



Business Strategy Proposal for Solar Energy EPC Company

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ABSTRACT: Catur Elang Energi (CEE), as one of the business diversifications of PT. Catur Elang Perkasa was established in 2020 to support Indonesian government to increase the new and renewable energy contribution in Indonesia by providing EPC (Engineering, Procurement, Construction) service for roof top solar power plant. In 2022, revenue generated from their operations is not good enough to achieve the target given by management. This research conducted to know the external and internal factor and propose strategy to improve CEE performance. This study further analyzes how the company runs its business from an external and internal perspective. This study uses external analysis such as PESTEL analysis, Porter's five forces, and competitor analysis. Moreover, there are also internal analysis such as Segmenting, Targeting Positioning (STP) analysis, Marketing Mix. Then a further analysis was conducted by using a SWOT analysis to determine the strengths, weaknesses, opportunities, and threats of Catur Elang Energi business. Business Model Canvas used to define and communicate Catur Elang Energi business and TOWS Matrix will help Catur Elang's develop its business and sales. The recommendation given include product development for solar energy related product, promotional campaign, developing agent network, and partnership with financial institution. Strategy implementation in the form of Gantt chart also made based on recommendation that can be implemented by PT. Catur Elang Perkasa.

KEYWORDS: Business strategy, External analysis, Internal analysis, Solar energy, TOWS matrix

INTRODUCTION

The demand for energy has increased globally, with primary energy demand rising by 5.8% in 2021 compared to 2019[1]. Despite an increase in renewable energy consumption, fossil fuels still account for 82% of primary energy use [1]. Wind and solar energy were the largest sources of renewable energy in 2021, surpassing nuclear energy [1]. The COVID-19 pandemic led to a decrease in carbon emissions from energy use in 2020, but emissions rebounded strongly in 2021 as economic activity resumed [1]. The Indonesian government plans to increase the contribution of new and renewable energy to the total energy mix by 23% in 2025 and 31% in 2050, with a target of utilizing 6.5 GW of solar energy in 2025 and 45 GW in 2045 [2][3]. However, only 0.07% of Indonesia's more than 200 GW solar energy potential is currently utilized. Increasing public interest in solar energy presents an opportunity to fulfill the government's target for rooftop solar power plants in 2025. This paper discusses the challenges and opportunities for renewable energy in Indonesia and emphasizes the importance of transitioning to sustainable energy sources to mitigate environmental harm. Catur Elang Energi (CEE), as one of the business diversifications of PT. Catur Elang Perkasa was established in 2020 to support Indonesian government to increase the new and renewable energy contribution in Indonesia by providing EPC (Engineering, Procurement, Construction) service for roof top solar power plant. CEE provides end-to-end solution for both residential and industrial customers in Indonesia starting from engineering and design, materials procurement, construction, and operation & maintenance service. In 2022, the management of Catur Elang has set revenue target for CEE to achieve. However, despite their efforts, the team has been unable to meet the target given. As a result, the management recognizes the need for a strong business strategy to compete in renewable energy market sector.

LITERATURE REVIEW

Research result of Sumarsono et al. stated that solar energy industry in Indonesia is on its introductory stage or emerging industry and might face several problems such as absence of infrastructure, standardization of product or technology, customers confusion due to diverse product existence, variation of technology as well as conflicting claims by competitors; erratic/unpredictable product quality; image and credibility towards financial community; regulatory problem; high initial cost; and response of threatened entities [4]. Director General, New Renewable Energy and Energy Conservation (EBTKE) Dadan Kusdiana also stated that the utilization of solar energy in Indonesia only reach 0.07% from more than 200 Giga Watt (GW) potential. Grimm et al. concept of industry revolution and the life cycle framework explain how industries change over time, during introduction stage, the industry is characterized by low



sales, limited product offerings, and few competitors [5]. Grimm et al. framework also explains the key success factors in introduction stage of industry is to establish credible image of firm and product [5]. Porter stated that in an emerging industry as it occurred within the period of industrial development where “the rules of the competitive game are largely undefined, the structure of the industry is unsettled and probably changing, and competitors are hard to diagnose” [6]. An extra consideration on uncertainties and risks is needed when formulate a strategy since the competitive game within solar energy industry in Indonesia is not mature yet which can be seen from policy, supporting infrastructure as well as financial institution role that are not optimal yet. Despite overall condition in Indonesia, solar energy industry still has its potential and firms in this industry need to consider the game rules specifically in pricing strategy, marketing approach, and product policy. Good strategic choice will open an opportunity to obtain strong position in the market.

RESEARCH METHODOLOGY

This research data analysis is using qualitative method, started from gathering insight regarding solar energy industry through interview from employee and ex-employee that working in the same industry and through secondary data from journals and official website. The other data needed to know is the existing condition of CEE such as strategy how CEE compete in the market, capabilities of CEE, STP and Marketing Mix strategy, and existing condition of digital marketing which also gained from employee interview. Competitor analysis is also needed to know and benchmark existing competitor in the same area of business. The result of data analysis is to know the existing condition of CEE and to conduct external and internal analysis and formulate the Business Model Canvas and SWOT/TOWS Matrix to select suitable strategy to solve the business issue of CEE.

RESULTS AND DISCUSSION

BUSINESS MODEL CANVAS

Business model canvas is method to define and communicate a business idea or concept. Business model canvas consist of customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure [7] . Author formulates business model canvas for CEE to quickly define CEE business idea and concept in the following

Figure 1.:

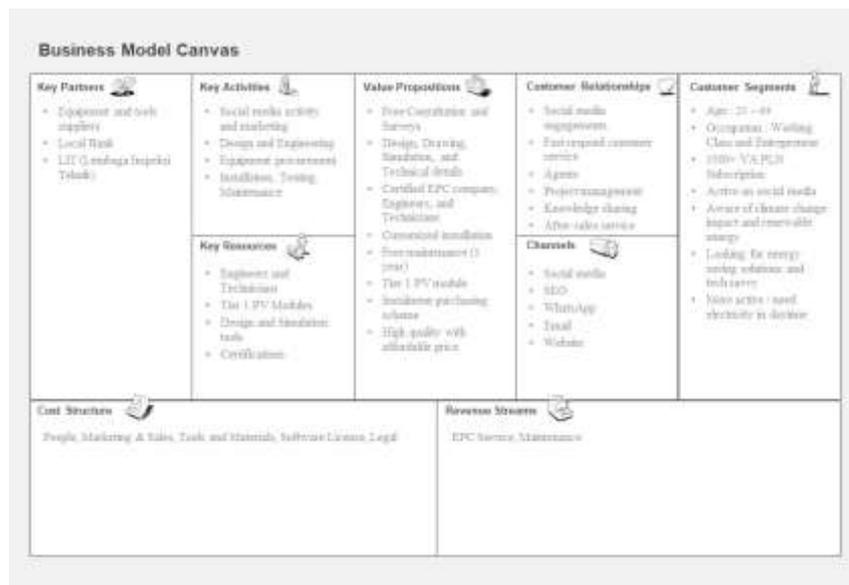


Figure 1. Business Model Canvas

Customer Segments

The ideal target customer of CEE are individuals between the ages of 25-64 which can be considered as productive age and part of the working class and entrepreneurs. CEE price range is not affordable for non-productive age in average. Additionally, the suitable target customer of CEE is aware of the climate change impact and willing to take part to reduce its impact. There are many



organizations and community of activist and hobbyist in Indonesia that can be targeted as CEE customers that interested in renewable energy solutions as they are looking for energy-savings solutions and can reduce climate change impact, it's also important to note that they are also tech-savvy, meaning that they are likely interested in technology innovation and products that can help to reduce energy consumption while still meeting their electricity needs. Given that the targeted customers are more active during the day, it may also be worth exploring solutions to fulfil their needs of electricity during daytime by installing solar energy power plant. Overall, the customer segment of CEE presents an opportunity for Catur Elang and CEE as a brands to market and promote their service that align with customers values and interest. Offering energy-efficient solutions such as solar energy power plant may resonate well with this audience, especially if they are offered through social media channels that they frequently use.

Value Proposition

CEE's value proposition includes variety of benefits to make it an attractive option for customers that interested in installing solar energy power plant system. CEE will provide free consultations and surveys to help customers understand their solar energy needs and assess the feasibility for their residence or business. CEE ability to provide customers with design and installation of solar energy systems that includes the creation of detailed technical drawings and simulations to help customers understand the proposed system that will be installed in their residence and its expected performance. CEE is also certified company in ministry of energy as Engineering, Procurement, and Construction (EPC) company with trained and certified engineers and technicians who have the expertise and knowledge to design, install, and maintain solar energy systems for their customers who can also customize the systems to meet their specific requirements. CEE only use Tier 1 PV manufacturer to ensure that the panels is reliable and will perform well over the long term with warranty coverage. Even though if needed and required by customers, CEE can also replat the PV brand to lower tier. CEE's customer also can enjoy free one year maintenance service after the installation to ensure the system installed in their residence is running well and provide repair service or equipment replace if needed. CEE offers high quality product with affordable price, providing customers with excellent value for their investment. Even though the price is affordable, CEE also provides instalment scheme as a purchasing option that requires no capital investment in front for its customers by partnering with local banks.

Channels

Channels can be used to drive traffic, engage with customers, and increase sales for business, and it's really important to select appropriate channels for CEE and target audience to use them to achieve business goals. CEE channels are in the following:

1. Social media that refers to platforms and websites where people connect and share content. CEE social media consist of: Facebook, Instagram, and LinkedIn.
2. SEO (Search Engine Optimization) as a set of practice to optimize CEE owned website ranking on search engine results page.
3. WhatsApp also considered effective to use by CEE team as a channel to engage with customers.
4. Email is also used as communication media especially commercial and industrial customers. Personalized emails and scheduled newsletter can also help CEE stay top of mind with potential customers.
5. Website as a digital presence for CEE business and used for first point of contact with potential customers.

Customer Relationship

Building customer relationship is a way of business to interact and communicate with customers. CEE customer relationship are in the following:

1. Social media engagements, social media is powerful tool for engaging with customers and building brand awareness. Rizvanovic et al. framework that link sales and leads generation with digital marketing tactics with leveraging social media can be used to increase customer engagements through social media [8]. The tactics are in the following:
 - Social media campaign & promotional posts are a great way to engage with potential customers and as a promotional activity. CEE can create content to shows the benefits of solar energy and how CEE can provide solution to save money in electricity bills. Paid ads in social media is also can be used to target specific target market.
 - Authentic content, authentic content is important to establish company expertise and build potential customer trust. Blog post, case studies, and white papers that shows and highlight the benefits of solar energy and CEE value proposition can be created for this tactic.
 - Building partnership with other companies in related industries can help CEE to expand their reach and credibility. Partnership for joint reports, webinars or promotional sharing campaign can be used to educate potential customers of solar



energy benefits. Partnership with other company such as EV charging company to create promotional sharing campaign that can cross-promotes each other services is also can be done.

- Contest, challenges, and gamification is also great way to engage with potential customers, CEE can create social media contest to encourages people to share their own solar energy system in their residence in action, to shows other users that they already installed solar power plant, shows their savings on electricity bills, etc.
 - Hiring influencers can help CEE to reach wider audience, solar energy influencer who has large followers on social media can help to create sponsored contents that highlight CEE services.
 - Loyalty program & referral, combining with CEE network agent, CEE can create a referral program to rewards customers to refers new business to CEE with discount. Customers that active to refers new customers can be hired as agent in the future.
 - Video content in social media to engage with potential customers can be created. CEE can create video content that highlights the installation process, benefits of solar energy, or provide an inside look at CEE itself as a company.
2. Fast respond customer service, fast respond customer service is important for service company with customize product such as solar energy power plant to increase customer satisfaction.
 3. Agents, CEE agents is also a form of customer relationship. Through CEE agents as representative who interacts directly with customer to address their needs, get information about solar energy and CEE services, answer question and provide supports.
 4. As a form of customer relationship, project management used to interact with customers. It involves managing project such as the delivery of equipment and materials. By managing the project, CEE can provide high level of communication and transparency to its customer and improve satisfaction and loyalty level.
 5. Knowledge sharing, even though solar energy power plant system is not a new technology, the industry in Indonesia still considered new and not all CEE customers is able to understand their system including general checking, switching on and off, basic maintenance, etc. and knowledge sharing can be form of customer relationship that CEE used to interact with customers. It involves providing knowledge and skills the customers need to understand the system installed in their residence.
 6. After-sales service is also important form of customer relationship. After installation and knowledge sharing, customers can also interact with CEE team as they need including maintenance or warranty claim.

Revenue Stream

Revenue streams of CEE come from two sources, by providing EPC service for its customer that involves engineering, procurement, and construction for the solar energy power plant and commissioning a project for a customer and providing maintenance service.

Key Resources

Key resources of CEE consist of:

1. Engineers and technicians of CEE is key resources for EPC company that involves engineering and technical work that responsible for designing, developing, and maintaining the technology that CEE owned. CEE engineers and technicians are also registered and listed in the Ministry of Energy system.
2. Tier 1 PV modules are high-quality solar panels which meet specific industry standards and manufactured by reputable companies. CEE have partnership with 3 Tier 1 PV manufacturers as a distributor and use their product for CEE customer solar energy power plant installation.
3. Design and simulation tool owned by CEE to make design and simulation process easier is also one of the key resources for CEE business. With the tool help, not only engineering process but the simulation reports can also be used for marketing tools.
4. Certifications are key resources for CEE that specialize in PV technology, as they demonstrate that CEE has the necessary expertise and knowledge to doing business in the particular industry.

Key Activities

Key activities of CEE business are in the following:

1. Social media activity and marketing for promoting the company's brand to increase its visibility and building positive reputation. With marketing activity in social media, CEE establish its presence on social media platforms and regularly share informative content related with solar energy and environment. Social media content also can contain company's success stories, latest project or portfolio, news, etc.



2. Design and engineering, in EPC service company, design and engineering take important part before the installation, or even before purchase order by customer. Its critical process in the construction business in general as it lays the foundation for project success. During this phase, CEE work closely with customers to fulfil their needs and wants in terms of installation design and need to ensure compliance with regulation and standard.
3. Equipment procurement, procuring high-quality solar equipment that meets the projects specification is also one of the key activities of CEE. It is including solar PV modules, inverters, mounting systems, cable, protection, and other accessories.
4. Installation, testing, and maintenance involves physical installation of solar system in customer location. Once the installation completed, engineers need to check thoroughly to ensure optimal performance and safety reason. LIT (Lembaga Inspeksi Teknis) also re-check the system to issue operating permits needed to submit to Ministry of Energy and PLN.

Routine maintenance also needs to be done to ensure the solar system continues to operate without problem. Normally, solar system only needs to be cleaned once for a while to ensure solar absorption is optimal.

Key Partnership

Key partner for CEE is to ensure the key activities running smoothly, key partnership of CEE consist of:

1. Equipment and tools suppliers are crucial partner for CEE. CEE needs high-quality and reliable tools and equipment to delivering solar energy projects successfully and comply with the specification and requirements.
2. Local bank to provides financing support for CEE customers that want to purchase the solar energy system with instalment scheme.
3. LIT (Lembaga Inspeksi Teknik) is a technical inspection agency that provides technical inspections and operating permits certification for solar system installation. The operating permit is needed to comply with regulation and also one of the requirements to apply to Ministry of Energy and PLN.

Cost Structure

Cost structure of CEE consist of:

1. People, this refers to the human resource costs including salaries, benefits, and other expenses. People cost also include cost that associated with hiring and training new employee.
2. Marketing & sales is cost associated with promoting activity and selling CEE services such as advertising, public relations, commissions, and other marketing related expense.
3. Tools & materials needed to delivering CEE services. This including solar system equipment and tools needed to do installation and testing.
4. Software license for Helioscope. Helioscope is a designer and simulation tools for solar energy used by CEE engineers team.
5. Legal expense for legal document submission and process for the solar energy system, including operating permit, and KWH Ex-Im submission process.

SWOT ANALYSIS

SWOT analysis stands for a company internal strength and weakness, market opportunities, and external threats. SWOT analysis can help to explain why strategy is working well or not by analyze company's strengths in relation to its weaknesses and in relation to competitor's strengths and weaknesses. SWOT analysis can also help to determine whether strategy has been effective in fending off external threats and positioning firm to taking advantage of market opportunities [9].

The main strength of CEE lies in the organization itself, PT. Catur Elang Perkasa was established in 1994 which already mature and had wide connection, good partners, and strong financial support. Catur Elang had several O&M contracts across Indonesia means that in every project location, Catur Elang need to have branch offices. Catur Elang also have strong digital marketing team to manage all Catur Elang businesses website and social media pages. Not only Catur Elang experienced in construction, in green energy sector, Catur Elang also had two mini hydro power plants that sells the epectricity to PLN as independent power producer (IPP). Catur Elang also holds IUJPTL certification and listed in Ministry Of Energy website (Siujanggatrik). To support the solar energy service, Catur Elang already had Tier 1 Photovoltaic module partner and leverage technology for engineering process that speed up the surveys, design, and simulation. The report generated by HelioScope also helps customer to know in details of their average yield annual production to calculate their return on investment.



CEE is considered new business of PT. Catur Elang Perkasa and still had small team to deliver their EPC service, and had no dedicated engineer and technician that solely work for CEE. CEE runs under business development department located in Jakarta with no representative in other locations outside Jakarta. For representative, CEE made network agent which unfortunately generated zero revenue until now. From the day Catur Elang established until CEE establishment, Catur Elang only focused on B2B market and had very little experience in B2C. CEE on the other hand, need to deliver its service to B2C customers, not to mention smaller scale project of residential customers. The small frontliner team of CEE overwhelmed with customer service process, especially when the customers coming from outside Jakarta which CEE does not have representative outside Jakarta make it worse. Promotional activities of CEE centered in Digital Marketing Team through website and social media, unfortunately the conversion rates from leads to sales is still under performed. The leads generated by marketing team still dominated by cold leads with more than 60%. A few competitor provides Off-grid and Hybrid package for its customers that CEE doesn't have. For Off-grid and Hybrid power plants, CEE will offer the custom solution based on discussion with customers and normally take long time.

There are several opportunities for CEE to grow, as emerging industry, there are many communities for solar energy that can be targeted as customers and agent to help promoting CEE products. The other community or organization that can be opportunity for CEE is social enterprise to provide electricity in remote areas, CEE can provide EPC service for social purpose or CSR for other companies. CEE can also expands their products range with solar energy related such as street lighting, solar pump, EV charging station, etc like their competitors. Even though CEE provides zero investment financial scheme for its customers, not all customers is eligible for this scheme. Benchmarked from CEE competitors that partnering with bank to provides lease or installment scheme can be opportunity for CEE to its customers.

Even though threat coming from new entrants is considered moderate and hard to be listed as eligible EPC company, it is still possible for smaller company to enter the residential market and become potential competitors for CEE. Furthermore, considering low on product differentiation among competitors in the solar energy industry can increase the threat of rivalry. The main threat is coming from the legal aspect in submission process by Ministry of Energy and PLN which can be different based on PLN's in the installation area. Furthermore, the regulation for solar energy in Indonesia is still new and can be changed in the future.

PROPOSED STRATEGY

1. Develop solar energy related products. Based on leads data of CEE, every month several customers asked for solar related products such as solar water heater, solar pump, and solar lighting which is not available yet in CEE product list. For Catur Elang, which already had many supplier partners, providing electric water heater, water pump, and street lighting system is not hard to do and this strategy to add product list for solar related product will expand CEE capabilities and target market.
2. Become local bank partner to provide installment scheme for residential customer. CEE's competitor provides their customers installment scheme for purchasing its product by partnering with local banks.
3. Campaign for social purpose. There are many communities and social enterprise that provides electricity in remote areas, several communities using crowd funding to fund the projects. This strategy will focus to make social media campaign for social purpose that targeting environment activist and for company CSR to provide solar power plant for people in need.
4. Build better agent network and act as representative outside Jakarta. CEE offered an referral fee for customers that already had solar power plant installed to helps CEE market their product as agent. Unfortunately their performance is not good enough to help CEE generate leads due to only few agents understand and able to explain about solar energy. By targetting solar energy related community members and building agent network that fully understand regarding solar energy will help CEE's promotional activity. This strategy will also solve the lack of representative of CEE outside Jakarta, agents with solar energy knowledge and active in community can be leveraged as representative of CEE.
5. Create Off-grid and Hybrid product package. There are several customers requested Off-Grid or Hybrid system for their solar power plant installation because their residence is not connected to the PLN's grid or connected but not reliable and want to have cheaper solution as a power backup than diesel generator. CEE is able to provide custom solution to build Off-Grid or Hybrid system based on customers requirement and discussion will take a long time. Few competitor also provides package for Off-Grid and Hybrid system with battery capacity options that can be benchmarked to develop new product package for CEE. By providing Off-grid and Hybrid system pricelist, the customers will have easier access to installation cost without consulting with CEE's representative.



6. Stakeholder analysis and build good relation with ESDM and PLN. Submission process for legal purpose is different based on installation area. Conducting stakeholder analysis can help to map the stakeholder and act accordingly. By mapping stakeholder, CEE can build good relationship with ESDM and PLN.
7. Employee training program. As emerging industry, not all customers familiar with the technology, how the system work, maintenance, etc. EPC service for solar energy also tends to have little or no differentiation among players. To increase customer experience, CEE need to increase their service level by providing training to its employee.
8. Subcontract with smaller company. Installation outside Jakarta will increase operational cost and will take more man-hours that can be problem with lack of Engineer and Technician resources for CEE. CEE can consider to give smaller project outside Jakarta to another company as subcontractor without having to hire more people to deliver service.
9. Open more branch office of CEE. By having more branch offices for CEE, the cost generated for surveys, installation, testing, and legal process can be lowered down and potentially have competitive advantage in the branch office area. Branch office will also increase marketing reach of CEE to generate more leads.
10. Merge with other company. With lack of B2C experience and not enough resources to compete in the market, CEE can merge with other EPC company to keep surviving in the solar energy industry and focus to increase portfolion in solar energy industry. By doing this, Catur Elang can focus on other business or bigger project in B2B market.

CONCLUSION

By having Business Model Canvas to define CEE business concept and TOWS matrix to know strategies that can be done by CEE to increase its revenue. Author proposes four strategies that CEE may implement in short term plan to increase revenue as follows:

1. Solar energy related product development
2. Promotional champaign
3. Agent network development
4. Financial institution partnership

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