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University**



**Graduation**  
Thesis



**TRƯỜNG ĐẠI HỌC QUỐC TẾ SÀI GÒN**  
**THE SAIGON INTERNATIONAL UNIVERSITY**

**GRADUATION THESIS**

**Topic:**

**MVP Plastic Cups Process and Maintenance for Quality and  
Environmental Safety**

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## **Declaration**

I, Pham Tuan Khoi, hereby declare that the work presented in this thesis, titled "MVP Plastic Cups Process and Maintenance for Quality and Environmental Safety," is entirely original. This work was completed while pursuing a degree at Saigon International University, and all prior submissions for a degree or certification, as well as contributions from others, have been duly acknowledged. Every information source has been correctly referenced. My own efforts went into creating this thesis, which represents my knowledge and investigation into the subject.

Signature:

Date:

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### **Instructor's Comments**

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**Abstract**

The production procedures, maintenance methods, and environmental safety procedures at MVP Plastic Cups in Vietnam are all examined in this thesis. In order to fully understand how MVP guarantees product quality and sustainability, the study makes use of qualitative and documentary analysis. Results show that MVP uses modern machinery and a wellorganized production process to maintain high standards. Risks like ergonomic hazards and contamination are effectively managed by strict safety protocols and proactive maintenance. Along with solid waste management, the company also takes comprehensive steps to address pollution of the air, noise, and water. Increasing packaging automation, implementing predictive maintenance technologies, funding renewable energy, and improving worker training initiatives are some of the recommendations. These tactics seek to lessen their negative effects on the environment and increase operational efficiency. This thesis offers a model for other businesses looking to improve their production procedures and sustainability initiatives by shedding light on industry best practices for maintaining quality and environmental safety in the plastic manufacturing sector.

## Table of Contents

<b>Chapter 1: The Problem and Its Background</b> .....	10
<b>I. Background</b> .....	10
1. Background of the industry in Vietnam.....	10
2. The significance of Plastic Cups .....	11
<b>II. Statement of the Problem</b> .....	12
1. Problem Statements.....	12
2. Sub-Problems: .....	14
<b>Chapter 2: Literature Review</b> .....	14
<b>I. Introduction</b> .....	14
<b>II. Conceptual Framework and Theoretical Framework</b> .....	15
<b>Chapter 3: Research Methodology</b> .....	23
<b>I. Introduction</b> .....	23
<b>II. Qualitative and Documentary Analysis Study</b> .....	23
1. Qualitative Analysis.....	23
2. Documentary Analysis.....	24
<b>III. Research Questions</b> .....	24
1. What type of products is the company MVP producing, and how are they produced?2. How does MVP maintain its machinery and working environment for quality and environmental safety?.....	24
2. How does MVP maintain its machinery and working environment for quality and environmental safety?.....	24
<b>V. Research Participant</b> .....	25
<b>VI. Data Collection Tools</b> .....	26
<b>Interviews:</b> .....	26
<b>Documentary Analysis:</b> .....	26
<b>Observation:</b> .....	26
<b>VII. Justification</b> .....	26
<b>Chapter 4: Finding and Discussion</b> .....	27
<b>I. Finding</b> .....	27
1. The Manufacture Machinery .....	27
2. Production Procedure .....	30
3. Maintenance and Safety Observations .....	32



4. Environmental Hazard Management .....	35
A. Identify possible threats .....	35
a. Air Pollution .....	36
b. Noise pollution .....	37
c. Water pollution .....	37
d. Solid Waste .....	38
e. Other hazardous impact .....	39
B. Solutions for the threats that MVP are applying .....	40
a. Air pollution .....	40
b. Noise pollution .....	41
d. Solid waste .....	43
e. Other hazardous impact .....	43
<b>Chapter 5. Conclusions and Recommendations .....</b>	<b>49</b>
<b>I. Conclusions .....</b>	<b>49</b>
1. Manufacture Machinery and Production Process: .....	49
2. Maintenance and Safety Observations: .....	49
3. Environmental Hazard Management: .....	49
4. Effectiveness of Implemented Solutions: .....	50
<b>II. Recommendations .....</b>	<b>51</b>
1. Enhance Automation in Packaging: .....	51
2. Adopt Predictive Maintenance Technologies: .....	51
3. Invest in Renewable Energy: .....	51
4. Improve Monitoring Systems: .....	51
5. Expand Worker Training Program: .....	52
6. Continuous Improvement and Innovation: .....	52
<b>III. Final Thoughts .....</b>	<b>53</b>
References .....	53

# Chapter 1: The Problem and Its Background

## I. Background

### 1. Background of the industry in Vietnam

According to the Vietnam Institute of Industrial and Trade Policy and Strategy, the plastic industry is still relatively new and developing globally and in Vietnam in comparison to more established industries like mechanics, electronics, chemical, textiles, etc., but it has been experiencing significant growth in the past decade. The plastic industry from the year of 2010 – 2020, is recorded to be one of the fastest growing industries with the growing rate of 16% - 18% (Le Anh Tu Department of Information, Library and Trade Promotion – VIOIT – 2022)

The plastic industry in Vietnam right now is seen as an active contribution to the economy due to its fast-growing pace. The reason behind the growth rate of plastic products is variable but the ones that stand out most are because. One, there is a sizeable and highly promising market for plastic products. Products made out of plastics are used in our daily life, including the building of our household equipment, construction materials, and packaging materials. Two, when comparing Vietnam's plastic industrial to other countries, they are still in its developing state.

Vietnam's plastic cup industry is distinguished by its capacity to create goods that are both reasonably priced and versatile. One significant benefit is that plastic cups can be produced at a lower cost than glass or paper alternatives, which makes them affordable for a variety of consumers and businesses. This affordability has helped to fuel the industry's ongoing growth.

## 2. The significance of Plastic Cups

The plastic cups industry holds a significant role in economic, environmental, and social importance:

### Economic Significance:

- A significant number of people can find job in the manufacturing, distribution, and related sectors of the industry.
- Vietnam's trade balance is strengthened by the foreign exchange earnings generated by its plastic cup exports.

### Environmental Significance:

- Due to their light weight and recycling potential, plastic cups can be an environmentally sustainable option if properly handled and recycled.
- When utilized and disposed of correctly, they can be a more environmentally friendly option due to their reduced energy usage and carbon footprint during production when compared to alternative materials.

### Social Significance:

- Vietnamese people's everyday lives depend heavily on the use of plastic cups, which are a popular option for beverage vendors, restaurants, and street food vendors.
- Because of their low cost, a variety of businesses, from big companies to smallscale street vendors, can easily use them since they're more affordable.

The importance of the plastic cup industry in Vietnam is further highlighted by the expanding consumer market in the country and the demand for reasonably priced, useful, and sustainable containers. To make the industry more sustainable, it is crucial to address

the environmental issues raised by plastic products, including waste management and recycling procedures. Innovations and improvements must also be investigated.

## **II. Statement of the Problem**

### **1. Problem Statements**

Within the framework of Vietnam's plastic cup industry, the problem statement "What type of products are they producing, and how will they do it? How do companies maintain their machinery and working environment for quality and environmental safety?" is extremely important. This research question tackles important problems that affect the growth and sustainability of this industry.

#### **a. Economic Implications:**

By answering the question of what kinds of products should be made, the plastic cup manufacturer can better match its products to the changing demands of both customers and businesses. Maintaining competitiveness and profitability requires an understanding of how to produce these goods in an economical and efficient manner. Growth in revenue, cost reductions, and market expansion are just a few of the possible economic benefits or drawbacks that come with decisions about new product development.

#### **b. Environmental Relevance:**

In the plastic cup industry, product selection is directly related to sustainability of the environment. Addressing this problem statement can have a significant impact on lowering waste, encouraging recycling, and minimizing the environmental impact of the industry because plastic products, including PET and PP cups, can be environmentally sustainable if managed and recycled correctly. This is especially important because of the rising focus on eco-friendly behaviors and the circular economy on an international level.

c. Competitive Advantage:

In order to create a competitive advantage, the problem statement is also important. Longterm success depends on creating the company's products distinct from those of competitors. In a competitive market, new and enhanced products can help a business stand out, draw in more clients, and even secure premium pricing.

d. Cost Management and Efficiency:

It is critical to determine the cost and methods of producing these goods. The profitability and competitiveness of the business may be impacted by cost reductions and increased operational efficiency that result from efficient budgeting, manufacturing processes, and product development.

## 2. Sub-Problems:

- a. How will the company maintain to keep on producing safety products for the consumer
    - How will that product be different from the other product from the market right now?
    - How will the workers and the company follow the procedure to produce safely use plastic cups
- ### 3. Objectives of the study
- a. Objective 1: To identify any environmental hazard and develop a safety procedure
    - Examine and find the specific type of environmental hazard
    - Specify what unique features and attributes will be used to prevent environmental risk.
  - b. Objective 2: How do company maintain its production process
    - Analyze the maintenance practice that the company is currently using

## **Chapter 2: Literature Review**

### **I. Introduction**

This chapter tackles on related previous literatures on how to maintain and what type of procedures were used in the production of a product in general and plastic cups to be precise, with a focus on product quality and environmental safety. The literature review contains case studies and researches on sustainability, maintenance guidelines, and the environment impact of plastic production and waste management, on how firms can reduce non-adding activities so they can maximize their production process and benefits.

## II. Conceptual Framework and Theoretical Framework

### 1. Theoretical Framework

- a. The chapter "Maintenance Quality and Environmental Performance Improvement: An Integrated Approach" from the "Handbook of Maintenance Management and Engineering" by Abdul Raouf (2009)
  - The integration of Total Productive Maintenance (TPM) and lean manufacturing to improve environmental performance and cut down on non-value-adding activities is covered in this chapter. These ideas are well-established theories in the maintenance management and manufacturing areas.
  - By applying these theories, production and capacity utilization can be optimized while reaching environmental improvements. The framework depends on recognized industry techniques and practices.

#### Key Points:

- Lean Manufacturing: A theory focused on minimizing waste and maximizing efficiency.
  - Total Productive Maintenance (TPM): a maintenance plan designed to increase OEE (overall equipment effectiveness) and reduce errors.
- b. The chapter "Safety and Maintenance" in the "Handbook of Maintenance Management and Engineering" by Liliane Pintelon and Peter N. Muchiri (2009)
    - The chapter covers both historical and modern theories relating to workplace maintenance and safety. Since the industrial revolution, established safety theories and models have been created.

- It offers guidelines for involving safety into maintenance procedures, based on accepted frameworks and procedures in the occupational health and safety category.

Key Points:

- Historical Evolution: explores how workplace safety policies and procedures have evolved, with a focus on theoretical and historical frameworks.
  - Safety Theories: includes models and theories that improve safety at work, such as those put forth by other regulatory organizations and the International Labor Organization (ILO).
  - Maintenance and Safety Integration: explains how safety procedures and maintenance techniques can be combined to avoid errors and guarantee a secure workplace.
- c. "Business performance and maintenance: How are safety, quality, reliability, productivity, and maintenance related?" from "Journal of Quality in Maintenance Engineering" by Narayan, V. (2012)

Key Concepts:

- Interconnectedness of Business Elements: The study highlights how important it is to consider the connection of quality, dependability, productivity, and maintenance when aiming for business performance objectives.
- Holistic Approach: In order to improve performance, the author provides an argument for a broad approach that combines human behavioral factors and technological advancements.



- Common Performance Drivers: According to the research, the main factors influencing safety, quality, and profitability are productivity, sustainability, and reliability.
- Integrated Action Plans: With a focus on long-term strategies for sustainable performance, the study promotes thorough action plans as compared to separate initiatives.
- Practical Implication: Throughout the lifespan of the business, high performance can be achieved through effective management of these drivers, demonstrating the significance of integrated maintenance strategies.

#### Findings:

- Technological and Human Balance: For a business to be successful, they have to balance out the factors between technological advancement and human factor.
- Casual Chain: It is important that every link in the casual chain of performance drivers in a company to be strengthened.
- Professional Discourse: It is also possible to further developing and improving by getting all the professionals and experts in a discussion.

#### Implications for Practice:

- In order to improve overall business performance, companies should try adopting integrated maintenance and management strategies.
- Quality and safety can be improved and benefit can be maximize by putting a strong focus and emphasizing the importance of sustainability and reliability.

## 2. Conceptual Framework

- a. "From Flow to Stock. New Circular Business Models for Integrated Systems: A Case Study on Reusable Plastic Cups" by Dario Cottafava and Luigi Riccardo (2019)
  - In order to improve economy practices, the research paper investigates that the transition from using single-use items to reusable plastic cups in Turin through the use of a Deposit-Return System (DRS)

#### Key Concepts

- Circular Economy: Emphasizes on how to decrease the waste and promoting the reusable materials.
- Deposit-Return System (DRS): Promotes the recycling and return of plastic cups by offering a refundable deposit option.

#### Findings

- Environmental benefits: Significant reduction in waste and maximizing the usage of resources.
- Challenges: Challenges to execution including logistical issues and acceptance among consumers.

#### Implications

- Business Models: Demonstrates how integrated systems and consumer motivation are necessary
- b. "Degradable Polymers and Plastics of the Future: Steps Toward Environmental Sustainability, Regulations, and Safety Aspects" by V. P. Sharma (2017). The author covered the creation and use of plastics that degrade in this chapter with the goal of lessening their negative effects on the environment.

### Key Concepts:

- Degradable Polymers: focuses on polymers that are intended to decompose more quickly in the environment, such as polylactic acid (PLA) and polyhydroxyalkanoates (PHA).
- Environmental Sustainability: Emphasizes the advantages of using degradable plastics to reduce environmental damage over time.
- Regulations and Safety: Examines and study the safety procedures and legal frameworks related to the use of degradable plastics.

### Findings:

- Current Drawbacks and Challenges: Regular plastics are hazardous and take a very long time to degrade, which are very harmful for the environment. Another factor for this challenging topic is that the budget and technical barriers, such as cost of productions and raw materials.

### Implication:

- Regulatory Support: Stricter rules should be applied for the encouragement of using degradable plastics.
- Research and Development: For improvement of the qualities and cut down on these degradable plastics' price, the research and development have to keep working on this.

### c. Total Quality Maintenance

A new concept called total quality maintenance (TQMain) is presented in the article "Total quality maintenance: An approach for continuous reduction in costs of quality

products" by Basim Al-Najjar, which was published in the Journal of Quality in Maintenance Engineering. (1996) Its goal is to achieve high overall equipment effectiveness (OEE) by integrating maintenance with quality management.

Key Concepts:

- Total Quality Maintenance (TQMain): an in-depth plan that includes maintenance of the machinery as well as all other aspects of the manufacturing process, such as personnel, methods, materials, environmental factors, and quality control.
- Condition-Based Maintenance: an approach to proactive maintenance which relies on constant observation and feedback in order to prevent equipment failures.

Finding:

- Improved Manufacturing Processes: Putting TQMain into practice aids in regular, high-quality production maintenance.
- Data Integration: The creation of a shared database allows maintenance programs to be integrated with other plant programs, making it easier to find and remove quality deviations and failure causes early on.

Implication:

- Economic Benefits: Ongoing developments and reduce the cost of quality control
- Operational Efficiency: Decrease the downtime and increase overall of equipment efficiency.

d. Regulation related to Plastic Industry

According to article 72. Requirement for Waste Management; of Environmental Safety in