

Report On

"Stepping towards sustainability: Exploring the feasibility and impact of recycling plastic footwear"

By

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Student ID: 19104117

An internship report submitted to the BRAC Business School in partial fulfillment of the requirements for the degree of Bachelor of Business Administration.

BRAC Business School

Brac University

May, 2023

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Declaration

It is hereby declared that

1. The internship report submitted is my/our own original work while completing degree at BRAC University.
2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The report does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I/We have acknowledged all main sources of help.

Student's Full Name & Signature:

Fazle Rabbi Sakib

Student ID: 19104117

Supervisor's Full Name & Signature:

Ms. Takmilla Tabassum

Lecturer, BRAC Business School

BRAC University

Letter of Transmittal

Ms. Takmilla Tabassum

Lecturer,

BRAC Business School

BRAC University

66 Mohakhali, Dhaka-1212

Subject: Submission of Internship Report

Dear Ma'am,

It is my pleasure to submit my internship report as required by the BBA program at BRAC University. I focused on exploring the feasibility and impact of recycling plastic footwear

I have worked in the Administration department of SP Footwear and Rubber Industry Ltd. and had the chance to work on their recently started recycling project which they have started with the aim to achieve sustainability in the footwear industry. I tried to collect all the information available to measure the effectiveness of the recycling project.

I trust the report meets your expectation and look forward to hear from you.

Sincerely yours,

Fazle Rabbi Sakib

Student ID: 19104117

BRAC Business School

Non-Disclosure Agreement

[This page is for Non-Disclosure Agreement between the Company and The Student]

This agreement is made and entered into by and between SP Footwear and Rubber Industry Ltd.
and the undersigned student at BRAC University Fazle Rabbi Sakib.....

Acknowledgement

I would like to appreciate everyone who has helped me complete my internship program and my internship report successfully. I am incredibly appreciative of the guidance I received from my supervisor. I want to thank her for all the helpful criticism, advice and encouragement she gave me. I'd also like to thank my coworkers for allowing me to learn from them.

Executive Summary

SP Footwear and Rubber Industry, is a footwear manufacturing company that uses plastic and rubber as raw materials for their production. As the concern for the environment is rising among consumers and the government, the company has taken several steps to reuse and reduce its plastic usage. In my executive summary, I will analyze the company's performance and capabilities to address these issues. Bangladesh is already facing numerous environmental problems caused by plastic waste due to a poor waste management system. To solve these problems the government of Bangladesh has already implemented several guidelines for plastic manufacturers and set a target to reduce the use of virgin materials by reusing and recycling plastic waste. To reduce the use of virgin materials the government has increased the tax on importing plastic raw materials. SP Footwear and Rubber Industry Ltd adopted sustainable practices in their production process in order to survive in this situation and to stay competitive in the market. Recently they have started a recycling plant where they recycle used plastic and turn them into raw materials that can be used to produce new products. However, the plan is not feasible due to inadequate research and lack of advance technology. To achieve sustainability in the footwear industry more research needs to be done and advanced technology should be implemented by this sector.

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Chapter 1: Overview of Internship

1.1 Student Information: Name, ID, Program and Major/Specialization

Name: Fazle Rabbi Sakib

ID: 19104117

Program: Bachelor of Business Administration

Major: Marketing

1.2 Internship Information

1.2.1 Period, Company Name, Department/Division, Address

Period: 3 months

Company Name: SP Footwear and rubber Industries

Department: Administration

Address: 3059, Bely Road, Huzurpara, Ashrafabad Kamrangirchar, Dhaka

1.2.2 Internship Company Supervisor's Information

Name: Mohiuddin Kazi

Designation: Managing Director

1.2.3 Job Scope

While doing my internship in the company, I got the opportunity to work alongside with a team of experts. My job involves helping my superiors with their daily work, attending meetings, and offering feedback on various projects.

1.3 Internship Outcome:

1.3.1 Student's Contribution to the Company:

As an intern I tried my best from my part to help the company with strategic ideas and solutions. I tried to help my supervisors as much as possible and tried to learn from them whenever possible. Here are some of the fields where I contributed the most,

Quality control: I worked with the quality control team to ensure that the quality of the product meets the standard set by the company before it goes to the market.

Design: Established a proper design team with the help and guidance of my supervisor to conduct research to identify trends and buyers' preferences and to create new designs according to the analysis. Before this the company relied on online pictures for designs. As a result, there was no uniqueness and originality in the products.

Digitalization: Introduced various technologies and software such Blender, Adobe Illustrator that allows the design team sketching, rendering and making 3D models.

Finally, I believe that my work as an intern for SP Footwear and Rubber Industry improved the overall operation of the company. Every task allows me to add my dynamic and strategic thinking to help us reach our objectives. Without a doubt, the information and experience I've gained throughout the period of time here will be valuable in my subsequent career choices.

1.3.2 Benefits to the students:

Throughout my entire internship period in SP Footwear and Rubber industry I have learned a lot. By working here, I was benefitted in many ways and some of them are:

Practical experience: As an intern I got the opportunity to gain hands on experience in managing financial operations and administrative tasks.

Effective Communication: While working as an intern I have developed my communication skill which involves listening, speaking and writing skill.

Positive attitude: While working as a team showing positive attitude to others is very important. It helps an individual to handle difficult situations and build resilience. I have cultivated a positive attitude by focusing on being solution oriented.

Teamwork skill: I have developed my teamwork skill by practicing active listening, having positive contribution to team discussions, respecting others' idea.

Time management: I have learned how to manage time effectively by planning, creating schedule, prioritizing and setting goals. After working under pressure, I have learned how to use the time in a more productive way.

Adaptability: Coming out of the comfort zone and learning to adapt into new situation was most difficult for me. But throughout my journey I have enhanced my adapting skill by adjusting into changing circumstances and environment.

Overall, my internship was a wonderful and satisfying experience that provided me with several benefits and helped me in my personal and professional development.

1.3.3 Problems/Difficulties (faced during the internship period)

The two major problem I have faced during my internship period are transportation and food.

Sometimes I had to visit the factories for both work and research purposes. Finding a convenient transport to reach the destination was a hassle for me as the factories are located in a remote area. Few times I had to walk a long distance just to find a transport.

Another problem was food. The company does not provide lunch to its employee so I had to buy my lunch from outside which was not so tasteful and nutritious.

1.3.4 Recommendations (to the company on future internships):

Here are some recommendations which I think the company should implement for the future interns,

- The company should have their own transportation system. In terms of flexibility and convenience having a dedicated transportation system can be a valuable benefit for the employees. It can boost the rate of productivity as it increases job satisfaction and decreases the commuting hassle.
- Providing lunch and snacks to the company employees can also boost the productivity rate.

Chapter 2: Organization Part

2.1 Introduction

The purpose of this part is to study the leadership style, brand management methods, financial situation, operational management, as well as the industry and competitive environment of the company. This paper's goal is to provide an overview of the company, explain its products and services, and evaluate its management, marketing, financial, and operating methods. In addition, the paper will conduct a SWOT analysis and Porter's Five Forces analysis of the sector in which SP Footwear and Rubber industry ltd. operates. Finally, the research will conclude with an overview of the significant results as well as ideas for improvement.

2.2 Overview of the Company

SP Footwear and Rubber Industry Ltd is a leading footwear manufacturer which was established in 2012. Their mission is to produce quality products that meet the customers' expectation while also supporting the economy and the environment. Every product they manufacture reflects their commitment to quality, and they try to ensure that customers are pleased with the purchases.

As a company SP Footwear believes that everyone should have access to comfortable and affordable footwear and they are very committed to make it happen. They are very passionate about making footwear solutions that are not only functional but also appealing to others.

Besides producing quality products, the company also believes in creating job opportunities and contributing to the economic growth by exporting their product. While contributing to the economy the company is also very committed to the environment and sustainability which is reflected in their waste management system and their use of materials that can be recycled. All of the products here are made out of plastic and rubber material which is very harmful for the environment. Keeping that in mind the company recently started a project where they collect all the plastic products and footwear that are thrown away and turn them into raw materials that can be used again for producing new products. Their objective is to achieve sustainability in the footwear industry by recycling plastic.

As they move forward, they remain devoted to their core values of quality, sustainability, innovation, and customer satisfaction.

2.3 Management Practices

2.3.1 Leadership style

SP Footwear and Rubber industry follows participative leadership style that allows the team members in the decision-making process. It is also known as democratic leadership because it promotes collaboration and involvement in decision-making. Participative leaders appreciate their team members' knowledge and encourage them to express their thoughts, views, and ideas. This leadership style emphasizes the significance of achieving common goals through fostering confidence and supporting teamwork. It helps the organization to achieve its goal and objectives as it encourages employee involvement and it creates a sense of ownership and commitment among the team members which ultimately lead them to greater engagement and productivity as they become more committed to the organization. Participative leadership style helps to build trust and collaboration among the team members which can help to build a positive work environment. It helps to generate new innovative ideas and solutions by allowing team members ideas and aspects. Decisions made by participative leaders are more accurate and effective. It assists the firm in preventing costly mistakes and making decisions that are compatible with its aims and objectives by involving different views and thoughts in the decision-making process.

2.3.2 Human resource planning process

SP Footwear and Rubber Industry Ltd strictly follows the child labor policy. To work as a laborer, one must have to be the age of 18 or above and the person have to compete the Secondary School Certificate exam. If the candidate fulfills these two requirements then he will be selected for the training session where he has to go through several training sessions and these training sessions includes observing, learning and operating machineries. After completing these training sessions, only the eligible ones will be recruited.

For the employee position one must have to be a Hons. Graduate. Moreover, knowing how to use Microsoft office is also required for employee position. After shortlisting the candidates, the eligible ones are recruited by interviewing them in person.

2.3.3 Compensation system

The company follows a very common compensation system that involves salary, bonuses, health insurance, maternal leave and performance appraisal bonus.

Salary: The employees and the employers receive a base salary which varies from department to department. The salary is paid on a monthly basis or by weekly installment.

Bonuses: On special occasions such as Eid-UI-Fitr, Eid-UI-Adha, Pohela Boisakh the company give bonuses to its employees and employers. On both Eid the employees and the employers get a bonus which is equivalent to half of their monthly salary. On Pohela Baisakh the employees get an average commission based on the annual sales. Moreover, the company provides Zakat to its eligible employees.

Insurance: The company offers health insurance to all of their employees. In any case if someone gets injured while working within the organization premises the company covers their medical bill and also pays an amount as compensation for the damage.

Performance appraisal bonus: After every quarter the employees gets a performance appraisal bonus based on their performance and contribution to the company.

Training: The company provides training and skill development session to its employees for improved performance and increased job satisfaction. Moreover, all the workers have to go through various training sessions on safety protocols before operating heavy machineries.

2.4 Marketing Practices

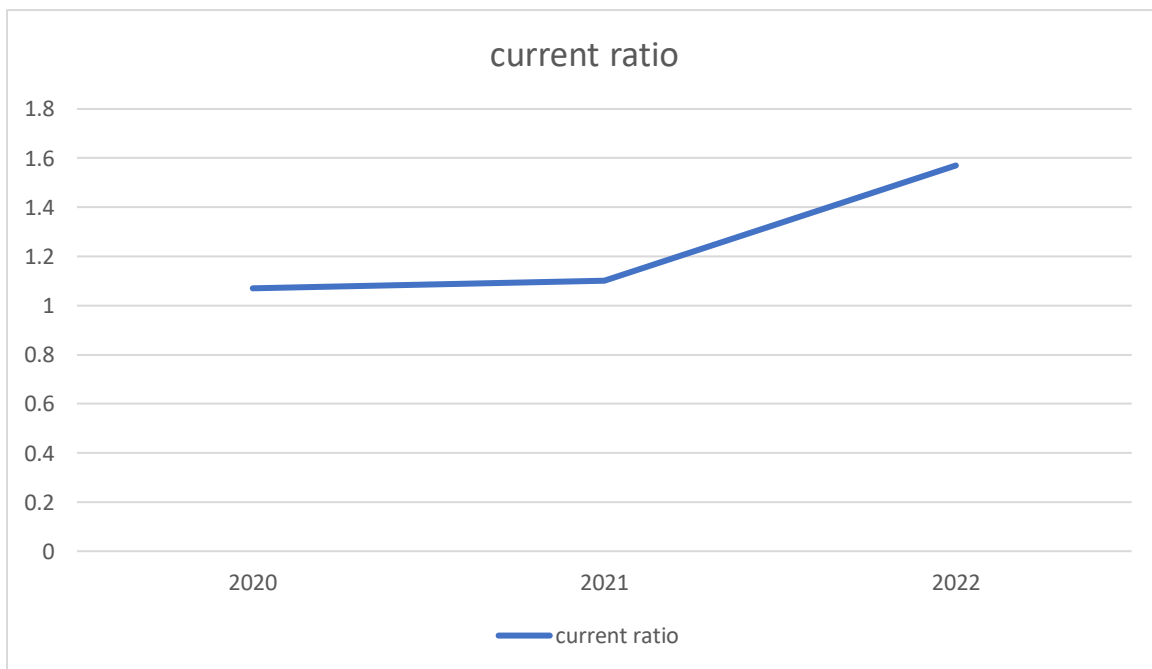
SP footwear and rubber industry ltd does not have any dedicated marketing department as it is a medium scale manufacturer so it does not follow any specific marketing strategy. The company has a B2B (business to business) model. As the company sells its products to the wholesalers so the customer interaction here is very low. Their target customers are lower, middle and upper middle-class people. They have a wide range of products available for male, female and kids. Their product positioning is very simple. They produce footwear for daily use that offers all day comfort and durability. To develop a new product the company conducts multiple market research throughout the year to identify customers' needs and preferences. This data is used to create a product that fulfill the demands of the customer. When developing a new product, the company

also consider factors such as cost, quality, and sustainability. To gain a competitive advantage over other companies' SP footwear adopted multiple competitive practices. Pricing strategy is one of them. The company always find a way to produce better quality products with a lower price. However, SP footwear is now completely focusing on sustainability to differentiate themselves from competitors. Consumers are becoming more aware about the usage of plastic products and its impact on the environment as a result the demand of items that are long-lasting and recyclable is increasing. SP footwear have included sustainable practices into their product development processes, such as implementing waste management system, decreasing waste, and recycling footwear that are thrown away to turn them into raw materials that can be used again for the production process.

2.5 Financial Performance and Accounting Practices

Current ratio:

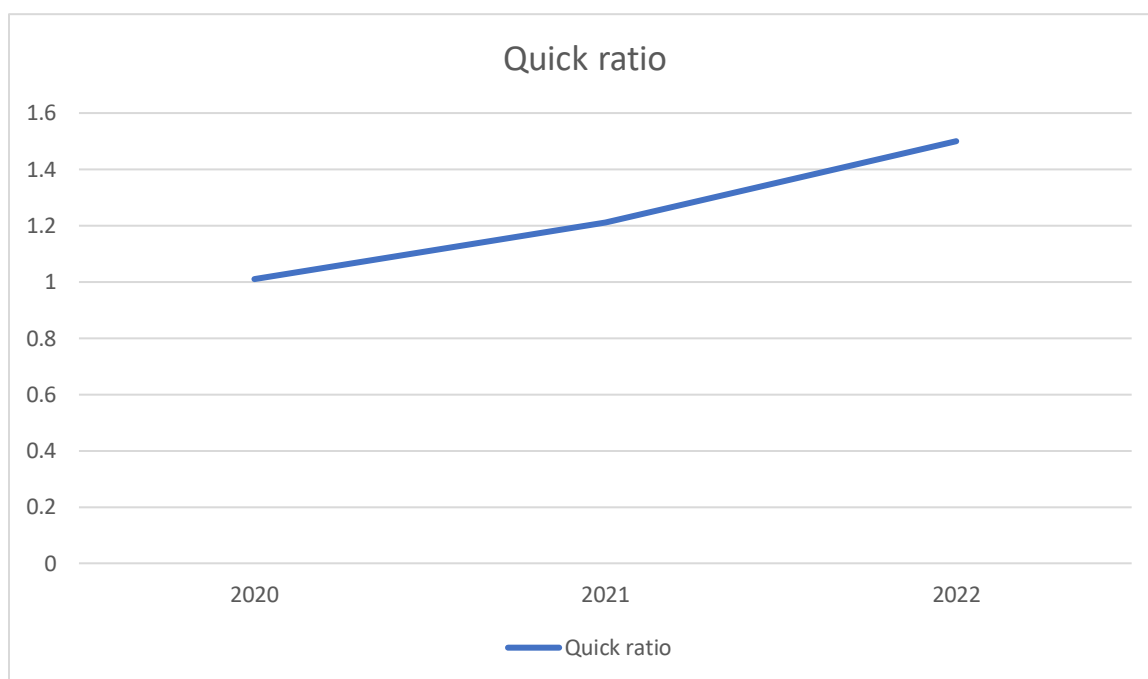
year	2020	2021	2022
Current ratio	1.07	1.1	1.57



A company's ability to meet its short term commitments is measured by current ratio. In 2020 and 2021 the current ratio of SP Footwear and Rubber Industry ltd was 1.07 and 1.1 which is slightly more than 1. However, after 2 years of Covid lockdown the ratio improved to 1.57 in 2022 indicating that it has sufficient current assets to meet its current short term liabilities.

Quick ratio:

year	2020	2021	2022
Quick ratio	1.01	1.21	1.50



Quick ratio measures the ability to meet the short-term liabilities using quick assets such as cash, marketable securities, and accounts receivable. Here we can see that the quick ratio has increased over the last three years. From 1.01 in 2020 the ratio improved to 1.50 in 2022 which indicates that the company has the ability to cover its short-term obligations 1.50 times.

Total asset turnover:

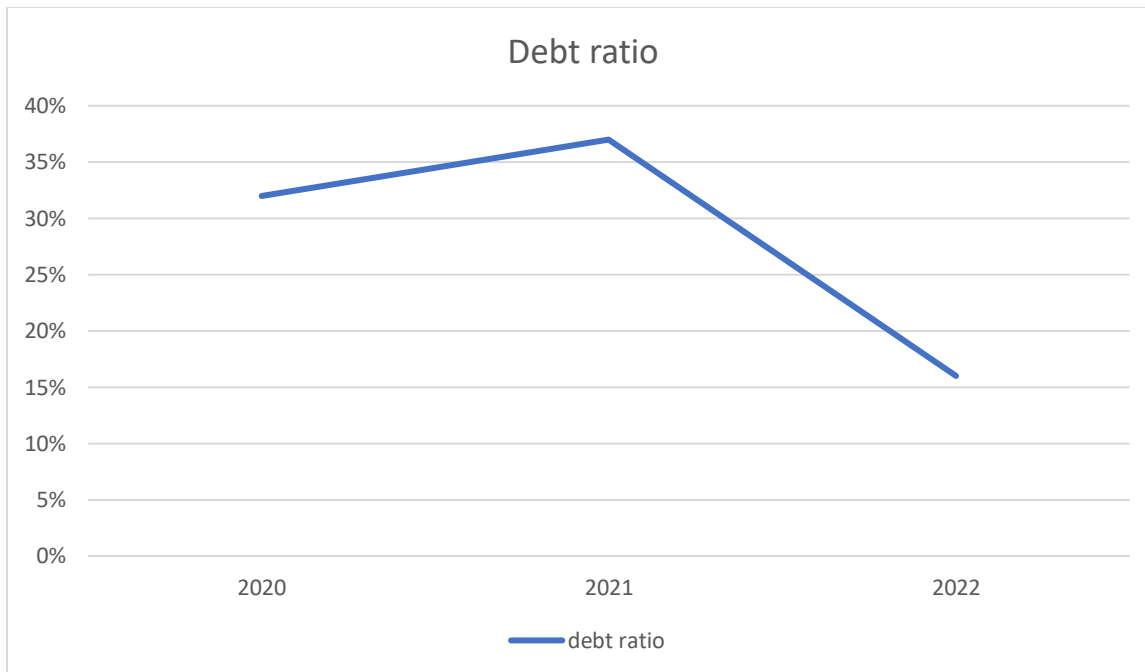
year	2020	2021	2022
Total asset turnover	16.90%	22.18%	30.55%



A company's efficiency in using its assets to generate revenue or sales income can be measured by looking at their total asset turnover. One crucial indicator of efficiency is the company's asset turnover ratio, which measures the sum of revenue produced per dollar of assets. The firm has always maintained a high quality of performance, having a total asset turnover rate of 16.90% in 2020, 22.18% in 2021 and 30.55% in 2022.

Debt ratio:

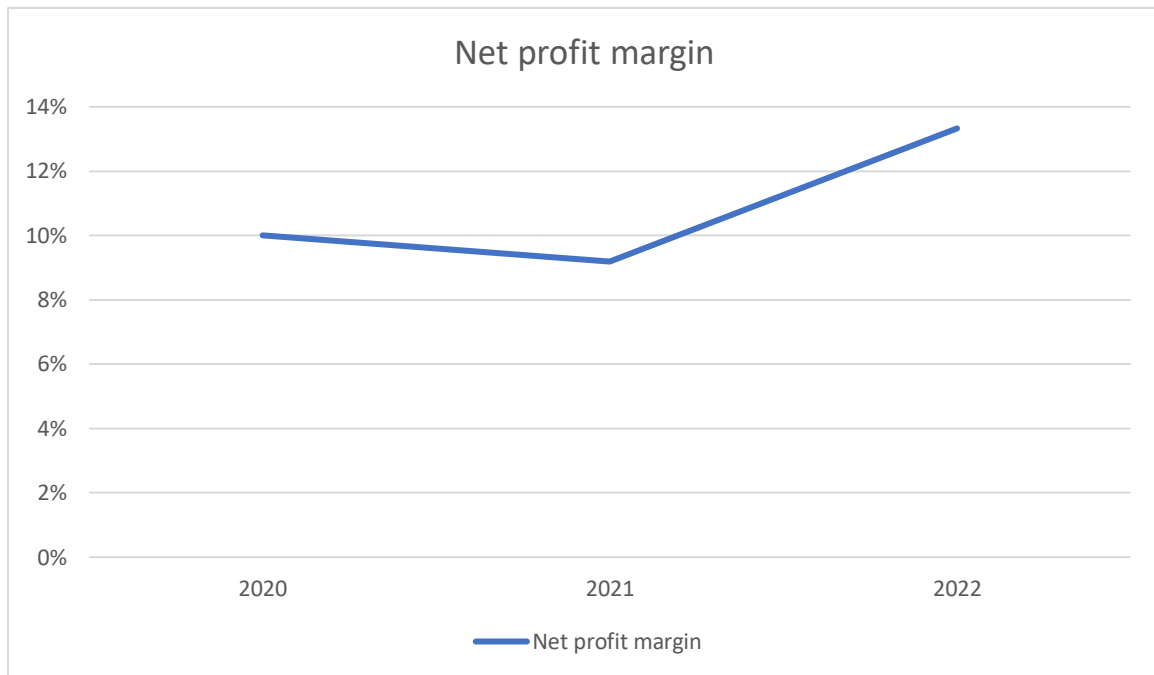
year	2020	2021	2022
Debt ratio	32%	37%	16%



Debt ratio measures the percentage of a company's total assest which was bought via debt. Here in the year of 2020, the debt ratio was about 32%. Compare to this, in 2021 the ratio went up to 37%. But in 2022 the company was able to secure a 16% debt ratio securing more assets than debts.

Net profit margin:

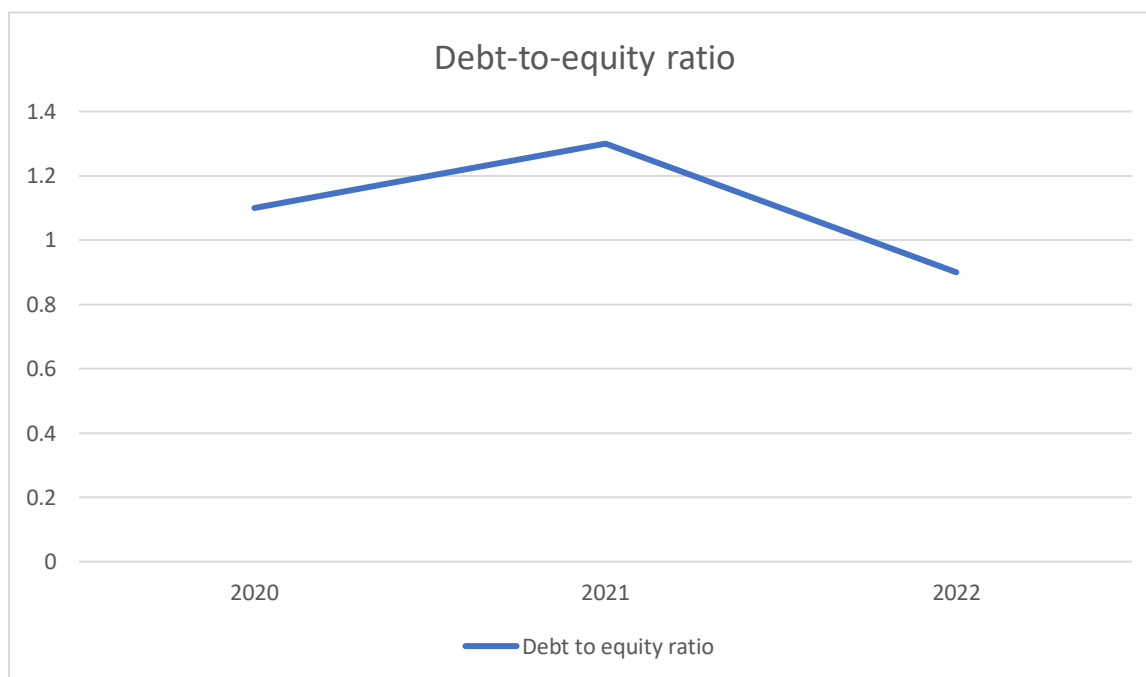
year	2020	2021	2022
Net profit margin	10%	9%	13%



Net profit margin is the scale of profit generated from selling a product. For SP Footwear and Rubber Industry Ltd the profit margin fluctuates based on the market demand and the price of raw materials.

Debt to equity ratio:

year	2020	2021	2022
Debt to equity ratio	1.1	1.3	0.9



Debt to equity ratio is the ratio of a company's total liabilities and the total equity of the shareholders. SP Footwear and Rubber industry Ltd has maintained a steady debt to equity ratio over the years. The ratio was 1.1 in 2020, 1.3 in 2021 and As of December 31, 2022 it was 0.9 which is better than the previous two years.

2.5.1 Liquidity and Solvency

A corporation's liquidity and solvency are two significant indicators of its financial performance. This indicates the company's ability to pay its debts and meet its financial responsibilities.

In the case of SP Footwear and Rubber Industries, the company has consistently maintained a good liquidity position over the last three years. As of December 31, 2022, the company had a current ratio of 1.57, suggesting that it has adequate assets to cover its short-term obligations. The firm had an excellent quick ratio of 1.5, suggesting that it had sufficient funds to cover its short-term debts.

The debt-to-equity ratio of the company's has been consistent over the last three years, indicating that it is solvent. As of December 31, 2022, the company had a debt-to-equity ratio of 0.9, which indicates that the company's equity and debt financing were almost balanced. This is a favorable sign since it indicates that the company is capable pay off its debts and meet its financial obligations.

2.5.2 Efficiency

Efficiency, or the capacity to use resources efficiently to generate profits, is an important aspect of a company's financial performance. In the case of SP footwear and rubber industry, the company has demonstrated exceptional efficiency over the last three years.

One crucial indicator of efficiency is the company's asset turnover ratio, which measures the sum of revenue produced per dollar of assets. The firm has always maintained a high quality of performance, having a total asset turnover rate of 30.55% in 2022.

2.5.3 Profitability

A company's financial performance is measured by its ability to generate profits from its operations, which is known as profitability. The company have shown excellent profitability with an average net profit margin of over 10% over the last three years. The company's rapid revenue growth has played a significant role in its profitability.

2.5.4 Leverage

SP Footwear and Rubber Industry has a debt-to-equity ratio of 1.3 as of December 31, 2022, indicating a very low level of leverage for the company. The utilization of leverage can have a both positive and negative impact on the company's success. However, SP footwear have used the money efficiently which was raised by debt financing. The debt to equity ratio of the company indicates that the company is not heavily dependent on debt to support its finance. It mostly depends on the equity funding.

2.5.6 Accounting Practices

SP Footwear and Rubber Industry Ltd follows the accrual basis of accounting to record their financial transactions. This is a system used by companies to record their revenue or expenses regardless of whether a cash transaction has been made. The company follows this method because it is more financially accurate than other systems. This method allows the company to record their sales and expenses in the same period which provides a more accurate depiction of the company's financial condition. It helps the organization to precisely track revenues and expenses as there is no chance of unrecorded expenses or revenues. Accrual accounting gives a full view of a company's financial status, which may help decision-makers to make well-informed decisions regarding investments, expenses and other financial issues.

2.6 Operations Management and Information System Practices

SP footwear and rubber industry ltd uses a cloud-based Enterprise Resource Planning (ERP) software Prism ERP for their inventory management process. They use a central database server which is (EDW) or Enterprise Data Warehouse to record their sales, expense, inventory, liability. By using one central server the company can keep all of their data in one place. It helps the management team to keep track of the sales, inventory, liability and expense easily. To make any informed decision analyzation of the data is crucially important. Without analyzing the data before making any decision is not beneficial for any organization as it may lead to great loss. The use of the software tool enables the management team to gather and analyze the data easily and it also reduce the manual work, ultimately improving the efficiency of the company.

2.7 Industry and Competitive Analysis

By using Porter's five forces model we can analyze the degree of competition in the footwear industry. The five key components of Porter's five forces model are threat of new entrants, competitive rivalry, threat of substitutes, bargaining power of suppliers, bargaining power of buyer.

Threat of new entrants: The threat of new entrants in the footwear industry is medium to low as the existing players' established brands, distribution networks, and economies of scale make it difficult for new entrants to compete. However, as e-commerce and B2C (business-to-consumer) models are rising, startups with innovative business models may pose a threat.

Competitive rivalry: The competitiveness among the existing companies is high and they are coming up with various types of strategies to put their company name on the top. To outdo one another some companies are even trying to copy others' design.

Threat of Substitutes: Threat of substitute is very high in the footwear industry due to the wide range of footwear options available. Consumers have several substitutes to pick from. In addition, fashion trends and changes in the seasons can affect demand for various types of footwear, making it difficult for businesses to keep up their market position.

Bargaining Power of Suppliers: Manufacturing plastic footwear requires a number of raw materials such as PVC, EVA, synthetic oil, rubber and other chemical materials and most of the items are imported from other countries. As there are only a few suppliers available in our country, the foreign companies hold a significant amount of bargaining power over the footwear manufacturers.

Bargaining Power of buyer: Customers have a high power of bargaining as there is a wide range of footwear options available in the market. They can easily shift from one brand to another without any psychological and financial cost. Moreover, with the increasing number of online shops and price comparison tools, customers have more power than ever before to find the best deal.

From the above analysis we can measure the degree of competition in the footwear industry,

Key factors	Very low	low	medium	high	Very high
Threat of new entrants			3		
Competitive rivalry				4	
Threat of Substitutes					5
Bargaining Power of Suppliers					5
Bargaining Power of buyer					5

So, the degree of competition here is, $(3+4+5+5+5/25) * 100=84\%$

From the above analysis we can say that the degree of competitiveness is very high in the footwear industry.

Companies and stakeholders use Porter's Five Forces to analyze the competitiveness within the industry, but a SWOT analysis can be used to dig deeper into a company to examine its internal capabilities. Here is a SWOT analysis for a better understanding of SP footwears internal potential.

Strengths:

- The company has strong distribution channel and good relation with the retailers which allows them to reach a broader customer base to increase sales. These collaborations give useful market information as well as input on client preferences and trends. Overall, the company's solid distribution network adds to its ongoing success in the competitive footwear sector.
- One of the key factors that differentiate SP Footwear from other competitors is that they are focusing on achieving sustainability through recycling plastic waste and turning them

into new footwears. By using sustainable materials and developing an eco-friendly manufacturing process the company is becoming more appealing to the customers who are environment conscious.

Weaknesses:

- One of the major weakness for the company is its dependency on suppliers for raw materials which can lead to cost and supply chain disruption for the organization. there are only a few numbers of supplier who imports the raw materials as a result they can control the price of the materials as their will. If they increase the price of raw materials the production cost goes up which ultimately affects the company sales.
- In today's digital era, not having a digital marketing team is a weakness for the company. the company has a very limited online presence. With more customers turning to the internet for purchasing a lack of a digital presence may cause in lost revenue and decreased brand recognition. To remain competitive in the market, the organization may need to spend in strengthening its online presence and developing successful digital marketing techniques.

Opportunities:

- Expansion into new unexplored markets can be a great opportunity of growth for the company. The organization can expand its customer base and increase revenue streams by finding and targeting markets with strong demand but low competition.as the target customers are lower and middle class people and we will find most of the lower and middle class people in the rural areas.by setting up a manufacturing plant outside of Dhaka can help in the case of acquiring more customer.
- Entering the online market can be a major breakthrough for the company. The company has no digital marketing team and their online presence is very low. In the past few years both the number of online shops and the number of online shoppers has increased in a drastic way. Building a digital marketing team and creating a strong online presence can be a great opportunity for acquiring new customer base.

Threats:

- Because of the dollar crisis no bank is issuing new LC. As a result, importing new machineries is becoming a hassle for the company and it is taking longer than ever. It is affecting company's overall revenue stream.
- As the dollar rate is rising day by day the price of raw materials is also increasing. As a result, the whole production cost is increasing as well as the price of the products. As the price increases the overall sales is decreases which ultimately affects the revenue stream. If the price of raw materials keeps increasing with the dollar rate it can lead to a great loss for the company.

2.8 Summary and Conclusions

In conclusion, SP Footwear's achievements can be attributed to several key factors. To begin with, the company's participative leadership style has created a collaborative work atmosphere that stimulates employee participation and creativity. In addition, the company has consistently delivered great financial outcomes by having a combination of good management and strategy.

The company works in a highly competitive market, yet it has maintained its competitive edge via a mix of good management and effective strategy. However, in order to keep growing in the future, the company might consider expanding its business by engaging in online marketing. This could help the company to explore new markets and reach new customers.

2.9 Recommendations

From the overview of the company presented above there are some certain recommendations which in my opinion going to help the company in the longer run. Some of the recommendations are given below:

- **Implementing Human Resource Planning:** Human resources is an integral part of a company. I believe building a strong human resource will help the company go move forward in terms of managing the internal people, key stakeholders, employees and other

resources. Also, a proper human resource planning will assist the management team to have an overview of the resources they have.

- Having recruitment and selection process: A proper recruitment and selection process leads to a better chance of hiring the right people for the right work. So, it is recommended to have a proper recruitment and selection process throughout the year so that the people getting hired do not face any difficulties while working.
- Building strong online presence: Nowadays, people are more into online shopping than in person. World was stuck in online for past two years. So online presence is a must. Online presence can help the company to reach the potential clients and help to build a strong relation with the clients and stakeholders. Also, this includes having a proper digital marketing team. The digital marketing team will help to have a strong online presence in the market.
- Finding marketing channels for product promotion: For “This company” product promotion is different. So, finding the right channels and promoting the products there will lead to a greater awareness for the company and for its products.

Chapter 3: Project Part

3.1 Introduction

The topic of this study is “Stepping towards sustainability: Exploring the feasibility and impact of recycling plastic footwear”. Plastic is a crucial element for the production of any types of footwear. Every footwear we see in the market and we use has non-biodegradable plastic in it. Due to its affordability, comfortability and durability plastic footwear is becoming more popular among the people for daily use. However, with the rise of its popularity it poses a serious threat for the environment. Many countries have already started taking serious steps to reduce the use of plastic. In this situation SP footwear and rubber industry ltd is also focusing on reducing plastic waste caused by plastic footwear. They have already started practicing sustainability which includes collecting used recyclable footwears, plating waste management system, turning plastic waste into raw materials. Through this study we will try to examine the feasibility and the impact of recycling plastic footwear by using a qualitative and quantitative research methods including interviews and data analysis. The findings from this study can be used for the development of sustainable strategies for other footwear companies and also hopes to shed light on a viable solution to the plastic waste problem and to promote more sustainable practices. With the increasing demand for products that are sustainable, the findings of this research can give significant insights to companies seeking to remain competitive while simultaneously addressing critical environmental problems.

3.1.1 Literature Review

Waste production has increased drastically over the years as a result of technological revolutions, changes in consumer behavior and improved living standards. Efficient waste management is an essential part of sustainability (Kazuva and Zhang, 2019; Bhat et al., 2017; Oelofse and Nahman, 2019; O’Neill,2018). According to a study by World Bank, in urban areas of Bangladesh's yearly per capita plastic use tripled from 3.0 kg in 2005 to 9.0 kg in 2020 and only 31 percent plastic were recycled of the 977,000 tons of plastic consumed in 2020.

According to Rahimifard et al. (2007), since 1950s globally the footwear consumption has doubled every 20 years. Chemical compounds from shoes have serious impact on the environment, including emissions into the atmosphere, contaminants leaking into the soil, and effects on neighboring ecosystems. The complex mixture of glues, rubbers, chemicals and PVC used in the manufacturing process of footwear gives a compelling reason to concentrate on this stream of waste (Behrendt and Naber, 2009; Gottfridsson and Zhang, 2015; Chrobot et al., 2018; Ferreira et al., 2011; Kolomaznik et al., 2008). Around 40 different types of raw materials can be used to make a shoe, but usually leather, rubber, textile, foam and plastic are used (Lee and Rahimifard, 2012, Tatàno et al., 2012).

Sustainable Waste Management (SWM) is currently a crucial industrial requirement for Bangladeshi plastic producers in such a circumstance. They are responsible for generating 0.79 million metric tons of plastic garbage each year (Chowdhury et al., 2021). "Approximately 646 tons of plastic waste are collected daily in Dhaka, accounting for 10% of total waste generated in Bangladesh. Among the 646 tons only 37.2 percent of plastic waste is recycled (World Bank, 2021). According to Grand View Research, the worldwide sustainable footwear industry was valued at \$7.5 billion in 2019. It is expected to expand at a 5.8% annual rate between 2020 and 2027.

3.1.2 Research Questions

The following research questions need to be answered to make this research paper impactful,

- How the growing number of plastic wastes is affecting the environment as well as the footwear industry?
- As a plastic footwear manufacturing company what measures are being taken by SP Footwear and Rubber industry?
- Are these measures sufficient enough to achieve sustainability in footwear industry?
- Is this recycling project profitable enough or not?

3.1.3 Significance

According to a study by world bank, in urban areas of Bangladesh's yearly per capita plastic use tripled from 3.0 kg in 2005 to 9.0 kg in 2020. According to the report, 48% of plastic garbage ends up in landfills, 12% waste is thrown away in water bodies, 3% is dumped in sewers and other places and only 37% is recycled. In this situation Bangladesh aims at reducing 30% plastic waste by 2030. According to the country's national action plan that will be jointly implemented by the World Bank sets a target to recycle 50% of plastics by 2025 and reduce the use of virgin material by 50% by 2030. To reduce the use of virgin material there is no alternative option without recycling. The ministry of Bangladesh has already imposed several guidelines on the production of plastic products. The price of raw materials is increasing as the government has increased tax on importing raw materials which is used to make plastic products and in the next few years the government is going to set a limit on how much raw materials can be imported within a year. Already there is a gap between the demand and supply of the raw materials and such guidelines will increase the gap without any doubt. To survive in this condition and to stay competitive in the market it is high time to implement sustainable practices for the footwear manufacturers. The research findings may provide useful insights into the competitive environment of the footwear industry of Bangladesh's.

3.2 Methodology

To conduct the research, I have used both secondary and primary sources. Most of the data I obtained in this study are from websites, reports and articles. I have also used primary sources to gather information. To gather first-hand information on the recycling process I have interviewed the people related to the waste management plant. Moreover, I have done multiple field visits to monitor the recycling plant's procedures and operations. To identify the obstacles and possibilities connected with recycling plastic footwear, the obtained data was examined using both qualitative and quantitative methodologies. Both qualitative and quantitative method has their own limitations and strengths. Combining both methodologies increases the validity and reliability of study findings by ensuring that the limitations of one method are balanced by the other method. It allows

the Researchers cross-verify and validate data gathered from multiple sources. Quantitative data helped me to measure things and then I used the qualitative data to interpret those numbers. Combining both methods allowed me to get a broader and different perspective.

3.3 Findings and Analysis

Globally, approximately 380 million tons of plastic are manufactured each year, with the amount increasing at a rate of 4% each year (Mwanza, Mbohwa, & Telukdarie, 2018). Plastic garbage also endangers the ecosystem by polluting the water bodies and increasing greenhouse gas emissions. Approximately 80% of the plastic trash in the sea comes from land, abandoned landfill sites, and is eroded by airflow and tides (*Great Pacific Garbage Patch, n.d.*)

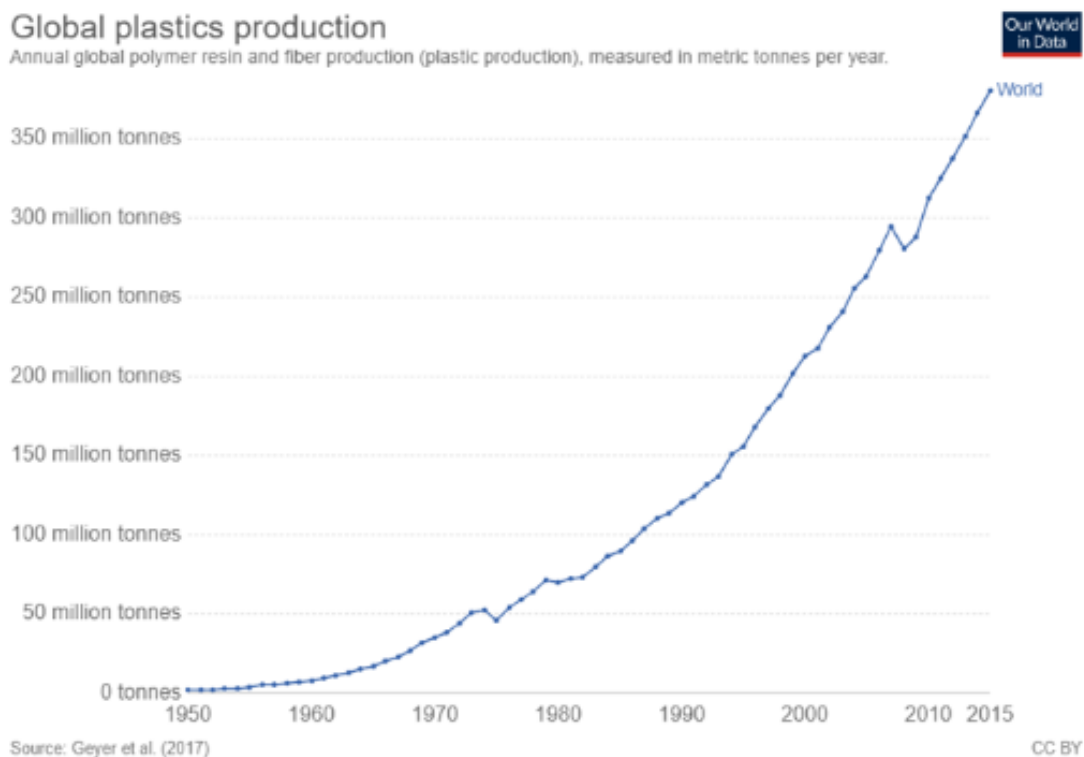


Figure: Global plastics production; Source: (Mwanza, Mbohwa, & Telukdarie, 2018)

As the production of plastic is increasing so does the amount of plastic waste. In the year 2015 total 300 million tons of plastic waste was generated (Mwanza, Mbohwa, & Telukdarie, 2018).

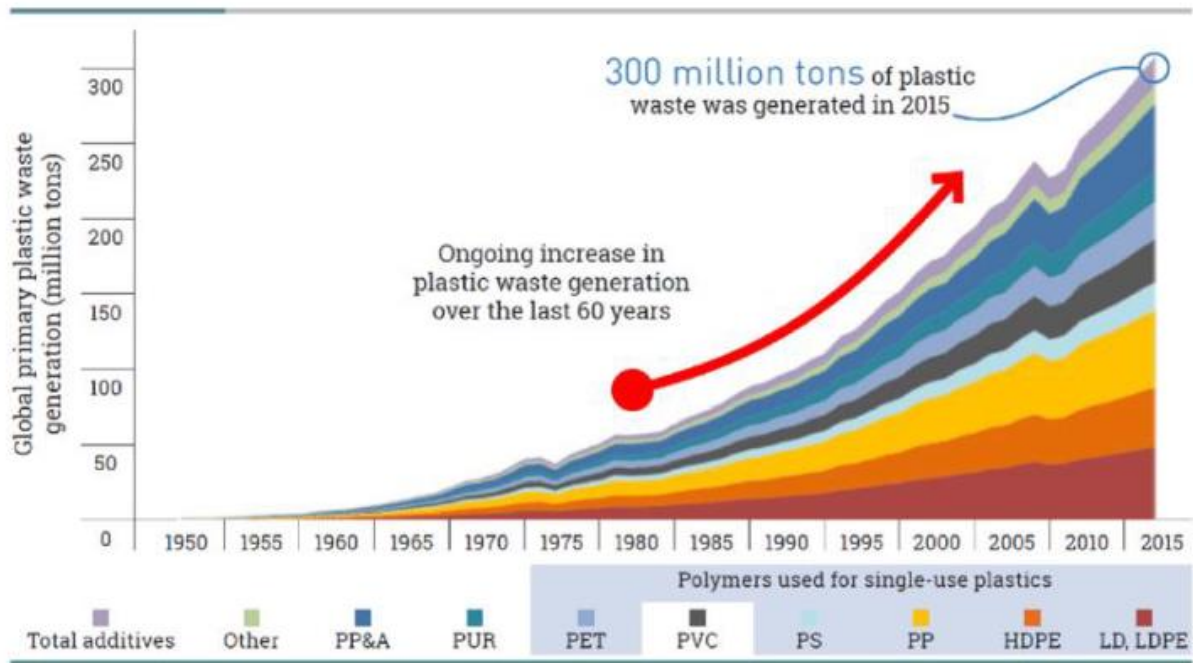


Figure: Global Primary Plastics Waste Generation, 1950 - 2015; Source: (Mwanza, Mbohwa, & Telukdarie, 2018)

Annual consumption of plastics per capita has grown rapidly in developing nations such as Bangladesh in recent decades, as seen in the below figure,

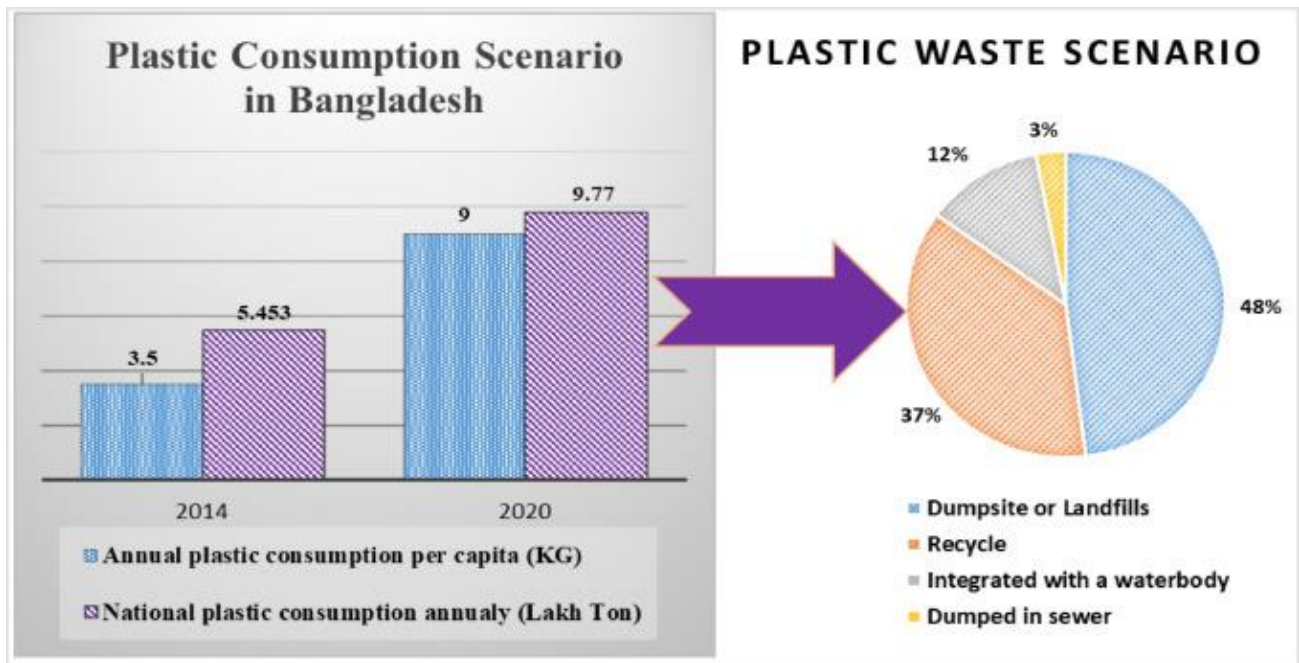


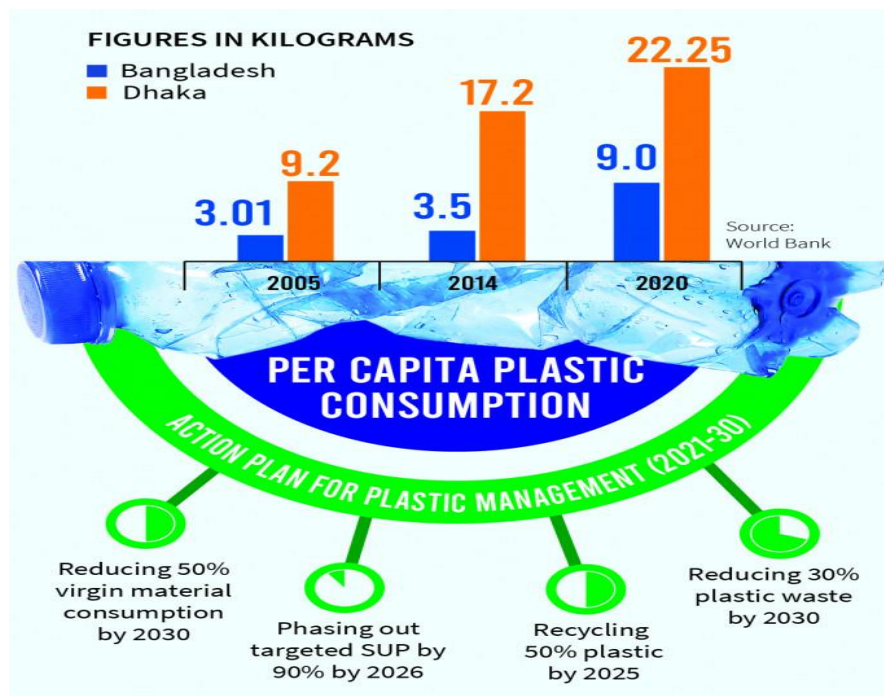
Figure: Plastic waste and consumption in Bangladesh ([The World Bank, 2021](#)).

Dhaka collects around 646 tons of polymer garbage every day, accounting for 10% of total trash generated in Bangladesh. However only 37.2 percent of Dhaka's plastic waste is recycled (*The World Bank, 2021*). The per capita use of plastic in European countries exceeds 100 kg (*Meeting Bangladesh's Plastic Challenge Through a Multisectoral Approach, 2021*), which is significantly more than in Bangladesh. However, Bangladesh is now one of the most plastic-polluted countries due to its poor waste management. There are several environmental risks associated with the footwear company activities. These occur both in the manufacturing of footwear and in the production of raw materials. The main important environmental problems for footwear producers were the use of harmful chemicals and materials in shoes, as well as the solid waste, air and water discharges created during the process of shoe manufacturing. In the footwear manufacturing sector, the use of PVC has also been decreased since it is believed that when it is burned at low temperatures, it generates organochlorine chemicals that are exceedingly harmful to both the environment and humans.

Footwear Materials	Environmental Pollutants
Leather	Chromium, Aldehydes , Solvents
Synthetic Materials	Solvents, VOCs
Textiles	Process Chemicals, Biocides
Rubbers	Rubber Fume
PVC	Vinyl Chloride Monomer Cadmium, Plasticisers
Polystyrene	Styrene Monomer
Polyurethane	Isocyanates, (CFCs)
Adhesives	Solvents, VOCs, Chlorine

Figure: Major Pollutants in the Footwear Industry

To overcome this problem the government of Bangladesh has sets multiple targets such as recycling 50% of its plastic waste by 2025, reducing the use of virgin material by 50% by 2030 (The World Bank, 2021)



In this circumstances implementation of sustainable waste management practice in plastic industry has become crucially important. As the government of Bangladesh has sets a target of recycling of its plastic waste and reducing the use of virgin materials. To survive and to stay competitive developing sustainable practices in footwear industry has become mandatory. SP Footwear ltd has already started practicing sustainable practices in their production process.

The European Commission has established a waste hierarchy framework that sets out the considerable ways to manage waste in terms of their impact on the environment. The figure below is a developed framework which is created based on the hierarchy.

This suggested framework divides shoe waste management strategies into two categories: proactive and reactive. All measures taken to reduce or minimize waste at the source are considered proactive approaches. waste minimization is a proactive method since trash that is avoided requires no management and has no environmental effect. On the other hand, reactive waste management which is also known as End-of-Life Management operates after the product's useful life has expired.

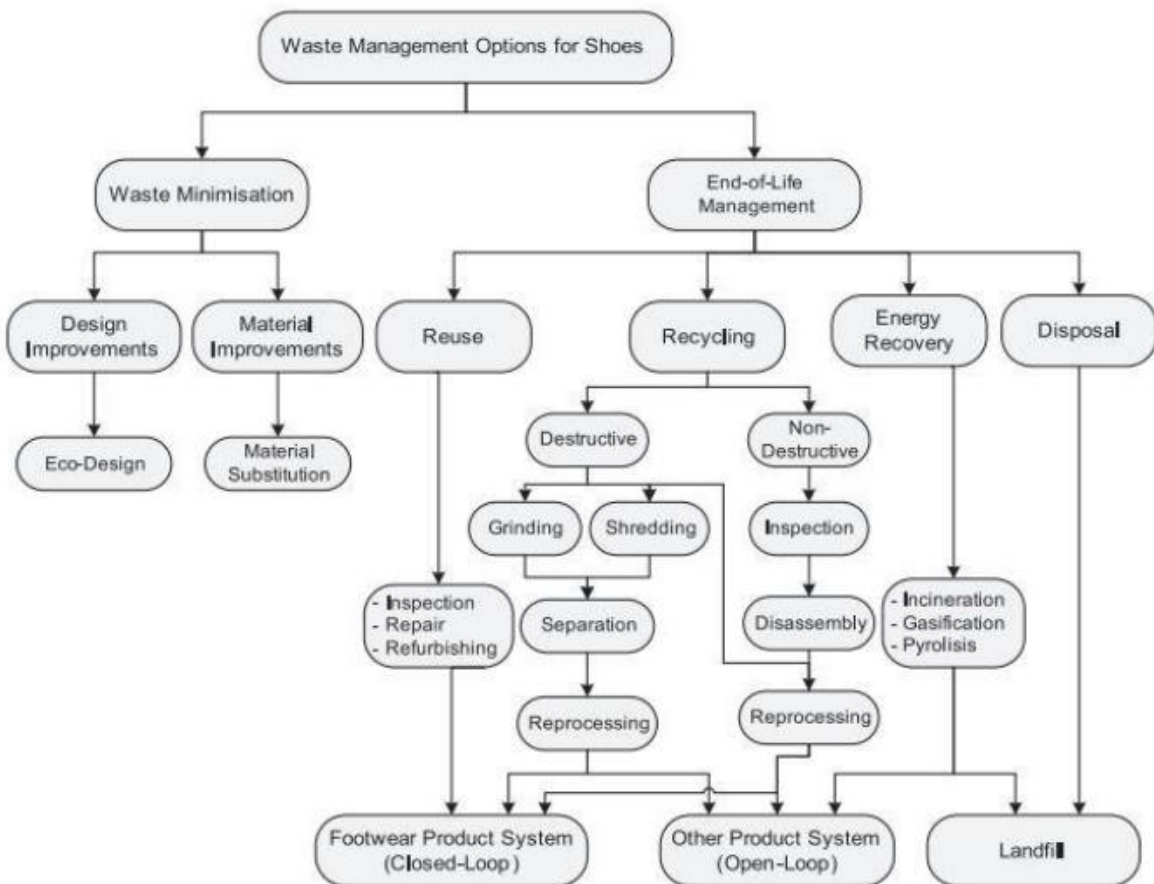


Figure: Waste Management Framework for Footwear Products

SP Footwear is following the reactive approach which is the end-of-life management by recycling the used footwear. Recycling involves reusing used footwear products, parts, or components, either to produce the same product or to produce alternative products. End-of-life waste is therefore reintroduced into the market by a variety of operations that may be split into two categories: destructive and non-destructive. Shredding and other destructive procedures might be used to convert shoes into other usable materials or to produce new shoes. SP footwear has chosen the destructive method for turning the waste into new footwear products.

While conducting the research I got the opportunity to have a conversation with the plant manager Mr. Hazrat Ali who is in charge of the recycle and waste management plant of SP Footwear and Rubber industry Ltd. Here are some key findings from the interview,

Types of plastic waste collected for the recycling process: Mainly the footwears that are completely made out of plastic. They also use plastic bottles and materials that contains PVC, PU, LDPE, EVA, these are the elements which is looked for in a product while collecting. They also use the waste made from the production process.

The methods for collecting the used plastic products: Usually they buy the used footwears and plastics from the local vendors. They have a team of their own who collects the waste that are thrown away from landfills and dumpster. Sometimes they buy the used footwears by going door to door.

The procedure followed by the plant for sorting and separating the collected footwears: After collecting the waste at first, the waste gets washed properly for extracting any types of dust. Then the wastes are separated by their colors and extract any types of metal, leather, fabrics attached to the footwear,

Ensuring the safety for the workers who deal with this plastic waste on daily basis: Wearing face mask and gloves is mandatory for every worker. to make sure that no contaminants stays with the waste we wash them using bleaching powder, CaOCl_2 .

Types of equipment and machineries used by the recycling plant: After collecting the waste, the workers do the inspection and separation by hand. After that it goes through a cutter machine that cuts them into small pieces then the small pieces are put into a mixer where it gets mixed with color and oil. At last it goes through a roller that turns everything into a sheet.

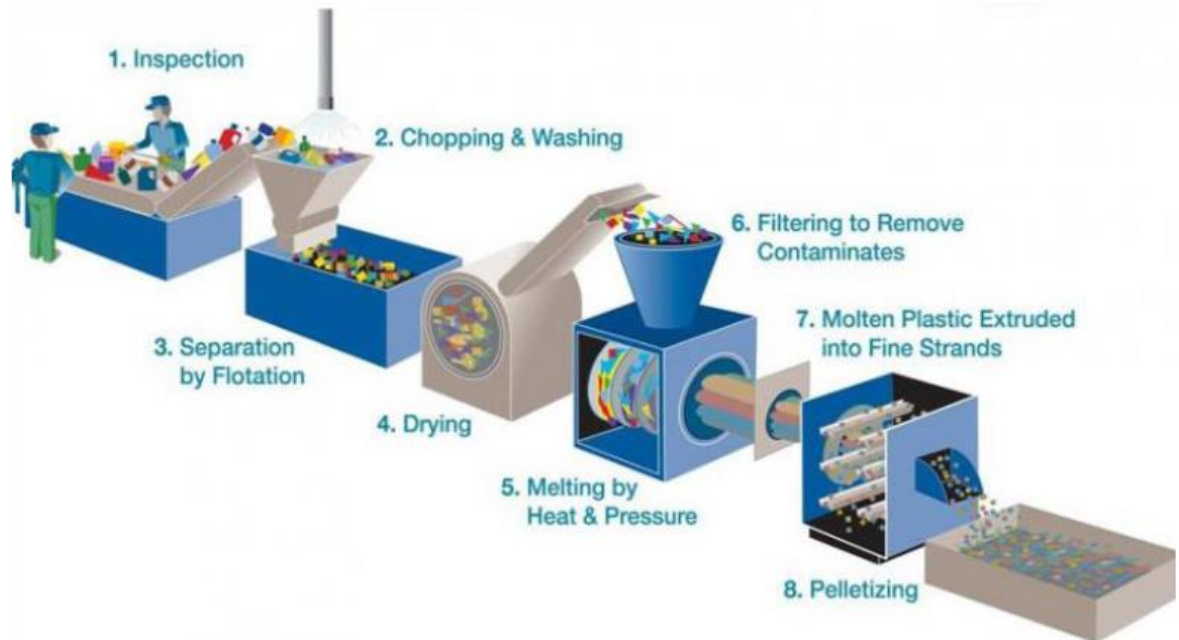


Figure: Mechanical Recycling

The process of turning the recycled material into new footwear: After turning them into sheets some of these are directly sent to the other production plant where it gets cut into sponge sandals. The sheets are also used for making raw materials for making PVC footwear.

The percentage of recycled plastic used in the production of new footwear: Almost 90% of the plastic recycled here can be used in the production of new footwear.

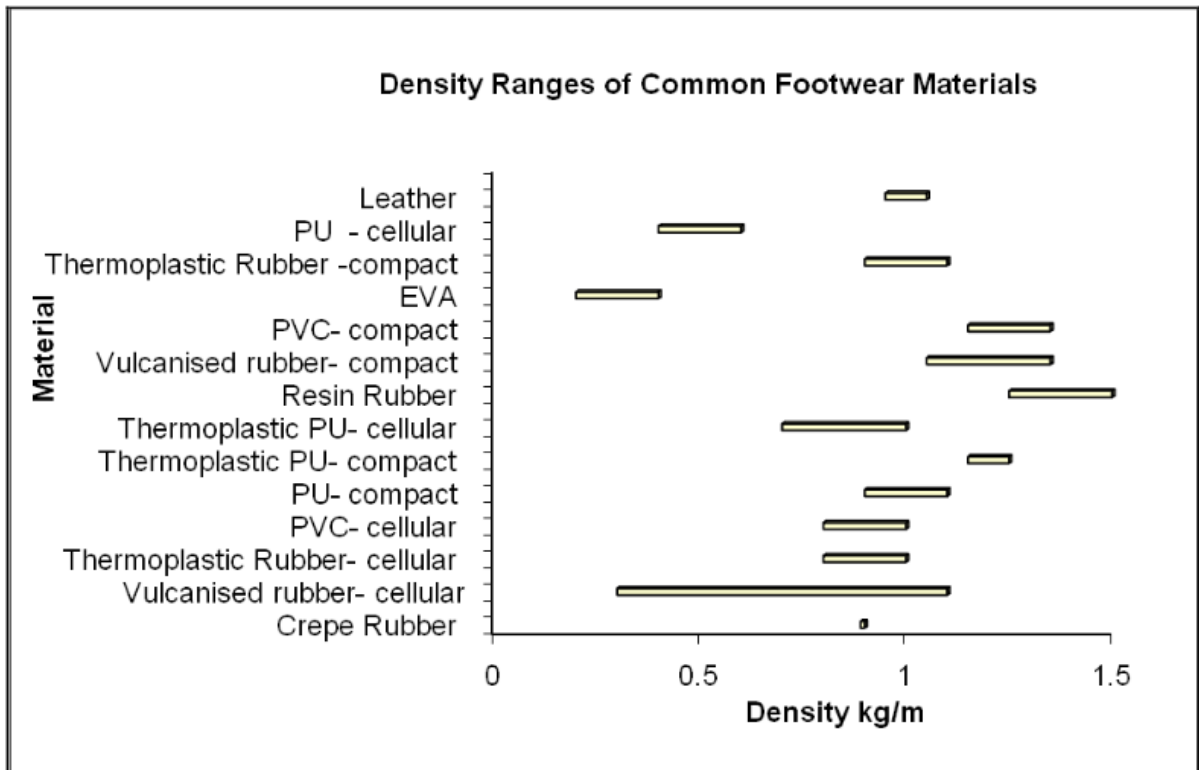


Figure: Density range of common footwear materials

The challenges and limitations of turning the waste into raw materials: Maintaining the quality is very critical as all of the used footwears are degraded. The whole process takes a long time as we have to continuously check the process to make sure the quality is not compromised. Sometimes the whole process has to be redone to make the end product perfect.

Comparison between the use of elements required: To produce 100 kg of PVC the amount of virgin materials required is much higher but when we add recycled plastic the amount decreases. From the environmental context the plant has achieved success as the plastic is being recycled and the use of virgin material reduced. However, as it takes longer to produce, economically the plant is partially successful with all the limitations.

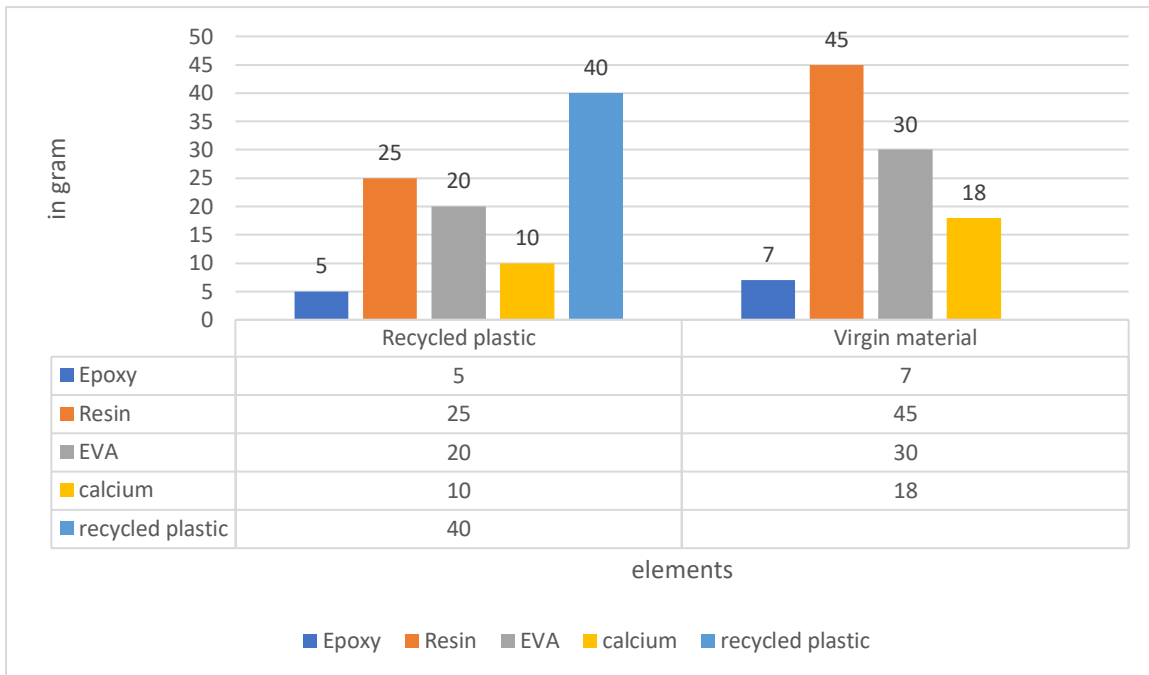


Figure: Comparison between the use of elements required

Here we can see that the amount of virgin element required to produce 100 kg of PVC is significantly less when recycled plastic is being used for the production.

3.3.1 Cost ratio/recycling benefit

The project is at an early stage. The whole process is time consuming and by using recycled plastic, the use of virgin materials is being reduced but to do that they have to buy the plastic waste from outside which increases the cost. At this stage the plant is not making any profit however, the plant will be able to make profit if it can overcome the limitations and obstacles and according to the plant manager, they are currently working on it.

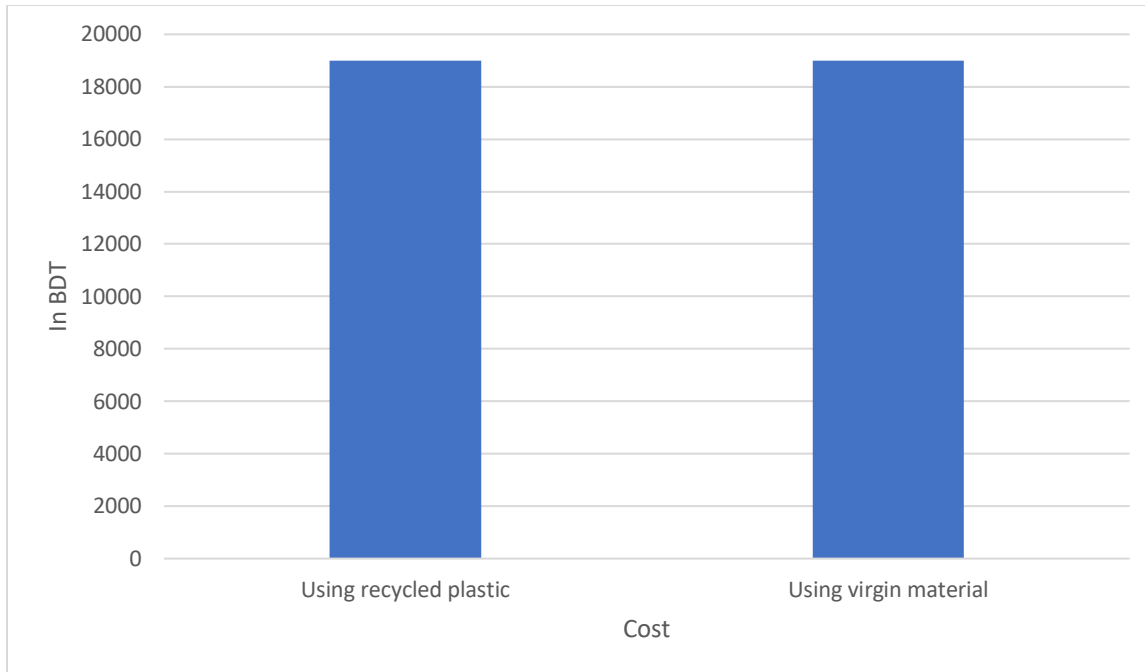


Figure: Comparison between the cost

Here is a cost comparison of producing 100 kg of PVC. As we can see the cost of each process is same. When we use recycled plastic the cost of using virgin materials reduces but the cost of collecting and processing the waste adds up and that increases the production cost.

We can find out the cost ratio by using this formula where (Bw) is the weight of recycled material, (Bv) is the market value of the material divided by the sum of variable costs which includes labor cost, transportation cost, electricity cost.

$$BCR_{RC} = \frac{\Sigma BRC}{\Sigma CRC}$$

$$= \frac{BWeight \times BValue}{CVariable}$$

On an average the market value for 1 kilogram of recycled raw material is 190 BDT and the average cost to produce 1 kilogram of recycled material is around 188 BDT. so the ratio here is,

$$\frac{1 \times 190}{184} = 1.03$$

The ratio we get is 1.03 which is almost equivalent to 1 so the profit margin here is .03 which is not enough to say that the project is profitable.

Recycling has proven to be a problematic and largely ineffective waste management strategy in the footwear industry, Furthermore, little research has been conducted to develop effective recycling methods for footwear with a complex combination of materials (Pringle, 2017). According to Lee and Rahimifard(2012), approximately 5% of post-consumer footwear is recycled throughout their End of Life (Eol) management. In a developing country like Bangladesh managing this massive amount of plastic waste is very difficult. Due to lack of having proper understanding of the challenges most business have failed in this endeavor. Poor infrastructure, insufficient funding, not having advance waste management technologies are the factors responsible for this failure (Mourshed et al.,2017).

The initiative taken by SP footwear to recycle plastic and reduce the use of virgin material is great but it is not sufficient enough to achieve sustainability. More research and study should be conducted on this topic as well as more advance technologies and strategies are required.

3.4 Summary and Conclusions

As per World Bank (2021), in 2020, the plastic waste in Bangladesh was about 9.77 lac tons. In Dhaka city, the plastic garbage was about 646 tons daily. So, this concerning numbers encourages the project of “Stepping towards sustainability: Exploring the feasibility and impact of recycling plastic.” In simple words, the project is about making a final product (shoes) by recycling the plastic wastes. SP footwear and rubber industry ltd is currently focusing on this project. Through this project SP Footwear and Rubber industry ltd is trying to create a sustainable environment by recycling plastic waste. But there are some drawbacks of it. Firstly, access of technology. At this moment the advance technology to recycle all kind of plastic to make the final product is not

available. Also, the cost is not currently feasible. To make it more feasible market research is needed. A good market research containing all the factors to recycle the plastics and how to make it market ready product will make the project feasible.

3.5 Recommendations:

Working on this project and through gaining some experiences on it there are some recommendations which can be suggested. The key highlight points are given below

- **Research:** At this moment, the findings are not enough and cost effective. To make a final product from the recycled plastics needs a proper development plan and execution. That is why to develop a plan and make it happen proper research it needed. An expert opinion or an expert and experienced researcher in this field might come in handy.
- **Technology:** Recycling plastics requires a certain technology. By technology here I meant advanced machines, technical skills etc. A machine to recycle the plastics and a machine to make shoes from the recycled plastics are needed. Also, the business also requires skilled people to run these machines properly.

Reference

- Staikos, T., & Rahimifard, S. (2007). An end-of-life decision support tool for product recovery considerations in the footwear industry. *International Journal of Computer Integrated Manufacturing*, 20(6), 602–615. <https://doi.org/10.1080/09511920701416549>
- Lee, M., & Rahimifard, S. (2010). Development of an Economically Sustainable Recycling Process for the Footwear Sector. *ResearchGate*. https://www.researchgate.net/publication/284678958_Development_of_an_Economically_Sustainable_Recycling_Process_for_the_Footwear_Sector
- Zavodna, L. S., Trejtnarová, L., & Pospisil, J. Z. (2020). A SUSTAINABLE MATERIALS FOR FOOTWEAR INDUSTRY: DESIGNING BIODEGRADABLE SHOES. *ResearchGate*. <https://doi.org/10.15547/artte.2020.01.001>
- Staikos, T., Heath, R., Haworth, B., & Rahimifard, S. (2006). End-of-life management of shoes and the role of biodegradable materials. *ResearchGate*. https://www.researchgate.net/publication/229015996_End-of-life_management_of_shoes_and_the_role_of_biodegradable_materials
- Debnath, B., Bari, A. M., Ali, S. M., Ahmed, T., Ali, I., & Kabir, G. (2023). Modelling the Barriers to Sustainable Waste Management in the Plastic-Manufacturing Industry: An Emerging Economy Perspective. *Sustainability Analytics and Modeling*, 100017. <https://doi.org/10.1016/j.samod.2023.100017>
- Van Rensburg, M. J. J., Nkomo, S. L., & Mkhize, N. (2020). Life cycle and End-of-Life management options in the footwear industry: A review. *Waste Management & Research*, 38(6), 599–613. <https://doi.org/10.1177/0734242x20908938>
- Report, T. (2021, December 20). Bangladesh aims at reducing 30% plastic waste by 2030. *The Business Standard*. <https://www.tbsnews.net/bangladesh/bangladesh-plans-reduce-30-plastic-waste-2030-346282>
- Great Pacific Garbage Patch. (n.d.). <https://education.nationalgeographic.org/resource/great-pacific-garbage-patch/>