

## Operational Management for “Electric Vehicle Charging Station (eV-Station)” In Indonesia

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### Abstract

The charging station service business that will be carried out by the Company focuses on providing charging station services for electric vehicles. In addition to these main services, the Company has other services such as the provision of co-working space, Coffee Shop and also automatic car wash. The eV-Station business operational process requires asset costs and operational costs to run the company's operations. Although this business is relatively new, it has the potential to generate promising profits due to the popularity of electric vehicles today. The Company is committed to raising public awareness of the use of green energy in the hope that it can reduce the greenhouse effect and the effect of global warming at a wider level.

**Kata Kunci:** busniess strategy; electrical vehicle charging; operational management;

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### INTRODUCTION

In the management of a business, it is necessary to have business operational management so that business activities can be carried out properly because operational planning affects the running of a business in the future. Operational plan is part of business strategy planning that contains aspects of business workflow, business resources, and business implementation mechanisms used in the business process. The operational plan has the aim of controlling business processes and providing a clear picture of the overall business activities to be carried out. To achieve this goal, in carrying out business operations, good coordination between networks of all units in a business is needed.

Business operational planning and management is not only beneficial for internal companies but can also provide benefits for financial labor management of a company (Kurniadi, 2018). An operational plan will help each department focus on their contribution to the larger vision by identifying all members to work together within one company.

The eV-Station service business focuses on charging station services for electric vehicles which are also equipped with other facilities such as co-working space, Coffee Shop and automatic carwash. This operational process requires operational costs to run eV-Station business operations that are adjusted to business needs and values.

The operational goals and objectives of eV-Station in the short term (0-2 years) are the development of SOP management, IT infrastructure and networking, the development of SPKLU facilities and infrastructure, and the development of automatic car wash facilities. Medium-term operational objectives (3-5 years) include the development of eV-Smart App, customer self-service system, smart co-working space, and implementation of SNI and ISO standards. Then the long-term operational objectives (6-10 years) of PT. eV-Station is the expansion of SPKLU business units in the West Java area, rejuvenation of facilities and infrastructure, and intensive study of hydrogen car charging development. The framework of the operational plan of PT. The eV-Station is presented in Figure 1.



Figure 1. Operational Plan of PT. eV-Station

### Establishment Stages

Operational planning in a business is important. In increasing the acceleration of business progress, the operational department must implement the right strategy in carrying out all aspects of business operations (Taryana, Yanuar Rahmat Syah et al., 2021). Analysis of a business is needed to start a business so that the real position of the company can be well known. The analysis can be in the form of internal or external analysis (Hardono et al., 2021).

The establishment of the eV-Station business began with the establishment of an eV-Station company in the form of a Limited Liability Company (PT). The establishment of this company will follow the applicable regulations in accordance with Law No. 40 of 2007 concerning Limited Liability Companies. In addition to the establishment of a legal entity in the form of a Limited Liability Company (PT), eV-Station must also fulfill the licensing process for the establishment of Public Electric Vehicle Charging Stations (SPKLU). The process consists of the following stages:

1. Determination of General Electric Power Business Area (PWUPTL). The

designated business area must be an area designated by the Minister as the place where the electric power distribution or sales business entity conducts the business of providing electricity.

2. Ratification of the Power Provider Business Plan (RUPTL). The ratification is carried out by the Director General of Electricity of the Ministry of Energy and Mineral Resources.
3. Application and issuance of a General Electricity Provider Business License (IUPTLU). To apply for IUPTLU, business owners must have a Business Identification Number (NIB) and a list of beneficiaries.
4. SPKLU Identity Numbering. SPKLU numbering is an obligation for SPKLU business owners. The procedure for applying for a SPKLU identity number is regulated in the Regulation of the Minister of Energy and Mineral Resources No. 13 of 2020.
5. Issuance of Certificate of Operating Eligibility (SLO). SLO is a formal recognition of an electrical power installation that is functional and ready to operate in accordance with specified requirements. SLO must be owned by Indonesian electric power installations.
6. Issuance of Electrical Engineering Power Competency Certificate (SKTTK). Engineering personnel in the electricity business are required to have a Certificate of Competency. Issuance is carried out by Competency Certification Bodies that obtain accreditation or appointment from the Minister of Energy and Mineral Resources through competency certification activities.

Establishment Stages of PT. eV-Station is presented in Table 1.

Table 1. Establishment Stages of PT. eV-Station

Activities	Establishment Timeline											
	Time Frame (In Month)											
	1	2	3	4	5	6	7	8	9	10	11	12
Business Area Determination	Yellow	Yellow	Yellow									
Business Plan Ratification		Green	Green	Green								
Business License Application and Issuance				Blue	Blue	Blue						
SPKLU Identity Numbering						Orange	Orange	Orange				
Issuance of Operational Eligibility Certificate									Grey	Grey	Grey	
Issuance of Competency Certificate									Green	Green	Green	

## METHOD

### OPERATION DESIGN

#### Product and Design Process

One solution to this dilemma is to link the overall corporate goal of value maximization to strategic and operational targets to ensure that the pursuit of financial goals is not at the expense of the longer term strategic position of the company (Prabangkara, 2023). To ensure that the company's financial goals can guarantee the company's strategic position in the long term, the company's overall goals must be linked to value maximization, strategic objectives, and operational targets (Grant, 2002). An important decision in operational management is to determine the product design and operations that will be produced by the company.

eV-Station is an electric vehicle charging station equipped with a comfortable waiting room, co-working space with beautiful acuascape interior, automatic car wash, electric massage chair, tenants coffee shop, nitrogen filling and ATM galleries. Building layouts are presented in Figure 2 and Figure 3. In addition, eV-Station provides several services as a revenue stream consisting of:

1. Battery Charging Services. This service provides various types of connectors according to the vehicle, type of battery charging speed, and there is technical support, namely a team of Engineering personnel who already have SKTTK certificates.

2. Co-Working Space Rental. This service is one of the main products of eV-Station which provides a variety of internet networks, computer devices that can be used for free, and has a Smart Office concept to facilitate customers.
3. Private Working Space Rental. This service provides more private workspace facilities with various functions as a workspace or studio that can be used to make videos, podcasts, and recordings because there is a soundproof room.
4. Event Tickets. As part of the service, eV-station creates many weekly events with the type of event adjusted to the company's target customers, namely from the creative industry. The event was held in the form of seminars, workshops, and expert discussions on creative industry topics.
5. Coffee Shop Tenant Rental. eV-station collaborates with well-known coffee shop tenants to provide facilities that provide comfort and relaxing space for customers through the existence of coffee shops.
6. Indoor Event Space Rental. This service provides venue rental facilities to target customers such as MSMEs or electric vehicle communities who need a place to hold meetings. Event Space Indoor has an acuascape gallery interior design concept.
7. Automatic Carwash. The automatic car wash facility on the eV-station aims to be an attraction for customers because it can save customer time with the automation applied to this car wash facility.
8. Area for ATM Machine. eV-station collaborates with well-known banks such as BCA, BNI, and BRI to provide ATM machines equipped with high security for customers with surveillance cameras, security officers, and ATM placement close to security posts.

**Layout and Service Flow**

To ensure the flow of transaction processes and customer activities run well, the process design of a company is important to pay attention to. The flow of business transaction processes on eV-Station is as follows:

1. **Booking Order.** Can be done in several ways such as through the eV-Smart App application, contacting directly to customer service by phone, business whatsapp, or booking directly at eV-Station.
2. **Payment Mechanism.** Payment is made after the customer uses the eV-Station service. Payment can be made via eV-Smart App, QRIS on EDC machines, debit or credit cards, transfers or cash.
3. **Use of Vouchers.** Vouchers can be used automatically for customers with digital transactions, while for customers with manual transactions such as cash, vouchers can be used manually inputted by the eV-Station cashier.

The process flow of eV-Station direct customer activities starts from the customer's arrival to eV-Station. Customers can directly park their vehicles at the existing charging station unit. Customers can carry out other activities by using other eV-Station facilities such as co-working space facilities, coffee shops, event areas, private working space areas, to automatic car wash facilities. Layout PT. The eV-Station is presented in Figure 2. and Figure 3.

**Process Technology**

One of the important part of the eV-Station's operating design is the process technology used. Process technology supports services and provides added value for customers. The technological process on the eV-Station consists of:

1. **Fast Charging Technology.** eV-Station provides service through increased speed, safety, and the provision of

various types of connectors for charging electric vehicles.

2. **Smart Co-Working Space.** eV-Station implements smart co-working in every existing room consisting of city touch technology, smart door lock, and smart locker, as well as the use of other facilities that can be accessed through gadgets.
3. **High Speed Internet** is available with some highspeed Internet providers.
4. **SMART eV-Station Apps** to make it easy for customers to access various facilities and services on eV-Station.

**OPERATIONAL SHIPPING**

Although eV-Station focuses on service services, there are physical product services that must still be a concern in the running of this business. The regulated aspects include:

1. **Capacity Management.** Facilities at the eV-Station are arranged to meet capacity and target customers. eV-Station has 4 charging station facilities that can operate in 24 hours. In addition, there are 3 main co-working space units that operate 12 hours per day. And there is 1 unit of automatic car wash that can operate 12 hours per day.
2. **Supply Chain Management.** To ensure good services, good supply chain management is needed in providing these services. eV-Station collaborates with selected suppliers based on the results of selection and strict supervision in providing the best facilities and services for customers. Suppliers to the eV-Station company consist of charging station technology providers, area developers, furniture and aquascape designers, office appliance providers, internet providers, and coffee shop tenants.

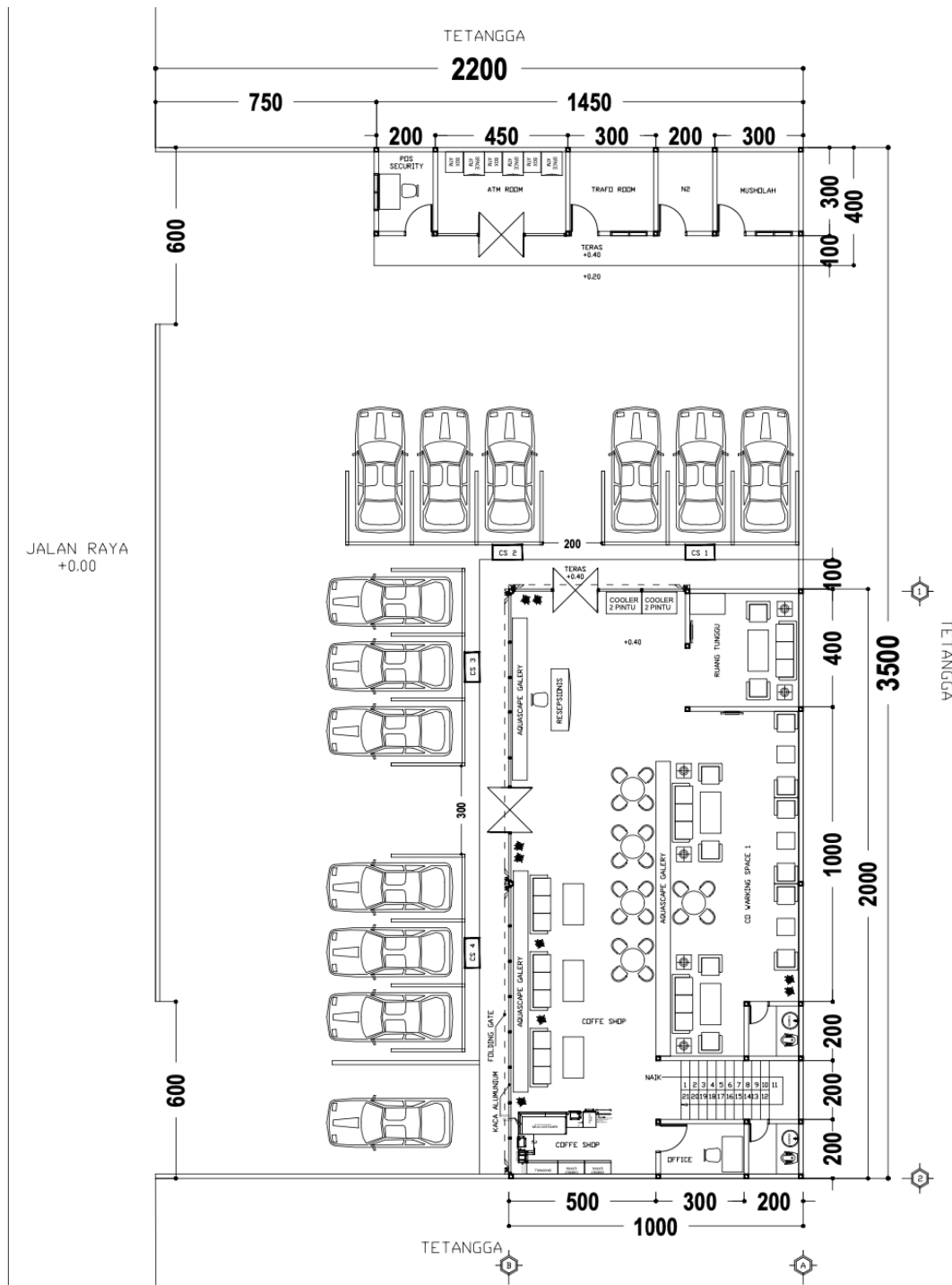


Figure 2. First Floor Layout of PT. eV-Station

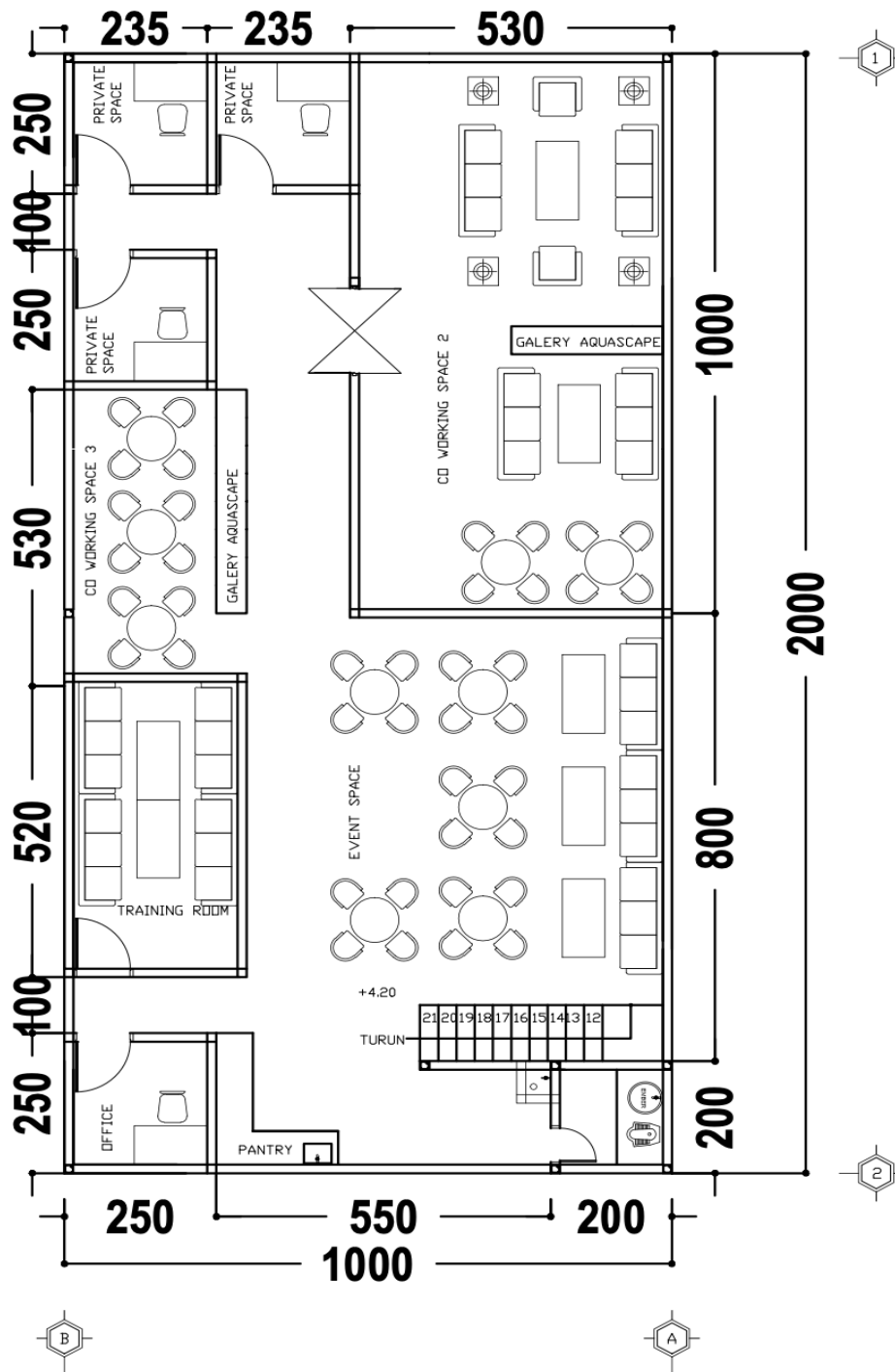


Figure 3. Second Floor Layout of PT. eV-Station

3. Inventory Planning and Control. Inventory planning and control is carried out by implementing a Minimum Stock Level (MSL) policy for several inventory needs such as electricity supplies for charging station units, cleaning agents for automatic car wash units, and critical eV-Station part inventory. Inventory will be evaluated every week then the system will automatically place a purchase order if the inventory touches the minimum level and forward the inventory purchase approval matrix to the purchasing department in the company.
4. Quality Management. Service quality assurance at eV-Station is carried out by implementing routine asset maintenance activities. Maintenance activities are carried out according to a schedule that has been made which is adjusted to the frequency of activities for each unit at the eV-Station.

### **PROJECTED OPERATIONAL COST Scenarios and Assumptions**

Operating cost budget assumptions on eV-Station are divided into 2 cost groups, namely:

1. Asset costs are costs allocated for the purchase of equipment and machinery for charging station units and furniture with a useful life of up to 5 years. Asset purchases are carried out in the first year of company establishment.
2. Operational costs are costs allocated for routine expenses in supporting the company's operational activities such as land rental costs, electricity procurement costs, telephone costs, water costs, etc.

greater allocation of funds compared to operational costs, this can occur because the cost of several asset procurements at the beginning of the company's establishment is very large. Such as the procurement of company buildings, the procurement of charging station units for electric vehicles, the procurement of automatic car washers, the development of eV-Station Smart Apps, and etc.

This biggest cost is very reasonable because companies such as eV-Station provide the main service in the form of charging stations for electric vehicles whose unit procurement does require a large allocation of funds. So that the provision of key assets in this company must be a top priority in establishing a company to ensure the company can provide the best service to customers. The cost of assets is budgeted at 90-93% of the total cost of this business. The breakdown of asset costs is presented in Table 2.

The operation of the charging station service company for electric vehicles for 5 years is calculated by all operating costs that provide in the table below. Where it can be concluded that maintenance costs are 50-55% of the total operational costs needed for charging station service business operations with a total projected revenue target within 5 years with total sales of approximately 29 billion rupiah. Details of the company's operating costs are presented in Table 3.

Then eV-Station accumulates assets as capital to prepare income, investment activities are carried out in the hope that they can provide benefits in terms of increasing profits, especially from the capital that has been issued. With a large investment cost, this business must be run with a good management strategy so that high profit potential can be achieved from running this business.

## **RESULT AND DISCUSSION**

The cost of assets in a charging station service company for electric vehicles has a

Table 2. Capex of PT. eV-Station

<i>CAPEX (CAPITAL EXPENDITURE) eV-STATION</i>					
No	Asset			Price/UoM	Total Price (1 <sup>st</sup> year)
	Equipment & Machinery	Qty	UoM		
1	Charging Station	4,0	unit	939.066.000,00	3.756.264.000,00
2	Laptop Dell latitude 7240 core i3 gen 4	1,0	unit	5.000.000,00	5.000.000,00
3	Android Cash Register BLUEPRINT POS	1,0	unit	2.200.000,00	2.200.000,00
4	LED TV LG 32 Inch	5,0	unit	2.300.000,00	11.500.000,00
5	CCTV HIKVISION 8 Channel 8 Camera	1,0	package	10.000.000,00	10.000.000,00
6	Printer HP DeskJet Ink Advantage 2775 Wireless	4,0	unit	900.000,00	3.600.000,00
7	Printer DCP T720 dw T720dw T720w 720 Print Scan Copy Wifi Wireless Adf - COMPATIBLE INK	1,0	unit	3.580.000,00	3.580.000,00
8	PC ALL IN ONE HP 800-G3 INTEL CORE i7-7700 RAM 4GB SSD 512GB WIN10	3,0	unit	8.600.000,00	25.800.000,00
9	UPS Prolink	4,0	unit	1.450.000,00	5.800.000,00
10	Infocus Projector	2,0	unit	4.460.000,00	8.920.000,00
11	Speaker Wirelles Portable Aiwa	3,0	unit	1.200.000,00	3.600.000,00
12	Smart Access Door Lock	3,0	unit	700.000,00	2.100.000,00
13	4 Furnace Gas Oven Stove	1,0	unit	2.800.000,00	2.800.000,00
14	Kitchen Set Stainless	1,0	unit	10.000.000,00	10.000.000,00
15	HDX-10000 POWER GENERATOR SILENT SOLAR 7000WATT 7KVA HYPER	1,0	unit	25.694.500,00	25.694.500,00
16	Automatic Carwash	1,0	unit	355.941.015,00	355.941.015,00
17	APAR	4,0	unit	18.884.800,00	75.539.200,00
18	Air Conditioner (AC) 2,5 PK	10,0	unit	9.000.000,00	90.000.000,00
19	Air Conditioner (AC) 1 PK	8,0	unit	4.500.000,00	36.000.000,00
20	eV-Station Smart Apps	1,0	package	300.000.000,00	300.000.000,00
21	Website Development	1,0	package	50.000.000,00	50.000.000,00



Building & Vehicle					
1	eV-Station Main Building	1,0	unit	1.200.000.000,00	1.200.000.000,00
2	Operational Car	1,0	unit	150.000.000,00	150.000.000,00
3	Land Rental	1,0	Lot	200.000.000,00	200.000.000,00
Furniture					
1	Minimalist Table + Chair	15,0	set	650.000,00	9.750.000,00
2	Office Desk + Chair	8,0	set	720.000,00	5.760.000,00
3	Sofa + Table	4,0	set	3.500.000,00	14.000.000,00
4	Reception Desk	1,0	pcs	4.000.000,00	4.000.000,00
5	Cafee Table Chairs	5,0	set	780.000,00	3.900.000,00
6	Multipurpose Buffet Table	1,0	set	7.500.000,00	7.500.000,00
7	Aquascape + cabinet making	25,0	Pcs	5.500.000,00	137.500.000,00
<b>TOTAL</b>				6.516.748.715,00	

Table 3. Operational Costs of PT. eV-Station

<i>OPEX (OPERATIONAL EXPENDITURE) eV-STATION</i>					
Operational Items	Year 1	Year 2	Year 3	Year 4	Year 5
Charging Station Equipment Maintenance Cost	24.000.000,00	25.200.000,00	26.460.000,00	27.783.000,00	29.172.150,00
Aquascape And Co Working Space Maintenance Costs	60.000.000,00	63.000.000,00	66.150.000,00	69.457.500,00	72.930.375,00
Certification And Calibration Fees	48.000.000,00	49.440.000,00	50.923.200,00	52.450.896,00	54.024.422,88
IT Infrastructure Cost (Hardware & Software)	48.000.000,00	48.000.000,00	48.000.000,00	48.000.000,00	48.000.000,00
Electricity Costs Office etc (Non Direct)	48.000.000,00	50.400.000,00	52.920.000,00	55.566.000,00	58.344.300,00
Automatic Car Wash Maintenance Cost	30.000.000,00	31.500.000,00	33.075.000,00	34.728.750,00	36.465.187,50
eV-Station Smart App Maintenance Cost	30.000.000,00	31.500.000,00	33.075.000,00	34.728.750,00	36.465.187,50
AC Maintenance Cost	18.000.000,00	18.900.000,00	19.845.000,00	20.837.250,00	21.879.112,50

Internet & phone charges	15.000.000,00	16.500.000,00	18.150.000,00	19.965.000,00	21.961.500,00
Licensing Fee	15.000.000,00	15.750.000,00	16.537.500,00	17.364.375,00	18.232.593,75
Other Operating Costs	12.000.000,00	12.600.000,00	13.230.000,00	13.891.500,00	14.586.075,00
Website Maintenance Cost	10.000.000,00	10.500.000,00	11.025.000,00	11.576.250,00	12.155.062,50
Electric Generator Maintenance Cost	7.650.000,00	8.032.500,00	8.434.125,00	8.855.831,25	9.298.622,81
PDAM Cost	6.000.000,00	6.300.000,00	6.615.000,00	6.945.750,00	7.293.037,50
Fire Extinguisher Maintenance Cost	5.550.000,00	5.827.500,00	6.118.875,00	6.424.818,75	6.746.059,69
Office Stationery Cost	4.800.000,00	5.040.000,00	5.292.000,00	5.556.600,00	5.834.430,00
Office Household Expenses	3.000.000,00	10.000.000,00	10.000.000,00	10.000.000,00	10.000.000,00
CCTV Maintenance Cost	3.000.000,00	3.150.000,00	3.307.500,00	3.472.875,00	3.646.518,75
<b>Total</b>	<b>388.000.000,00</b>	<b>411.640.000,00</b>	<b>429.158.200,00</b>	<b>447.605.146,00</b>	<b>467.034.635,38</b>

## CONCLUSION

To ensure that the operational costs of the eV-Station business do not exceed the planned budget, the operational strategy is necessary:

1. Effective and efficient work processes and operations, both internally and externally in cooperation.
2. Follow technological advances to improve services in the company and maintain the quality of use of technology that has been applied so as to extend its service life.
3. Carry out effective and efficient cooperation with suppliers or vendors who help in ensuring the optimal services and facilities that exist so as to improve the quality of company services.
4. Conduct quality management to improve the company's reputation.

5. Implementation of Standard Operating Procedures and Work Instructions in work operations in the company and ensuring it works optimally in all aspects of the company.

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