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OPERATIONAL MANAGEMENT FOR "STOCKISTS AND FABRICATION ABRASION RESISTANCE PLATE" IN INDONESIA

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Abstract:
The steel industry between stockists and fabricators is very rare. Business Establishment PT. Gipan Metal Teknik Indonesia (PT.GMTI) combines stockists of abrasion resistant materials and the fabrication process that will be carried out by the company focuses on providing abrasion resistant materials from 4 to 20 thick. The company supports end to end services in the fabrication process which consists of design & drawing process, material, cutting plate, fabrication, forming up to the machining process. The investment value in this company is quite high, so to get a positive profit margin it really depends on operational planning where operational cost calculations are needed to run the company's business. The company makes a profit from the difference between stockist material sales and customization of the fabrication process and production operational costs. The purpose of this research is to determine the importance of operational influence in managing operations to gain company profits. The conclusion of this research is that the operational department needs to implement innovative strategies to be able to compete with competitors. fabrication industrial company.

Keywords: Establishment , Design and process, Calculation of operational costs

INTRODUCTION

The steel and construction industry recorded negative growth when the world experienced the Covid-19 pandemic storm in 2020, however, based on data from the coordinating ministry for the economy, it was noted that Indonesia's economic growth grew by 5,015 (YoY) in the fourth quarter of 2022. At the national level, the steel industry also plays an important role in infrastructure development and manufacturing industry (SUGIANTO, 2018). Indicators of success in the manufacturing industry are marked by the achievement of goals and a rapidly improving development process. The factors for this success cannot be separated from setting the basic 5 points, including financial management, production management, marketing management, human resource management and information management.

In forming a business venture, proper planning is definitely needed, in order to form and develop a business entity to avoid problems that could be detrimental (Suharjo, 2017); (Novel et al., 2023). Designing business strategies and operational planning are very important stages (Lawu & Ali, 2022); (Thaib & Emanuel, 2020). Operational planning is the stage of setting targets to achieve certain goals with planned implementation which can describe specific stages in a particular strategic planning model which describes how and the amount of resources that will be operated during a certain operational period (Ahmad, 2020); (Julyanthry et al., 2020). The operational planning stages describe information related to the sequence of business processes, resources, goals and objectives, explanations regarding products and processes, quality control and supply chain management related to operational delivery .

In operational planning, the company will focus on the stockist business of abrasion-resistant materials and the fabrication process, planning the operational framework as follows :

Figure.1 Operational plan of PT. GMTI

Stages Establishment

The essence of operational planning is to determine the operational impact on a business's work in real-time, therefore operational planning is very important (Syaifullah & David, 2021); (Fauzan, 2021). The pace of business will be fast if the operational department implements appropriate and precise strategies in carrying out all operational aspects in increasing the pace of business (Taryana, Yanuar Rahmat Syah et al., 2021).

The establishment of the stockist business and the abrasion resistant material fabrication process began with the establishment of a company in the form of a Limited Liability Company (PT). The establishment of this company will follow the applicable provisions of Law Number 40 of 2007 concerning Limited Liability Companies (Nomor, 40 C.E.). In addition to establishing a legal entity in the form of a Limited Liability Company (PT), this stockist and fabrication process for abrasion-resistant materials also registered to become a member of The Indonesian Iron & Steel Industry Association

(IISIA) to receive information support related to the development of the Indonesian Iron and Steel industry, especially regarding the Indonesian Steel industry, market. , regulations, technology, steel standards and steel galleries. The process consists of the following stages: (1) The deed of establishment must include KBLI (Indonesian Standard Classification of Business Fields) No. 2020-2591 relating to the Forging, Pressing, Printing and Metal Forming Industry; Powder Metallurgy. (2) Managing tax documents (Registered Certificate, NPWP and Taxable Entrepreneur Confirmation Letter (SPPKP)), (3) Managing Business Identification Numbers (NIB) and managing electronically integrated business permits (Online Single Submission (OSS)).

MATERIALS AND METHODS

This operational design is based on PT.GMTI's product and service on the Value Proposition Canvas model, namely PT.GMTI as a provider of abrasion resistance plate material and providing fabricated products that can be customized according to customer wishes with end to end product service. The running system has several sub-systems that form a series and are connected to each other. Inputs are classified into fixed inputs which do not depend on the amount of production output and input levels which depend on the amount of output capacity to be produced. The GMTI process is a combination of labor, materials, equipment, technology to produce added value transformation of products so they can be sold. The output of PT GMTI's production process is supply of abrasion resistance plate materials, customize cutting plates and product fabrication .

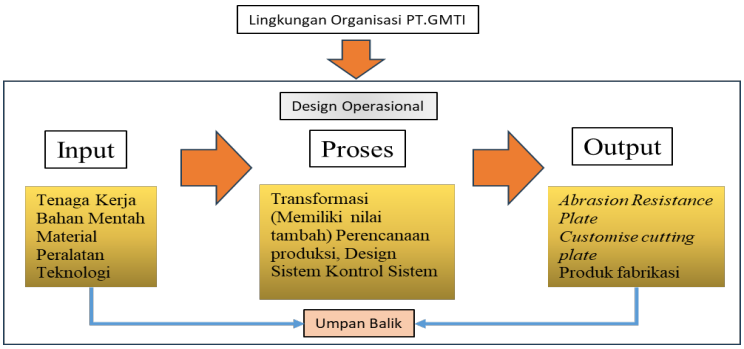

Figure 2. PT GMTI frame work

Business Process

Business processes in the company stockist And abrasion resistance plate fabrication consists of from elements of management process, product realization, and supporting processes. Analysis business processes can maximizing every stages And help understand customer with more OK , anticipate his changing needs , prevailed existing competition , and also produce _ product and innovative ideas to market .

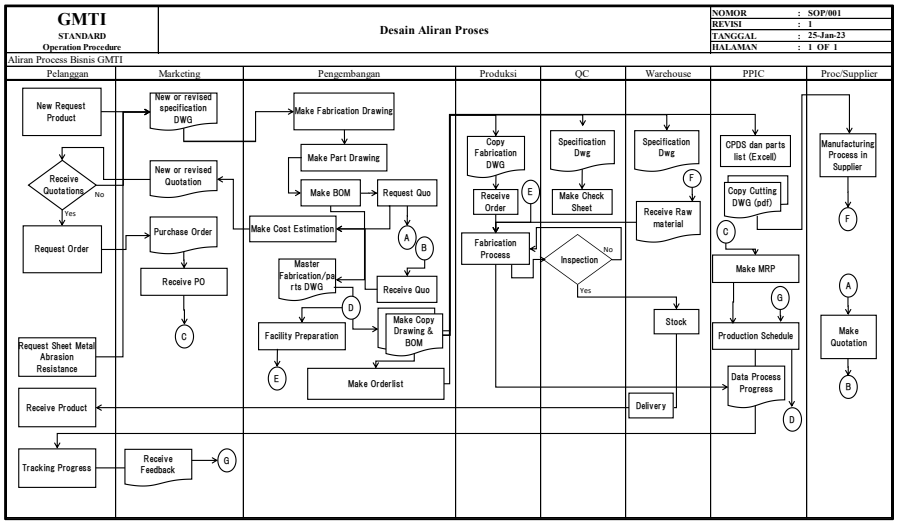

Figure 3. Business Process PT. GMTI

Activity process flow started from accepted request product from customers , counting cost product , development process, making MRP, production , up to product accepted by customer .

Product and Technology.

Financial analysis shows the efficiency benefits that arise from being a market leader and having an integrated collection and delivery system that optimizes operational efficiency (M.GRANT, 2002). Factors that influence operational efficiency are process and product design to produce a product. The product design of this company's stockists is to provide abrasion-resistant materials in the form of sheet metal. Apart from that, it provides customized products which are also supported by fabrication processes such as: (1) Plasma cutting plate cutting process, which is a process used to cut steel and other metals of different thicknesses using a plasma torch. (2) laser cutting plate process, namely a material cutting process that uses a laser, producing high quality, dimensionally accurate cuts. (3) waterjet cutting, namely a cutter that works by spraying high-pressure and high-speed water onto the surface of a workpiece up to a thickness of 300 mm and has a high level of precision. (4) welding fabrication, namely a fabrication process in which two or more parts are joined together through heat, pressure, or both and form a joint when the parts cool. The first year's fabrication process will focus on SMAW welding and in the third year it will also use a GMAW welding machine. (5) Forming or shaping using bending and rolling processes, namely changing the shape of the metal by applying an external force so that plastic deformation occurs and the shape changes as desired. The material forming process uses 25 ton and 100 ton pond machines and in the third year uses 500 ton press and 1000 ton rolling machines. (6) CNC or manual machining process, namely the process of chip formation as a result of the tools installed on the machine tool, moving relative to the work piece which is gripped in the working area of the machine tool. Machine components made of steel have various shapes.

Layout Design

PT. Factory layout needs. GMTI for initial development requires a factory area with a total land area of 1980 m2. Layout planning _ under This is moment commencement business .

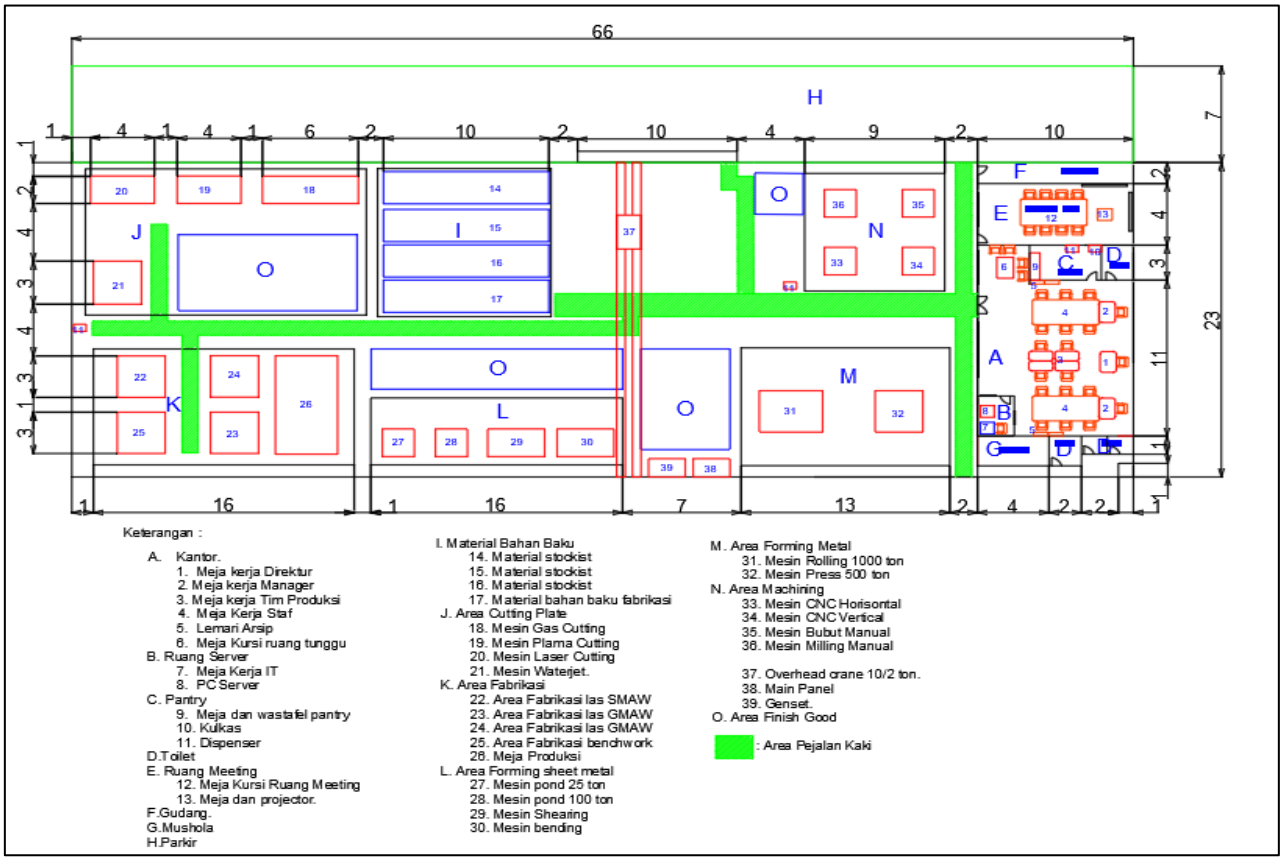

Figure 4. Layout Planning

Development factory will started on 3rd year where will area needed for CNC machining machines and the 5th year will be development of press and bending roll areas.

Supply Chain Management

Management chain sustainable supply _ has appear as approach main for purposeful company _ For can compete . The great benefit lies in collaborating with suppliers and customers to improve product design and processes that connect business with customers (Hasan, 2013).

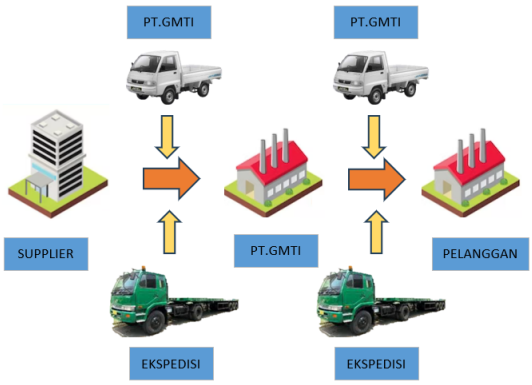

Figure 5. Supply chain PT. GMTI

PT. GMTI for can carrying out supply chain management according to function, has several approaches (1) Collaborating with 5 brands of Abrasion resistance plate material producers, namely Hardox, Abrex, Raex, JFE Everhard, and Wearpro. The aim of choosing this brand is to make it easier to purchase imported materials and also to get more competitive purchasing prices from suppliers. (2) Raw materials for LPG, O2, CO2 gas cylinders are selected from suppliers located around Jakarta and Bekasi. PT.GMTI will select 3 suppliers. (3) Procurement of SMAW and GMAW Welding Wire and Grinding Stones is selected from suppliers located in the Jabodetabek area.

In order to maintain stock availability of all raw materials used as input, PT. GMTI will prefer suppliers who are willing to enter into a 2 year work contract and can provide purchasing prices that can be standardized within a period of 2 months for local raw materials and 3-4 months for materials . abrasion resistance plate.

Management Quality

Management quality This become set tool For make A company or organization experience repair Keep going continuously , that can be give effect Good to company For increase product and HR (Jauhar Winarto & Mahmudah El Madja, 2021). In application management quality is ensure products supplied _ or generated by PT. GMTI has quality desired height _ by customer . The following are several steps that will be implemented to implement quality management (1) Management determines the company's quality policy. (2) Identification and analysis of quality risks (3) Product quality planning (4) Implementation of quality control (5) Quality control (6) Replacement of NG products.

PT.GIPAN METALTEKNIK INDONESIA Specialist and The Best Solution for Metal Abrasion Resistance Plate			Quality Control Process Sheet			Control Document : GMTI/QC-001		Nama Pelanggan			Date 28 Agustus 2023
Nomor Proses	Nama Proses	Nama mesin/peralatan	Karakter yang perlu di cek	Standar pengecekan	Alat Pengukut	Sistem Kontrol			Abnormal condition		
						Persentasi	PIC	pencatatan	PIC	Approved	Methode
1	Material Abrasion Resistance Plate	-	Dimension, visual, Mill Certificate	Specification document	Roll meter, caliper	100%	QC Inspector	Drawing			
2	Gas Cutting (rell)	set mesin cutting	temperatur pemotongan, Orientasi, Visual, Dimensi	Dimensi toleransi pada Drawing	Roll meter, caliper	100%	operator	Drawing	Operator	Ketua regu	informasi ke pelanggan
3	Gas Cutting (CNC)	set mesin cutting	temperatur pemotongan, Orientasi, Visual, Dimensi	Dimensi toleransi pada Drawing	Roll meter, caliper	100%	operator	Drawing	Operator	Ketua regu	informasi ke pelanggan
4	Plasma Cutting (CNC)	set mesin cutting	temperatur pemotongan, Orientasi, Visual, Dimensi	Dimensi toleransi pada Drawing	Roll meter, caliper	100%	operator	Drawing	Operator	Ketua regu	informasi ke pelanggan
5	Laser Cutting (CNC)	set mesin cutting	temperatur pemotongan, Orientasi, Visual, Dimensi	Dimensi toleransi pada Drawing	Roll meter, caliper	100%	operator	Drawing	Operator	Ketua regu	informasi ke pelanggan
6	Water Jet Cutting	set mesin cutting	temperatur pemotongan, Orientasi, Visual, Dimensi	Dimensi toleransi pada Drawing	Roll meter, caliper	100%	operator	Drawing	Operator	Ketua regu	informasi ke pelanggan
	QC Inspection	-	Dimensi, visual, orientasi, toleransi	Dimensi toleransi pada Drawing	roll meter, thickness gauge, Bevel Protractor	1000%	QC Inspector	Drawing	Operator	Ketua regu	informasi ke pelanggan
7	Forming (Bending, Rolling, Shearing, Pressing)	Mesin press, shearing, r	Dimensi, kelurusan, Kesejajaran, sudut.	Drawing dimensi dan toleransi	Roll meter, Siku	100%	Operator	Drawing	Operator	Ketua regu	informasi ke pelanggan
	QC Inspection		Dimensi, kelurusan, Kesejajaran, sudut.	Drawing dimensi dan toleransi	Roll meter, Siku	100%	QC Inspector	Drawing	Operator	Ketua regu	informasi ke pelanggan
8	Docking	Blender m/c, gas burner	Dimensi, kelurusan, Kesejajaran, sudut.	Drawing dimensi dan toleransi	pengukur kaki las, roll meter	100%	WD Operator	Drawing	Operator	Ketua regu	informasi ke pelanggan
	QC Inspection		Dimensi, kelurusan, Kesejajaran, sudut.	Drawing dimensi dan toleransi	pengukur kaki las, roll meter	100%	QC Inspector	Drawing	Operator	Ketua regu	informasi ke pelanggan
9	Welding	Welding mesin	Dimensi, Distorsi pengelasan, ukuran kaki las	Drawing dimensi dan toleransi	visual & welding gauge	100%	WD Operator	Drawing	Operator	Ketua regu	informasi ke pelanggan
	QC Inspection	UT mesin	Dimensi, Distorsi pengelasan, ukuran kaki las	Drawing dimensi dan toleransi	visual & welding gauge	100%	QC Inspector	Drawing	Operator	Ketua regu	informasi ke pelanggan
10	Machining	Grinding m/c	visual welding & material appearan	Drawing dimensi dan toleransi	caliper, centering tools, meja rata, high gauge	100%	Machining Operator	Drawing	Operator	Ketua regu	informasi ke pelanggan
	QC Inspection	-	Dimensi, toleransi, kekasaran	Drawing dimensi dan toleransi	caliper, centering tools, meja rata, high gauge	100%	QC Inspector	Drawing	Operator	Ketua regu	informasi ke pelanggan

Figure 6. Table Planning Process Quality

RESULTS AND DISCUSSION

Influencing costs _ cost PT. GMTI's operations consist of: from Cost Material standard , cost operations , costs acquisition of assets and cost pre-operation . The procurement of several assets at the start of the company was very large.

Like cost material standard , rent factory , overhead crane. This asset does require a fairly large allocation of funds. So providing this asset is a top priority for running the stockist and abrasion resistance plate fabrication business. Asset costs are budgeted at 25-30 % of total business costs.

All operational costs for 5 years required for stockist and fabrication business operations with a total projected income target within 5 years with total sales of approximately 29 billion rupiah.

With large investment costs and losses occurring in the first year, the stockist business and fabrication process must be run with a good, effective and efficient management strategy in order to reduce out-of-budget expenses and get high profits from running this business.

Stock material control

Supply for Start-ups in the world is one key most importantly in operational company . According to Heizer and Render (2014) all organizations certainly have a planning system and inventory control system. In the 2nd year , after have a forecast for reduce cost storage of abrasion resistance plate material stock, PT. GMTI will collaborate with local distributors using the JIT (Just in Time) method which aims to store some stock which can be stored by the distributor and can reduce PT. GMTI will only stock material as much as 5% of the total monthly.

Table 1. Inventory Material standard

Material	Price (IDR)	QTY Year (Tons)					Price Year (Billion Rupiah)				
		1	2	3	4	5	1	2	3	4	5
Stockist	40,000	275	350	455	683	1,000	11.00	14.00	18.20	27.30	40.00
Fabrication (End to End)	40,000	54	54	81	81	108	2.16	2.16	3.24	3.24	4.32
Total		329	404	536	764	1,108	13.2	16.2	21.4	30.5	44.3

Projected Operational Costs

Every company, whether a service or manufacturing company, has the main goal, namely to obtain maximum profits, and every business activity carried out by a company requires costs, including operational costs. If the company can reduce operational costs, the company will be able to increase net profit, and vice versa, if costs are wasted it will result in decreased profits (Rahmawati et al., 2021). Operational cost budget at PT. GMTI is divided into 3 cost groups, namely operational costs, asset acquisition costs and pre-operation costs. To determine the annual operational cost plan, the product price and fabrication process must first be determined.

Table 2. Operational Costs for Each Product and Process
In IDR unit

Cost PT GMTI operations	Price per unit	Year-1	Year-2	Year-3	Year-4	Year-5
Stockist of Abrasion Resistance Plate Material	Kg	40,000	40,000	40,000	40,000	40,000
End to End Process Materials	Kg	40,000	40,000	40,000	40,000	40,000
Plasma Cutting (Rail)	Kg	1,827	2,442	2,271	2,157	2,054
Plasma Cutting (CNC)	Kg	1,868	2,866	2,767	2,620	2,525
Laser Cutting	Kg	80,736	133,424	122,034	114,228	110,730
Water Jet Cutting	Kg	237,661	242,461	47,863	2,157	209,179

Bending	Kg	12,360	13,957	10,086	7,875	6,629
Machining	Kg	0	0	13,146	12,406	14,990
Welding Process	Kg	16,328	15,796	13,957	13,868	13,817

Table 3. Operational Cost Table
In IDR Units

Operational Items	Year-1	Year-2	Year-3	Year-4	Year-5
PAM water	11,664,000	12,130,560	12,494,477	13,119,201	13,381,585
Drinking Water	13,440,000	13,440,000	14,784,000	14,784,000	16,262,400
Electricity	88,374,033	91,025,254	92,390,632	95,162,351	96,589,787
Telephone & Internet	36,000,000	36,000,000	46,800,000	46,800,000	60,840,000
Rent Factory	750,000,000	750,000,000	750,000,000	750,000,000	750,000,000
Maintenance Machine	60,480,000	65,000,000	84,500,000	118,300,000	177,450,000
Operational Fuel	81,600,000	85,680,000	89,964,000	94,462,200	99,185,310
50kg LPG Gas Cylinder	272,056,320	290,193,408	402,643,354	519,446,200	732,157,968
O2 Gas Cylinder	52,977,900	56,509,760	78,407,292	101,152,470	142,574,124
CO2 Gas Cylinder	12,364,728	14,837,674	17,805,209	27,776,126	43,330,756
SMAW Wire Welding	12,533,400	15,040,080	23,462,525	29,562,781	46,117,939
GMAW Wire Welding	-	-	12,960,000	13,608,000	17,690,400
Rock 4" Grinder	1,920,000	2,496,000	3,244,800	4,218,240	5,483,712
Rock 7" Grinder	2,580,000	3,354,000	4,360,200	5,668,260	7,368,738
Rock Grinding Cut 7"	1,200,000	1,560,000	2,028,000	2,636,400	3,427,320
Maintenance Office Supplies	10,200,000	10,710,000	15,000,000	15,000,000	15,000,000

ATK + Office Equipment	11,382,000	11,951,100	15,536,430	17,090,073	18,799,080
Cost Other operations	12,000,000	12,000,000	12,000,000	13,200,000	17,160,000
Generator Fuel	37,517,760	39,393,648	51,211,742	53,772,330	69,904,028
Office & factory cleanliness	12,000,000	12,360,000	12,730,800	13,112,724	13,506,106
Improvement Ideas	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000
Cost Development	48,000,000	62,400,000	81,120,000	105,456,000	137,092,800
Tax Vehicle	3,500,000	3,500,000	3,500,000	3,500,000	3,700,000
Total	1,537,790,141	1,595,581,483	1,832,943,461	2,063,827,356	2,493,022,053

Table 4. Table of acquisition of assets

In IDR Units

Machine	Year				
	1	2	3	4	5
CNC Laser Plate Cutting Machine	103,950,000				
CNC Plasma Cutting Machine	390,000,000				
Machine WaterJet Cutting	320,597,800				
Portable cutting welding machine	11,187,468				
SMAW inverter welding machine	22,500,000				
GMAW inverter welding machine			37,500,000		
Gouging Machine	49,282,668				
Ultrasonic Test Machine					56,250,000
Plate bending bending machine	129,600,000				
Bandsaw Machine	55,000,000				

Plate cutting shearing machine	120,000,000			
Machine / pound	150,000,000			
Machine Pound	70,000,000			
1000 ton Rolling Machine			750,000,000	
500 ton Press Machine			468,000,000	
Machine Manual lathe		96,000,000		
Manual milling machine		160,000,000		
CNC Lathe Machine				120,000,000
CNC Milling Machine				347,250,000
10 ton overhead crane	450,000,000			
Hoist crane 10 tons	111,261,600			
Magnetic lifting 5 tons	918,000			
Chain lifting set with hook	7,798,800			
Universal Magnetic Drill	11,700,000			
cutting wheel machine	3,688,000			
Machine grinding hand 7in	1,906,000			
Machine Grinding hand 4 in	1,906,000			
Generator 20KVA Emerald	72,000,000			
HandyTalkie	390,000			
Fan Tornado Wind 16"	1,435,000			
Exhaust Fan 10"	2,611,000			
AC 0.5 PK	3,209,000			
AC 1 PK	13,916,000			
Table Production		130,000,000		

Small fabrication tools	20,000,000		
Tool measure fabrication	10,000,000		
Tool Measure QC	8,000,000		
Pick up car	254,000,000		
Laptop Director & Manager	60,000,000		
Staff Laptops	120,000,000	16,000,000	40,000,000
Laptop Design	15,000,000	15,000,000	
Autocad 2023	33,000,000		
Table Office Work + Chair	33,750,000		
Table Meeting Chairs	10,878,000		
Cupboard cabinet	2,280,000	760,000	
Projector	4,000,000		
White boards	1,200,000		
PC workstations (servers)	20,000,000		
Machine absence of finger print	3,000,000		
KONICA MINOLTA BIZHUB BZ283 PHOTOCOPY MACHINE	8,032,500		
KONICA MINOLTA BIZHUB BZ283 PHOTOCOPY MACHINE	8,032,500		
CCTV 6 points	5,000,000		
Table + Chairs	6,000,000		
Refrigerator	2,875,000		
Dispensers	4,500,000		
32" Digital TV	2,300,000		
Telephone	500,000		
Rack 18 door locker	2,050,000		
Fire extinguisher	30,000,000		

Total	**2,769,255,336**	**130,000,000**	**324,500,000**	**1,218,760,000**	**563,500,000**

CONCLUSION

To ensure business operational costs can be controlled and according to budget plans, operational strategies need to be implemented as follows: (1) The work process is carried out effectively and efficiently and in collaboration with internal and external parties of the company. (2) create operational standards to ensure optimal processes (3) Quality management needs to be prioritized so that product re-work is not carried out frequently. (4) carry out continuous improvement involving employee participation. (5) Improve quality suppliers.

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