomes the cash inflow section of the analysis. The financial related data is used to calculate the financial indicators, such as cost of debt, cost of equity, and weighted average cost of capital (WACC) (Rodríguez, 2023). Results will be used to determine the feasibility of the excavator purchase and help the investment decision making for the company.

3. RESULTS AND DISCUSSIONS

PT MDS is looking for an excavator with high performance and efficiency that can reduce the fuel cost and maintenance cost, but also consider the acquisition cost. By studying the features, specifications, and considering the acquisition cost, the company chooses to target the Kobelco SK210-10HD because it has the lowest price among all. Moreover, the company has been renting out Kobelco SK210-10HD excavators to support all its projects for the last 5 years. The excavator has created a good impression for the company.

The feasibility analysis requires financial projections to correctly model future cashflows (Wiratama, 2020). The projections use several financial parameters, such as cost of debt, cost of equity, and weighted cost of average. The cost of debt calculation uses the cost of debt before tax that is obtained from the interest rate that the company received from the leasing company, which is 11.5% flat for three years leasing period, and the company tax rate, which is 22%. Based on the calculation provided in table below, the after-tax cost of debt is 8.97%.

Table 1. Cost of Debt Calculation

Cost of Debt		
Cost of Debt	r_d	11.50%
Tax Rate	T	22.00%
After Tax Cost of Debt	r_i	8.97%

$$\begin{aligned}
 r_i &= r_d \times (1 - T) \\
 r_i &= 11.5\% \times (1 - 22\%) \\
 r_i &= 8.97\%
 \end{aligned}
 \tag{1}$$

The cost of equity for this study is calculated using the Capital Asset Pricing Model (CAPM) technique. Based on the calculation provided in Table 2, the cost of equity is 19.16%.

Table 2. Cost of Equity Calculation

Cost of Equity			
Risk-free Rate	R_f	6.85%	Indonesia 10-year Bond Yield
Equity Risk Premium	r_m	7.89%	Damodaran for Indonesia
Beta	B	1.56	Average Beta, 10 Indonesian construction firms
Cost of Equity	r_s	19.16%	

$$\begin{aligned}
 r_s &= R_f + [b \times (r_m - R_f)] \\
 r_s &= 6.85\% + [1.56 \times (7.89\% - 6.85\%)] \\
 r_s &= 19.16\%
 \end{aligned}
 \tag{2}$$

In purchasing the excavator, PT MDS capital structure utilizes 30% of equity and 70% of debt. The Weighted-Average Cost of Capital (WACC) is 12,03%, provided in Table below.

Table 3. WACC Calculation

Weighted-Average Cost of Capital		
Cost of Equity	r_s	19.16%
After Tax Cost of Debt	r_i	8.97%
Weight of Equity	w_s	30.00%
Weight of Debt	w_i	70.00%
WACC	r_a	12.03%

$$\begin{aligned}
 r_a &= (w_i \times r_i) + (w_s \times r_s) \\
 r_a &= (70\% \times 8.97\%) + (30\% \times 19.16\%) \\
 r_a &= 12.03\%
 \end{aligned}
 \tag{3}$$

The price of the excavator that is set by the main dealer is IDR 1,636,235,125. The company's plan is to settle the down payment by 30% of the excavator price and the loan terms will be in the period of three years or 36 months. In the loan terms, the company must pay some money in advance, not only the down payment, but also the administration fee, insurance fee, insurance policy, and the first month's installment. The detailed information about the loan agreement is provided in Table below.

Table 4. Purchasing Cost Information

Purchasing Cost Information			
Down Payment	IDR	428,737,500	30%
Administration Fee	IDR	1,000,000	One-time payment
All Risk Insurance	IDR	10,003,875	Each year, for three years period
Insurance Policy	IDR	150,000	One-time payment
Installment	IDR	32,676,000	Per month, for three years period

The equipment operating cost consists of the maintenance cost that includes the components cost, scheduled service cost, and unscheduled breakdown cost, and the fuel cost called as the life cycle cost because it represents the costs that will be spent over the excavator lifetime.

Table 5. Life Cycle Cost Required to Purchase Excavator

No	Item	Comp. Life (hrs)	Comp. Cost	Qty
1	Air separator filter	400	IDR 185,000	60
2	Engine oil	400	IDR 1,250,000	60
3	Fuel filter	400	IDR 200,000	60
4	Grease pump	2,400	IDR 145,000	10
5	Hydraulic oil	2,000	IDR 5,000,000	12
6	Hydraulic oil filter	2,000	IDR 550,000	12
7	Oil filter	400	IDR 145,000	60
8	Rotary lubricant	400	IDR 890,000	60
9	Tooth bucket	2,400	IDR 1,175,000	10
10	Transmission oil	600	IDR 450,000	40

11	Gear pump	12,000	IDR	4,650,000	2
12	Backhoe bucket	24,000	IDR	20,000,000	1
13	Boom seal	24,000	IDR	4,500,000	1
14	Hydraulic control valve	24,000	IDR	25,000,000	1
15	Radiator	24,000	IDR	2,000,000	1
16	Radiator fan drive	24,000	IDR	2,000,000	1
17	Safety system	24,000	IDR	1,700,000	1
18	Screw tooth bucket	24,000	IDR	175,000	1
19	Solenoid valve	24,000	IDR	2,000,000	1
20	Swing circle	24,000	IDR	25,000,000	1
21	Swing motor	24,000	IDR	8,000,000	1
22	Service 250	250	IDR	10,000,000	1
23	Service 500	500	IDR	10,000,000	1
24	Service 1000	1,000	IDR	10,000,000	1
25	Unscheduled breakdown	2,400	IDR	10,000,000	10

The fuel cost for the operation is determined according to the equipment specifications. Based on the specifications, it is found that the equipment will consume 15 liters of fuel per working hour. Assuming the fuel price is at Rp 15,000 per liter, the fuel cost per hour is calculated as follows.

$$\begin{aligned}
 \text{Fuel cost per hour} &= \text{fuel consumption per hour} \times \text{fuel price} \\
 &= 15 \text{ liters per hour} \times \text{IDR } 15,000 \text{ per liter} \\
 &= \text{IDR } 225,000 \text{ per hour}
 \end{aligned} \tag{4}$$

Office operating costs are an investment process to fulfill office needs. The summary of total office operating cost per excavator working hour is provided in Table below.

Table 6. Office Operating Cost

No	Description	Volume	Unit	Unit Price	Total Price
1	Operator salary	1	hr	IDR 12,500	IDR 12,500
2	Operator meal allowance	1	hr	IDR 25,000	IDR 25,000
3	Administration employee salary	1	hr	IDR 25,000	IDR 25,000
Total Office Operating Cost per Hour					IDR 62,500

The straight-line method is used in computing the depreciation of excavator (Petronijevic et al., 2012). The excavator is expected to have a 10 year of useful life. The excavator's salvage value at the end of the ten-year period is assumed to be IDR 300,000,000 based on the market price of the used excavators around the research location. The depreciation calculation is as follows:

$$\begin{aligned}
 \text{Depreciation} &= \frac{P-S}{n} \\
 &= \frac{\text{IDR } 1,636,235,125 - \text{IDR } 300,000,000}{10 \text{ years}} \\
 &= \text{IDR } 133,623,513 \text{ per year}
 \end{aligned} \tag{5}$$

Based on the calculation above, the depreciation cost of the excavator each year is IDR 133,623,513. The cash inflow represents the money earned throughout the excavator lifetime. It includes the excavator income that is earned from its operation. The expected income that the excavator would generate is calculated using the excavator rate and productivity that the company charges inside its unit price of sub-base course and base course works to clients. The amount of excavator work hours in a year is matched with typical project work hours which are 8 hours per day for 21 days per month in 12 months. The excavator rate that the company use inside its unit rate of works is detailed in Table 7.

Table 7. Excavator Rate per m3

No	Description	Coef.	Unit	Unit Rate	Total Rate
1	Operator cost	0.08	hr	IDR 25,000	IDR 2,083
2	Excavator cost	0.08	hr	IDR 150,000	IDR 12,500
3	Fuel cost	1.67	liter	IDR 15,000	IDR 25,000
Total Excavator Rate per m3					IDR 39,583

The typical excavator productivity for sub-base course and base course works is at 15 m3 per hour. With that rate of productivity, the excavator could carry out work up to 30,240 m3 per year. Therefore, the excavator will generate IDR 1,197,000,000 a year.

In the Net Present Value (NPV) analysis, an investment can be concluded whether it is a feasible or not feasible investment. An investment can be considered as feasible when the NPV value is greater than zero. The NPV calculation process is as follows.

Table 8. Net Present Value Calculation

Year	Purchase (IDR)	Operation (IDR)	Depreciation (IDR)	Revenue (IDR)	Salvage Value (IDR)	Cash Flow (IDR)	PV Flow (IDR)	Cash
0	(472,567,375)					(472,567,375)	(472,567,375)	
1	(359,436,000)	(668,290,000)	(133,623,513)	1,197,000,000		35,650,487	31,823,121	
2	(402,115,875)	(638,290,000)	(133,623,513)	1,197,000,000		22,970,612	18,303,206	
3	(402,115,875)	(638,290,000)	(133,623,513)	1,197,000,000		22,970,612	16,338,209	
4		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488	269,889,803	
5		(738,865,000)	(133,623,513)	1,197,000,000		324,511,488	183,914,743	
6		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488	215,050,801	
7		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488	191,963,367	
8		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488	171,354,554	
9		(642,940,000)	(133,623,513)	1,197,000,000		420,436,488	151,285,061	
10		(643,840,000)	(133,623,513)	1,197,000,000	300,000,000	719,536,488	231,113,738	
Net Present Value							1,008,469,227	

Based on the calculation provided in Table 10 above, the purchasing of excavator resulted in a positive net present value of IDR 1,008,469,227. It indicates that the investment is expected to generate a positive return.

In the Internal Rate of Return (IRR) analysis, an investment can be considered whether it is feasible or not feasible. An investment can be concluded as feasible when the IRR value is greater than the WACC of the company, which in this case is 12.03%. The IRR calculation process is as follows.

Table 9. Internal Rate of Return Calculation

Year	Purchase (IDR)	Operation (IDR)	Depreciation (IDR)	Revenue (IDR)	Salvage Value (IDR)	Cash Flow (IDR)
0	(472,567,375)					(472,567,375)
1	(359,436,000)	(668,290,000)	(133,623,513)	1,197,000,000		35,650,487
2	(402,115,875)	(638,290,000)	(133,623,513)	1,197,000,000		22,970,612
3	(402,115,875)	(638,290,000)	(133,623,513)	1,197,000,000		22,970,612
4		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488
5		(738,865,000)	(133,623,513)	1,197,000,000		324,511,488
6		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488
7		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488
8		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488
9		(642,940,000)	(133,623,513)	1,197,000,000		420,436,488
10		(643,840,000)	(133,623,513)	1,197,000,000	300,000,000	719,536,488
Internal Rate of Return						35.05%

Based on the calculation provided in Table 9 above, the purchasing of excavator resulted in 35.05% Internal Rate of Return. An IRR of 35.05% indicates that the projected cash flows from the

excavator investment are expected to provide a 35.05% return on the initial investment. It is also higher than the company's WACC which is 12.03%.

The Payback Period is used to evaluate the time it takes for the excavator investment to generate cash inflows sufficient to recover its initial cost. It helps assess the risk and time frame associated with recovering the excavator purchase. The Payback Period calculation process is as follows.

Table 10. Payback Period Calculation

Year	Purchase (IDR)	Operation (IDR)	Depreciation (IDR)	Revenue (IDR)	Salvage Value (IDR)	Cash Flow (IDR)	Balance (IDR)
0	(472,567,375)					(472,567,375)	(472,567,375)
1	(359,436,000)	(668,290,000)	(133,623,513)	1,197,000,000		35,650,487	(436,916,888)
2	(402,115,875)	(638,290,000)	(133,623,513)	1,197,000,000		22,970,612	(413,946,275)
3	(402,115,875)	(638,290,000)	(133,623,513)	1,197,000,000		22,970,612	(390,975,663)
4		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488	34,110,825
5		(738,865,000)	(133,623,513)	1,197,000,000		324,511,488	358,622,312
6		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488	783,708,800
7		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488	1,208,795,288
8		(638,290,000)	(133,623,513)	1,197,000,000		425,086,488	1,633,881,775
9		(642,940,000)	(133,623,513)	1,197,000,000		420,436,488	2,054,318,263
10		(643,840,000)	(133,623,513)	1,197,000,000	300,000,000	719,536,488	2,773,854,750
						Payback Period	3.08 years

Based on the calculation provided in Table 10 above, the purchasing of excavator resulted in 3.08 or 3 years and 1 month payback period. It means that the company will recoup the entire initial investment within 3 years and 1 months from the start of the investment.

The comparison of purchasing and renting option will be evaluated using cost benefit analysis. The benefit cost ratio generated from both options will be compared to help observe the preferable option. The benefit of the purchasing option will be the revenue that the excavator generated. The cost of the purchasing option will be the purchasing cost, operating cost, and depreciation cost.

The present value of both benefit and cost is calculated to obtain the benefit cost ratio as provided in Table 11 below.

Table 11. Present Value of Benefit and Cost Purchasing Option

Year	Benefit (IDR)	PV of Benefit (IDR)	Cost (IDR)	PV of Cost (IDR)
0			472,567,375	472,567,375
1	1,197,000,000	1,068,492,417	1,161,349,513	1,036,669,296
2	1,197,000,000	953,781,157	1,174,029,388	935,477,951
3	1,197,000,000	851,385,074	1,174,029,388	835,046,865
4	1,197,000,000	759,982,035	771,913,513	490,092,232
5	1,197,000,000	678,391,847	872,488,513	494,477,104
6	1,197,000,000	605,561,023	771,913,513	390,510,223
7	1,197,000,000	540,549,174	771,913,513	348,585,808
8	1,197,000,000	482,516,870	771,913,513	311,162,316
9	1,197,000,000	430,714,801	776,563,513	279,429,740
10	1,197,000,000	384,474,101	777,463,513	249,719,787
	Present Value	6,755,848,500		5,843,738,697

Based on the present value of benefit and cost of the purchasing option above, the benefit cost ratio can be calculated as follows.

$$\begin{aligned}
 \text{BCR} &= \frac{\sum PV \text{ Benefit}}{\sum PV \text{ Cost}} \\
 &= \frac{\text{IDR } 6,755,848,500}{\text{IDR } 5,843,738,697} \\
 &= 1.16
 \end{aligned}
 \tag{6}$$

The benefit of the purchasing option will be the revenue that the excavator generated as stated in previous subchapter. The cost of the purchasing option will be the renting cost and the operating cost consist of the operator meal allowance and the fuel cost. The renting cost is assumed to be at IDR 165,000, taken from the market price around the research area.

The present value of both benefit and cost is calculated to obtain the benefit cost ratio as provided in Table 12 below.

Table 12. Present Value of Benefit and Cost Renting Option

Year	Benefit (IDR)	PV of Benefit (IDR)	Cost (IDR)	PV of Cost (IDR)
0				
1	1,197,000,000	1,068,492,417	1,176,000,000	1,049,746,936
2	1,197,000,000	953,781,157	1,176,000,000	937,048,154
3	1,197,000,000	851,385,074	1,176,000,000	836,448,494
4	1,197,000,000	759,982,035	1,176,000,000	746,649,017
5	1,197,000,000	678,391,847	1,176,000,000	666,490,236
6	1,197,000,000	605,561,023	1,176,000,000	594,937,146
7	1,197,000,000	540,549,174	1,176,000,000	531,065,855
8	1,197,000,000	482,516,870	1,176,000,000	474,051,662
9	1,197,000,000	430,714,801	1,176,000,000	423,158,401
10	1,197,000,000	384,474,101	1,176,000,000	377,728,941
	Present Value	6,755,848,500		6,637,324,842

Based on the present value of benefit and cost of the renting option above, the benefit cost ratio can be calculated as follows.

$$\begin{aligned}
 \text{BCR} &= \frac{\sum PV \text{ Benefit}}{\sum PV \text{ Cost}} \\
 &= \frac{\text{IDR } 6,755,848,500}{\text{IDR } 6,637,324,842} \\
 &= 1.02
 \end{aligned} \tag{7}$$

Based on the calculation above, we can learn that the benefit cost ratio of purchasing an excavator is 1.16 and renting an excavator is 1.02. Based on the result, both options have benefit cost ratio above 1.0, indicating that both options are financially beneficial for the company. However, the purchasing option has a slightly higher value of benefit cost ratio compared to renting option. It indicates that the purchasing option provides higher benefits for the company compared to the renting option.

The decision to purchase an excavator is supported by the feasibility analysis provided in the previous subchapters. The analysis resulted in a NPV that indicates the investment is expected to generate a positive return. The IRR obtained from the analysis is 35.05% which is higher than the company's WACC at 12.03%. It indicates that the projected cash flows from the excavator investment are expected to provide a 35.05% return on the initial investment. The company is expecting a maximum 4 years of payback period for the excavator investment and the analysis resulted in a total of 3 years and one month of payback period. Moreover, the slightly higher BCR indicates that the purchasing option provides higher benefits from the company compared to the renting option. With the feasibility analysis done in this research, the board of directors considered the investment as a profitable investment. The board of directors are more convinced that the purchase of excavator is beneficial for the operation activities and can create operating cost reduction to work under the planned budget. While purchasing an excavator involves a substantial upfront investment, it can result in cost savings over the long term.

4. CONCLUSION

The financial feasibility study of the excavator investment at PT Mandrosa Sukses that has been carried out in this research uses assumptions based on the historical data of the company and the data collected from the financing company. The analysis results in an NPV of IDR 1,008,469,227, IRR of 35.05%, and Payback Period of 3.08 years. Based on the financial feasibility study and the company's requirements, it can be concluded that the excavator purchase is a feasible investment for the company. The cost benefit analysis uses assumptions present value of the cost and benefit. Based on the calculation, the purchasing option results in BCR of 1.16 and the renting option results in BCR of 1.02. Based on the Benefit Cost Ratio, it can be concluded that purchasing an excavator is a more preferable option than renting an excavator. Purchasing and owning an excavator will create some implications for the company. It will allow the company to better manage its equipment and operations. It ensures that the excavator used in projects is properly maintained, regularly serviced, and operated by trained professionals, leading to increased efficiency and productivity. Moreover, the company can ensure the equipment availability. By owning the excavator, it is expected to help facilitate and increase the productivity of the working process, reduce costs, and eventually increase company profits. The limited loan scenario become the limitation in this study. For future research, it is recommended to vary the loan scenario to with various possibility of initial investment to help the company figure out the most beneficial loan scheme for the company instead of choosing it in advance.

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