DETERMINATION OF FLOOR PRICE IN EXPANDING MARKET FOR ROTATING EQUIPMENT INDUSTRY

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Kin Tjendrasa
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ABSTRACT

Demand for rotating equipment services likely to remain steady over the next few years because strongly supported by the growth of oil & gas and power generation industries. PT. SI as a rotating equipment services company has demanded to increase shareholder value by growing up the business. Workshop expansion for servicing large rotating equipment is one of the ways to grow the business and it needs additional capital investment. Expansion facility to enlarge capabilities creates another challenge, that is the uncertainty of expected economic return from additional business and how to set a minimum price (floor price) as a reference price that will be used as a marketing guideline for pricing strategy within an additional capital investment. High threat from the analysis of the business issue related to the pricing. Selling price is the most important factor for marketing in the rotating equipment services because it is a weapon to negotiate with the customer in the last stage of bidding when dealing with the service. Determination of the selling price needs reference price, in this case, means the lowest price (floor price) of the service can be sold for. The determination of the floor price using the NPV calculation method is integrated with the terminal value in the end year of the projection when the NPV value equal to zero. This method is differed from the existing that only used historical data and not include target volume sales as an important factor to set the floor price and by determining a budget plan for other factors, the company can encounter the possibility of the costs swells and do cost efficiency. This method can keep the company grow the business with additional capital investment without losing money but can match the market at a competitive quote.

Keywords: market expansion, economic return, large rotating equipment services, floor price, marketing guideline

INTRODUCTION

Indonesia as a developing country with over 267 million people has to increase GDP (Central Bureau of Statistics, 2018) to stimulate economic growth. The demand for energy is increasing in line with the economy and population growth. The total of primary energy production consisting of oil, gas, coal, and renewable energy was 411.6 MTOE in 2008 (DEN, 2019). In the power generation sector, Indonesia’s power plant capacity in 2018 reached 64.5 GW or it increased 3% compared to the capacity in 2017. The power plant installed capacity in 2018 was mostly dominated by fossil fuel power plants especially coal (50%) followed by gas (29%), fuel (7%), and renewable energy (14%) as shown in Figure 1. Domination coal fuel power plants installed in Indonesia will keep the rotating equipment services business up in the next 25 – 30 years because they need services providers to maintain the performance of the equipment especially for rotating equipment to produce expected energy. Maintenance and repair services for rotating equipment in a power plant such turbine, compressor, pump, and motor are big share markets of this business. Knowing the market share of this business helps the company to determine the market size to project the sales target that will influence the determination of pricing strategy for the upcoming year. Government’s 35,000 MW electricity program to accelerate the supply of the electricity demand in Indonesia encourage PLN or other Private Power Utility (PPU) to install power plant with large capacity. The large capacity of the power plant required large rotating equipment to operate it. Large rotating equipment services are the new market that promises to be growth in line with existing of that power plant. Power plants need to be maintained regularly to ensure the operations run continuously with minimal downtime. Whereas, repair services of the equipment depend on the condition of the equipment itself. The market is already given by the existing power plant with large capacity, but the market size is not big yet. Market size promising to be growth in the next three up to five years. This market is expected to be captured by PT. SI with increase capacity and capability in larges stationeries such as diaphragms, casings that require large Vertical Lathe, mill & line boring machine, and the other capital investment.
Additional business with additional capital investment to capture the market make PT. SI facing a challenge in setting floor prices to reach expected economic return. That is the reason why PT. SI need to establish floor prices as marketing guidelines to enter the Rotating Equipment Services sector and it can be used to enhance criteria for pricing strategy decision.

LITERATURE REVIEW

PT. SI as a services company in the rotating equipment tends to expand the business in the large rotating equipment market with additional CAPEX investment. This business expanding try to capture a given market from increasing the demand of the electricity that encourage the government to install a large capacity of power plants with 35,000 MW program (DEN, 2019). The rotating equipment services business is unique because there is no standardize of the selling price. Each service provider in the rotating equipment industry will set selling prices as per customer demand. The service provider needs a reference price as a guideline to determine the selling price or market price with an expected margin profit. Reference price in this case means minimum prices or lowest price (floor price) of the services can be sold for. The company is unsure of the floor price for this service with additional CAPEX investment. The company needs to know what the floor price (minimum prices) is the company can offer without losing money and can match the market at a competitive quote. Determination of the floor price needs by the company as a marketing guideline to set up a pricing strategy to meet expected economic return in the additional business with new capital investment. It will be calculated using NPV calculation when the value equal to zero or breakeven point.

The net present value (NPV) is a measurement of profit calculated by subtracting the present values (PV) of cash outflows (including initial cost) from the present values of cash inflows over a period (Irawati and Daryanto, 2018). And several applications of the NPV literature shown in following table 1.

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Writer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Cost Reduction Strategy in Distribution Pipeline in Perspective of Capital Budgeting: A Case Study in Area “C” Greenland International Industrial Center (GIIC)</td>
<td>Arifin and Daryanto, 2018</td>
</tr>
<tr>
<td>3.</td>
<td>Financial Feasibility Studies for Perusahaan Gas Negara (PGN): A Case Study of City Gas Project in Indonesia for the Period of 2018-2038</td>
<td>Merzi and Daryanto, 2018</td>
</tr>
<tr>
<td>4.</td>
<td>The Effect of Depreciation Methods on the Profitability and Net Present Value (NPV): A Case Study of Nam Con Son 2 Phase 2 Pipeline Project, Vietnam for Period of 2019 - 2037</td>
<td>Elise and Daryanto, 2018</td>
</tr>
</tbody>
</table>

All of the literature is needed as a reference to calculate NPV. Then at the end of the projection will be integrated with terminal value to calculate the total value of the business with the assumption the business will grow at a constant growth rate forever after the forecast period. In the DCF method, the terminal value concept is used for company or project valuation (Dorfleitner, 2020). The terminal value is used frequently in practical set-ups (Friedl and Schwetzler, 2011). The result of the calculation used to
determine the floor price by using solver add-in from excel with the goal NPV result must be zero (or in breakeven point). This research is an application from financial theory used in practical business for the rotating equipment services industry, therefore a lack of specific literature in educational background.

The method is to calculate the floor price for all services per hour of the labor on average without specific skill and special services. The sensitivity of the floor price determines in the same year by changing the volume of the sales variable.

RESEARCH METHODS

The uncertainty of the selling price in the rotating equipment services business is an issue facing by PT. SI. There is no such reference or standard for it. The common business of the PT. SI is maintenance and repair services for small to medium rotating equipment while it is an extended business for large equipment services in Indonesia. Business expansion with additional capital investment quite challenging to set up prices that not make the company losing money and yet it should be a competitive quote to grab opportunity from the potential customer and gain the trust from them. PT. SI need to establish market guidelines to face such a challenge with floor price as a price reference. External analysis and internal analysis needed to explore more about that issue. This study assumes that market analysis and competitor analysis already done by the sales department, then data of the market share and target volume sales from that market size are given by them. The output of this study is a marketing reference to set a pricing strategy to negotiate with the customer in the bidding process. Sales or marketing used floor price as a reference with bullet weapon (margin profit) in their pocket when negotiate occurred in the last stage of dealing with the service.

(Source: Author)

Fig. 2: Conceptual framework of determination floor price
Completed with a quantitative data analysis method for the financial section to determine the floor price using NPV calculation that integrated with terminal value at the end of the projection year (2027). The result of the calculation used to determine the floor price by using solver add-in from excel with the goal NPV result must be zero. This study using primary data in practical business from rotating equipment services provider (PT. SI)

RESULT AND DISCUSSION

\[ \text{Selling Price} = \text{Expected Actual Cost (Per Hour)} \times \text{Margin Profit} + \text{Expected Actual Cost (Per Hour)} \]

where expected actual cost refers to the existing workshop divide by estimation of productive hours. Figure 4 show how to calculate the estimation of productive hours.

The cost of goods sold (COGS) refers to the direct costs of producing the goods/services sold by a company. This amount includes the cost of the materials and labor directly used to create the goods or services. But in this research, COGS of the services will exclude the material because of limitations. The COGS for this study consist of Direct Labor (DL) and Factory Overhead Cost (FOH). The company needs to forecast the resources (manpower) for workshop expansion to absorb the market of large rotating equipment along with forecast of target sales volume determined by the sales department to meet the delivery time. Figure 5 shows how to get direct labor costs.
Factory overhead is the cost incurred during the services process, not including the costs of direct labor and direct materials. Calculation of FOH in workshop expansion refers to the existing workshop and using the time-shared cost for the management of operational expenses. Factory overhead in PT. SI not limited to:

Marketing expenses are defined as expenses that directly relate to the selling of a product, service, or brand in the accounting term. In this study, marketing expenses maintain 6% from revenue refer to management guidance from the existing workshop. There are several shared costs from the existing workshop and additional business for large equipment markets such as Head of Sales, Inside Sales related to administration and documentation of tender, and Area Sales Manager. It could be hiring a new sales team if shared cost not higher than 6% from revenue. Whereas, General and Administrative (G & A) expense maintain 8% from revenue refer to management guidance from the existing workshop. The shared cost would be calculated using the time-sharing method.

\[
\text{EBITDA} = \text{TOTAL REVENUE} - \text{TOTAL COGS} - \text{TOTAL INVESTMENT} - \text{MARKETING EXPENSE} - \text{G & A EXPENSE}
\]

The result of the calculation from Earning Before Interest, Tax, Depreciation, and Amortization in this research is shown in graphic Figure 6.

Depreciation is an accounting method of allocating the cost of a tangible or physical asset over its useful life or life expectancy. Depreciation allows the company to write off the asset’s value over the asset’s useful time (lifetime of an asset or tangible resources). It represents how much of an asset’s value has been used up. There are several methods to calculate depreciation, but for this final project, the straight-line method is used as per the management of PT. SI guidance. Determination expense with projection from 2021 until 2027 shown in figure 7.
The company uses EBIT to analyze the performance of a company’s core operations without the costs of the capital structure and tax expenses impacting profit.

\[
EBIT = EBITDA - \text{DEPRECIATION}
\]

A flat corporate income tax rate of 25% applies to Earnings Before Interest and Tax (EBIT). PT. SI invests in additional business for business market expansion from the existing business line using 100% equity without loan. Therefore Net Cash Flow in this study equal to earnings before interest after tax that is shown in Figure 8.

Terminal value calculates, in the end, the year 2027 because its final year of the projection by using the perpetuity growth method. In this final project, the perpetuity growth rate using 1% by assuming without additional investment growth then it will be minimal i.e. constant growth assumption (Dorfleitner, 2020). Table 2 shows the result of the NPV calculation with an expected return of 14% based on management (PT. SI) decision in new investment.
Table 2. IRR, NPV and Profitable Index value

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRR</td>
<td>%</td>
<td>53.01%</td>
</tr>
<tr>
<td>NPV @ 14.0%</td>
<td>IDR</td>
<td>352,996,189,141</td>
</tr>
<tr>
<td>PROFITABILITY INDEX (IP)</td>
<td></td>
<td>5.03</td>
</tr>
<tr>
<td>PAYBACK PERIOD</td>
<td>Year</td>
<td>6</td>
</tr>
</tbody>
</table>

Floor price in this study means a minimum price or lowest price required to get when NPV equal to zero or break-even as per manhours services. The Floor price is not selling price or market price. But it can be used as a reference to set pricing strategy for the marketing or sales department. Market price can be equal to selling price in the condition when buyers willing to pay as much as the seller offers. There is no solid reference price for the buyer and the seller to determine the price of the services because the type of service can differ for each demand or buyer needed. Sometimes buyers or customers request the services provider to make the budgetary price as their estimation price and reference for the tender. Additional business to grab market expansion in the rotating equipment services, especially for large equipment need to invest new capital and the company need return for the investment as well. Determine the floor price as a reference to help the company analyze and decide pricing strategy for the services price of the expanding market to make the company not losing money (breakeven). By using solver add-in from excel application to get NPV = 0. The result from the calculation of the floor price using solver add-in shows in table 3. The floor price unit is manhours. It is meant that the price for an hour service of the labor doing all services for large rotating equipment on average. The price does not consider any special skill from labor and specific services.

Table 3: Floor price of the services for expanding market in large rotating equipment

<table>
<thead>
<tr>
<th>Year of Projection</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>2027</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume Sales</td>
<td>Manhours</td>
<td>83,552</td>
<td>173,509</td>
<td>215,570</td>
<td>249,021</td>
<td>289,934</td>
<td>318,927</td>
</tr>
<tr>
<td>Floor Price</td>
<td>IDR/manhours</td>
<td>363,242</td>
<td>373,345</td>
<td>382,853</td>
<td>392,685</td>
<td>412,930</td>
<td>421,648</td>
</tr>
</tbody>
</table>

Fig. 9: Floor price of the services for expanding market in graph

Fig. 10: Floor price vs selling price
Sensitivity in this study means what the factor are influence of the floor price and how much its influence. Increasing of sales volume by 10%, it will decrease the floor price by 10%. Increasing sales volume needs to absorb by additional hours. It can be overtime by existing manpower or invite trustworthy vendors (subcontractors) to do services under experienced PT. SI’s supervision. The calculation for sensitivity above using additional manpower from the vendor, so direct labor cost unchanged. Additional hours from overtime of existing manpower will increase direct labor cost and it will impact to floor price (higher than table and figure above). Then it should be considered.

![Fig. 11: Sensitivity of the floor price to sales volume](image)

**Table 4: Sensitivity of the floor price**

<table>
<thead>
<tr>
<th>Sales Volume (Man Hours)</th>
<th>Additional Manpower</th>
<th>Total Manpower</th>
<th>Capacity (Hours)</th>
<th>Floor Price (IDR)</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>83,552</td>
<td>0</td>
<td>53</td>
<td>83,740</td>
<td>363,242</td>
<td>Manpower = 53 (SI), OT = 0</td>
</tr>
<tr>
<td>91,907</td>
<td>6</td>
<td>59</td>
<td>93,220</td>
<td>330,220</td>
<td>Manpower = 53 (SI) + 6 (Vendor)</td>
</tr>
<tr>
<td>101,098</td>
<td>12</td>
<td>65</td>
<td>102,700</td>
<td>300,200</td>
<td>Manpower = 53 (SI) + 12 (Vendor)</td>
</tr>
<tr>
<td>111,208</td>
<td>18</td>
<td>71</td>
<td>112,180</td>
<td>272,909</td>
<td>Manpower = 53 (SI) + 18 (Vendor)</td>
</tr>
<tr>
<td>122,329</td>
<td>25</td>
<td>78</td>
<td>123,240</td>
<td>248,099</td>
<td>Manpower = 53 (SI) + 25 (Vendor)</td>
</tr>
<tr>
<td>134,562</td>
<td>33</td>
<td>86</td>
<td>135,880</td>
<td>225,545</td>
<td>Manpower = 53 (SI) + 33 (Vendor)</td>
</tr>
<tr>
<td>148,018</td>
<td>41</td>
<td>94</td>
<td>148,520</td>
<td>205,041</td>
<td>Manpower = 53 (SI) + 41 (Vendor)</td>
</tr>
<tr>
<td>162,820</td>
<td>51</td>
<td>104</td>
<td>164,320</td>
<td>186,401</td>
<td>Manpower = 53 (SI) + 51 (Vendor)</td>
</tr>
<tr>
<td>179,102</td>
<td>61</td>
<td>114</td>
<td>180,120</td>
<td>169,455</td>
<td>Manpower = 53 (SI) + 61 (Vendor)</td>
</tr>
<tr>
<td>197,012</td>
<td>72</td>
<td>125</td>
<td>197,500</td>
<td>154,050</td>
<td>Manpower = 53 (SI) + 72 (Vendor)</td>
</tr>
</tbody>
</table>

(Source: Author)

**LIMITATION**

This research only focuses on how to determine floor price for services only and excluding material or other costs. A market analysis was already done by the Sales Department of PT. SI. All of that data related to sales and marketing for market expansion given by Sales Department. The market target set by the marketing department, however method of setting is not discussed to encompass business/market risk. There is no competitive survey. Competitor analysis and any fiscal/rule changes were not captured. Floor price determination did not consider exchange risk. Floor price determination excludes site services works. Floor prices determination also set in normal condition, on-time delivery services base exclude warranty charges. There is no information from the other competitor in the method of the setting price. This research does not consider force majeure risk such as pandemic situations, earthquakes, etc.

**CONCLUSION AND RECOMMENDATION**

Conclusion of this research not limited to:
1. Service business industry especially rotating equipment service is targeting niche markets from specific customer and specific services such as maintenance and repair then it will difficult to standardize selling price and there is no solid reference to determine it. Additional businesses to expand the service market for large equipment need to grow the business, but on the
other hand, there is the uncertainty of the return from additional capital investment. The company or service provider needs to know the floor price of the services with that additional business in order to give insight into the sales or marketing department to make the decision on pricing strategy among competitors. Determination of the floor price using NPV calculation method integration with terminal value at the end of the year when the NPV value equal to zero (breakeven). The resulting range of the floor price value in this research with sales target volume as a planned is from IDR 360,000 until 430,000. If there any decrease in the demand, then the range result of the floor price can be different. The floor price used as a reference when the sales or marketing negotiate with the customer about selling price. The sales or marketing have 27% (margin profit) for the bullet in their pocket to determine the selling price in the negotiation stage. Knowing bargain power of the buyer or customer is high even though direct competitor with same workshop capability almost zero from the time the being for this market (large rotating equipment services) but the company needs to encounter the pressure from the buyer to decrease the price as they want with the floor price as reference.

2. Determine floor price by using NPV calculation method give idea to the company to analyze which part that should be more cost-efficient, and it will get the company to become more competitive for example overhead cost that can be more efficient by shortening process of the services with innovation and highly experienced worker that is strength of the company based on SWOT analysis.

3. Skilled and High experienced labor which is strength for the company, but in exchange, it will increase the cost of services especially from direct labor cost. Labor cost structure to determine floor price that used the NPV calculation method shows that manpower is the main actor for this service industry and the burden from it can be minimized by managing the manpower resources well. By knowing the floor price, the human resources department will have insight into a budget reference for recruiting workers or labor and force them to start in the people development which is weaknesses of the company based on SWOT analysis. Because without the people's development, it will impact the competitiveness of the company.

4. Determine the floor price by using the NPV calculation method show that the target sales volume is an important factor in the competitiveness of the business. Increasing the sales volume will decrease the floor price significantly and it will make the company more competitive in the market.

5. In the pandemic situation, the company still on progress to build the workshop expansion, the machine has been already bought and the impact of this situation with slowing progress because of difficulty in the net operating cash flow, completion of the workshop expansion may not be as planned in the 2021. That’s related with the customer or buyer that have difficulty from this pandemic situation and from cold war between Middle East and Russia related to production of the oil in Oil and Gas sector. Sustainability of the business in the pandemic situation can be seen on the back-log project list. Back-log project list means projects that should be delivered by PT. SI. There are 191 on going project with the 73 customers. Financial performance in the first semester as a prove even though the business will be impacted by pandemic situation in the cash flow but hopefully it will be impacted in the last and can turn around to gain next opportunity ahead.

Recommendation of this research not limited to:

1. The company needs to corporate restructure or cost efficiency if the floor price is too high compare to the market price for example using the manpower sub-contractor to work under the supervision of the experienced worker from PT. SI. Cashflow in and cashflow out in NPV calculation will give an idea to the company to analyze which part that should be more cost-efficient, and it will get the company to become more competitive.

2. The company needs to make an agreement with trustworthy vendors or subcontractors to get privileges with good quality and good prices when the company needs additional manpower to absorb the increase in the target of sales volume.

3. The company needs to create budget plan refer to the business plan that represents by NPV calculation along with projection year to keep monitoring actual cost and expense of the additional business and make the adjustment if there any deviation then it can get different floor price as marketing guide to decide other the strategy to win the market.

4. Human resources need to have a master plan about mapping how to recruit manpower according to budget and prepare for long term people development with training and guidance from the senior or experienced employee.

5. The company shall hire for marketing intelligence to keep monitoring updates of the market condition and competitor status especially for expanding the market on large rotating equipment. It can support the company to grab the chance to increase the target of sales volume and analyze how the price competition among competitors.
Fig. 11: Action Plan

REFERENCES


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