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IMPLEMENTATION OF OPERATIOANAL STRATEGY BUSINESS IN PT MARITIM INDUSTRI INDONESIA (MARINA)

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ABSTRAC :*Indonesiaisrecorded as the 2nd largest exporter of coal in the world, the world'slargest exporter of palm oil, the 2nd largest tin producer in the world, the owner of 12% of the world's nickel reserves (the 4th largest), the world's 7th largest bauxite reservestorage and producer. 4th largest in the world. Given the geographical composition of Indonesia, whichconsists of islands, the most effective means of transportation is to use ships. Marina'soperational design isbased on corporatestrategy: strengthenresearch and evelopmentactivity to increase engineering value of the company. Marina deliverthisstrategyinto 3 main concept: Product design innovation, factorylayout innovation, technologyprocess innovation. Focussing in leanmanufacturing and digitalization concept, Marina offers the concept of low operational cost products by making innovations in terms of product design. The product produced by Marina has a lighter weight concept, so it can reduce the fuel consumption of the customer's tugboat.*

KEYWORDS –*Ship builder, Lean manufacturing, digital manufacturing, research and development, cost reduction*

I. INTRODUCTION

According to data from the Central Statistics Agency, Indonesia's area is 1.9 million square kilometers and 2/3 of its area is covered by sea. With the vastness of the oceans in Indonesia, it is not surprising that many call Indonesia a maritime country, a country of a thousand islands, or a palm oil country because of its long coastline. Indonesia's coastline is recorded as long as 95,181 km. The length of this coastline is the fourth longest in the world after Canada, America and Russia.In addition, Indonesia also has a large natural wealth. Indonesia is recorded as the 2nd largest exporter of coal in the world, the world's largest exporter of palm oil, the 2nd largest tin producer in the world, the owner of 12% of the world's nickel reserves (the 4th largest), the world's 7th largest bauxite reserve storage and producer. 4th largest in the world. Given the geographical composition of Indonesia, which consists of islands, the most effective means of transportation is to use ships. The Nielsen Quest for Convenience Report, which explores changes in global consumer needs, highlights the rapidly growing demand for comfort in various countries around the world [1]. Marina as one of shipbuilder in Indonesia that focussing in reducing customer operational cost which applying Lean Manufacturing and Digitalization in order to keep its manufacture cost low and improve lead time as well as increasing customer productivity.

II. METHODOLOGY

In a business plan, the Operational role cannot be underestimated. The pace of the business will be fast if the operational department implements the right and accurate strategy in executing all operational aspects in increasing the pace of business [2]. In starting a business to formulate a strategy, some business analysis, both internal and external, is needed to find out the real conditions for the position of PT [3]. There must be a method and stages in implementing the establishment of businesses by stages as follows.

A. Business Establishment

Operational management ofKelolaLingkungan Kita company (PT. KLK) at the initial planning stage before establishing a factory to determine the location of the factory establishment [4].Based on the Law of the Republic of Indonesia Number 40 of 2007 concerning Limited Liability Companies, the realization of PT Marina's shipbuilding plan begins with the establishment of PT MartitimIndustri Indonesia.The company name submission is registered by a notary through the Legal Entity Administration System (Sisminbakum) of the Ministry of Law and Human Rights through the online system. The requirements needed are to attach the original form, a photocopy of the Resident Identity Card (KTP) of the founders and company management as well as a photo of the Family Card (KK) of the leader or founder of company.This process aims to check the

name of PT MartitimIndustri Indonesia, where the user of the company cannot be the same or very similar to the name of the existing company. In addition, the registration of company names aims to obtain approval from the relevant agencies (Kemenhumkam) in accordance with the Company Law and Government Regulation of the Republic of Indonesia Number 43 of 2011 concerning Procedures for Submission and Use of Limited Liability Company Names. While the processing time is generally 3-5 working days. The deed of establishment is made by an authorized notary throughout the territory of the Republic of Indonesia for further approval from the Minister of the Ministry of Law and Human Rights. The first supporting data needed to make a company deed is the company's position.

B. Operational Design

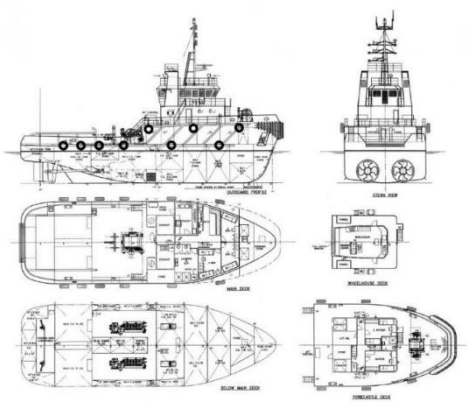
One solution to this dilemma is to link the overall corporate goal ofvalue maximization to strategic and operational targets to ensure that the pursuit offinancial goals is not at the expense of the longer term strategic position of thecompany [5]. Marina's operational design is based on corporate strategy: strengthen research andevelopment activity to increase engineering value of the company. Marina deliver this strategy into 3 main concept:

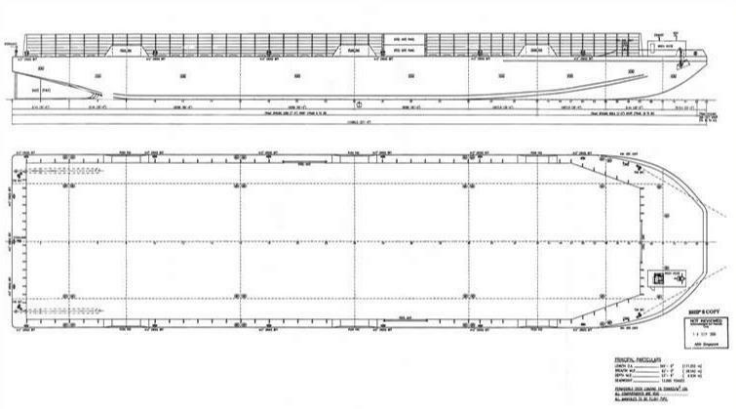
1. Product Design Innovation

Main product that Marina produce is tugboat and barge. Some product variant that Marina produce are:

Tugboat Size (hp)	Barge Size (feet)
2 x 659	250
2 x 780	270
2 x 829	300
2 x 1100	330

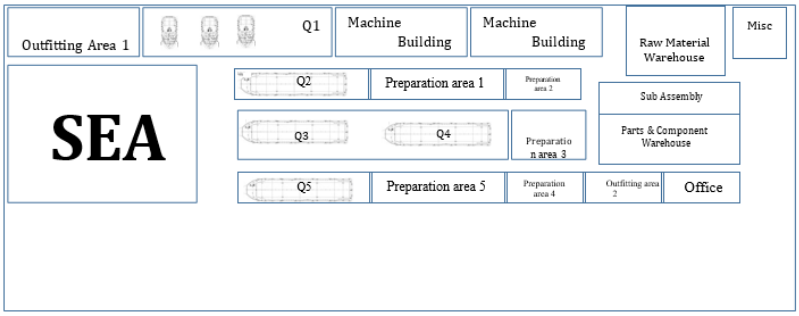
And example of product general arrangement drawing as follow:





2. Factory Layout Innovation

As a shipyard factory, Marina must have an effective and efficient factory layout to support operational excellence. Here is the layout plan for the Marina factory.



Enhancing flow process and cost reduce program become a challenge. Continuous improvement need to be applied in such factory so that the business can grow.

3. Technology Process Innovation

Marina applies the Lean Manufacturing concept in its production process. The concept of lean manufacturing was developed for maximizing the resource utilization through minimization of waste, later on lean was formulated in response to the fluctuating and competitive business environment [6]. Lean manufacturing is a way of thinking, philosophies, methods and management strategies to improve efficiency in a manufacturing or production line. This method was adapted from the Toyota Production System (TPS). The

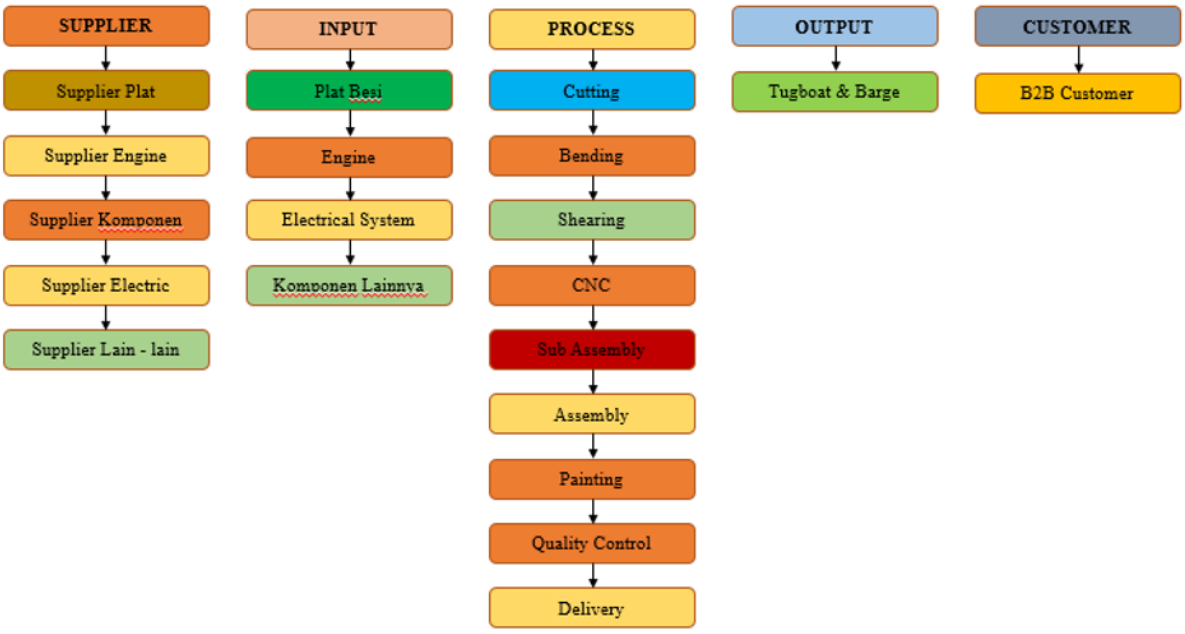
main objective of lean manufacturing is to maximize value for customers and increase company profitability by eliminating activities that do not provide added value (waste). The implementation of Lean Manufacturing (methods and tools) is carried out continuously to create improvements to processes and innovations in the company, so that the company carries out what is called continuous improvement (CI) to achieve operational excellence and customer intimacy. There are 8 wastes in the lean manufacturing concept and the following is an example of its application at Marina.

Waste	**Applied Strategy**
Transportation (Material Handling)	1. Determine the right material handling method and adjust the dimensions and weight of the material 2. Making rails and trains to transport plates so as to facilitate material handling 3. Buying the right forklift and according to the function of the weight 4. Purchase an Overhead Crane that fits the material weight requirements
Over Inventory	1. Determine inventory planning based on forecast demand 2. Determine the minimum and maximum material inventory 3. Make SOPs related to inventory
Movement	1. Make SOP for each process 2. Provide effective movement guidance 3. Make a lot of warnings about the importance of PPE and work methods
Waiting	1. Make the right production planning 2. Emphasis on deadlines for a process 3. Ensure the completeness of production and its components
Over Production	1. Create a make-to-order system 2. Designing the right production planning
Over Process	1. Reduce work at Marina's in-house and give it to subcontractors 2. Create a grouping process design so that it can speed up the overall production process
Defect	1. Allocate quality control officers in each sub-process 2. Make a checklist for each process along with the standard deviations that are allowed 3. Maintain the quality of the material from the incoming material to the finished product
Skill	1. Provide regular training to employees 2. Create a campaign about the importance of skills in work

Digital manufacturing has been considered, over the last decade, as a highly promising set of technologies for reducing product development times and cost as well as for addressing the need for customization, increased product quality, and faster response to the market [7].Another improvement that Marina apply is Digital Manufacturing concept that divided into 4 scope of works

a. Business Integration using ERP system
b. Plant Dashboard & Digitalized Job Card
c. Intelligence Planning & Digital Scheduling
d. Material Requirement Planning

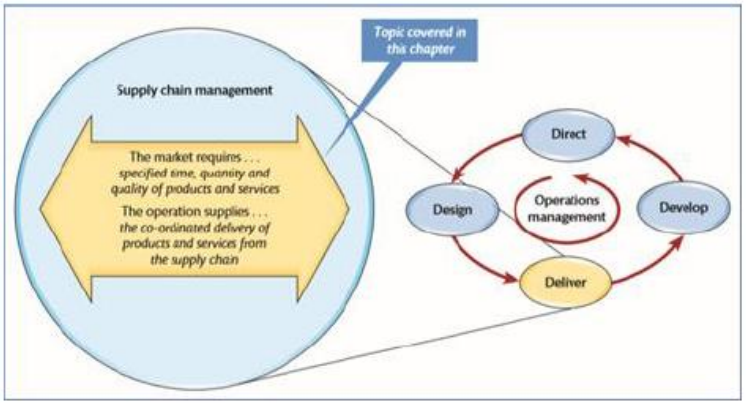
SIPOC diagram for Marina



C. Operational Excellence

1. Supply Chain Management

A management construct cannot be used effectively by practitioners and researchers if a common agreement on its definition is lacking [9]. Marina will cooperate with several vendors of materials and components. In addition, Marina will develop subcontractors in order to ease the burden of in-house production. Some of the key vendors are steel plate vendors, engines, electrical instruments, and tugboat material vendors. For subcontractors, Marina will focus on collaborating with subcontractors in the electrical component assembly process, material cutting process, liner boring process, and bending process.



2. Planning and Inventory Control

Inventory control in a supply chain is crucial forcompanies to satisfy their customer demands aswell as controlling costs [10]. Arrangement of supplies is certainly a priority for Marina. The thing that must be done is to ensure that the minimum inventory is well maintained. The basis for determining inventory is the demand forecast from the Marketing & Sales team. In addition, it is inventory management that will ensure availability

and determine the minimum inventory available, especially material inventory. This inventory will certainly be a burden at the end of the financial year, and it is inventory management that will regulate how much Marina can absorb.

3. Quality Management

The implementation of quality programmes often leads to major change within an organization [8]. At Marina there is a department that specializes in quality control. Marina establishes a policy that quality control is not only at the end of the finished product but in every process that occurs in the material being processed. For example, there will be a quality control officer who ensures every process is in accordance with the standard. This will minimize repair or rework at the end of the product. Apart from product quality, Marina will also ensure quality management in her company system by implementing ISO 90001 and OHSAS 140001.

III. RESULT AND DISCUSSION

After applying lean manufacturing and digitalization concept, Marina can reduce its production lead time. Its still better than competitor with average have 7 months lead time production. Marina offer its customer with 6 month lead time, and cost benefit product so that customer can reduce its operational cost. This is the main goal that become mind-set of all Marina's employee and process.Marina's innovation in terms of products is to make products that are lighter than competitors so that they can reduce customer operational costs. The following is an example of calculation and comparison between Marina's tugboat and barge and competitors.

	Marina	**Competitor**
Barge Capacity	7500 DWT	7500 DWT
Barge Weight	1200 Tons	1350 Tons
Tugboat Weight	175 Tons	200 Tons
Engine Size	2 x 829 HP	2 x 900 HP
Est Fuel Consumption liter/hour	262	285
Fuel/ Day	6288	6840
Price Marine Fuel Oil (MFO)	12100	12100
Fuel Cost / Day (Rp)	76.084.800	82.764.000
Deviation/day (Rp)	**6.679.200**	
Deviation/year (Rp)	**2.437.908.000**	

IV. CONCLUSION

The operational strategy carried out at Marina focuses on operational excellence and lowering costs. lean manufacturing and digital concepts were chosen as the backbone for continuous innovation at Marina. this can affect the lead time offered to customers and also the competitive price. in terms of products, marina offers the concept of low operational cost products by making innovations in terms of product design. the product produced by Marina has a lighter weight concept, so it can reduce the fuel consumption of the customer's tugboat

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