

Product Diversification to Bio-Degradable Plastic: A Financial Analysis of JutePro

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Introduction

To save the world from the pollution of plastic and plastic components most of the EU countries taking steps of global transformation in the biodegradable products. Under the Paris Agreement, maximum European countries have banned the use of single plastic. The plastic packaging used in this industry is considered single use. Thus, the problems of world contamination through plastic and plastics product became the world's big headache.

Now the concept and technology is here to transform the industry to recyclable, biodegradable and compostable products. Part of the stepping ahead we planned and decided to start the journey with recyclable, biodegradable and compostable products which will be made of natural fibres.

We do believe that biodegradable plastic is the ultimate solution to save the world and lots of EU countries already transformed and start practicing on these biodegradable products. Many of our brand customers like: *Zara, Mango, C&A, Pull & Bear, Monoprix, Camaieu, Massimo Dutti etc.* will be our ultimate customers after set up the manufacturing plant of biodegradable products like Poly, hanger and others. As from 2022 to 2025 the world is complete transformed on the biodegradable products.

So, considering the global changes and needs we advise and decided to step ahead with an exclusive project which will be headed by a global renowned scientist with collaboration of our prudent management. Hope we will be the leader in the south-east Asian region.

Project Description

The increase in awareness of the damage caused by synthetic materials on the environment has led to the development of environment friendly materials. Recent trends have shown a lot of interest in developing such materials that can replace the synthetic materials, owing to global environmental concerns and increased awareness of renewable green resources. As a result, there is an increase in demand for commercial use of the renewable fibre-based materials in recent years for various industrial sectors that led to a reduction in greenhouse gas emissions and carbon footprint of the final products.

Jute is an annual crop which is known to "Golden Fibre" due to its importance and grown mainly 80% in Bangladesh. In addition, jute fibre is composed of higher content of cellulose compared to other natural fibres.

In accordance with the future needs and to create options for the survival from the synthetic materials and to diversify the products, by using management accounting technique me and my team help the management to take this business decision.

Products

Biodegradable Film as packaging material: Biodegradable packaging from renewable resources is essential for less polluted and greener earth. Governments from all over the world is banning synthetic packaging material and encouraging biodegradable packaging products. From jute cellulose pulp and biopolymer, biodegradable film will be produced for daily life consumer packaging as well as garments products packaging.

Jute thermoplastic composite: Jute fibres will be introduced to polymeric material and prepare composites materials for bio-based eco-friendly furniture, toys and garments accessories.

Nano cellulose: The market for Nano cellulose is expected to grow from USD 297 million in 2020 to USD 783 million by 2025, at a CAGR of 21.3%. Rising concerns regarding the environment along with the market impetus for greater. Sustainability in the use of products is driving the demand for Nano cellulose. The rising resource constraint is also shifting the demand for bio-based products, which is a significant driver of the Nano cellulose market. Nano cellulose applications includes pulp & paper, composites, biomedical & pharmaceuticals, electronic sensors, cosmetics, oil & gas, and food.

The BIG Problem

Global Plastic pollution is becoming a threat to the planet and all living things. According to a report published in German Weekly Magazine '*Focus*', plastic particles have recently found collected all over the world, from the Arctic to rivers, Alpine soils to deep seas.

The Key Facts are:

- 8 to 12 million tons of plastic is dumped every year, that is one garbage truck every minute
- Plastic takes 450 years to decompose
- Micro plastics have been found in the human body
- 8 to 12 million tons of plastic is dumped every year, that is one garbage truck every minute

Why not recycle?

The cyclic process of recycle requires various steps which requires support from both the governing authorities and the citizens of the nations. The primary cause to why recycle has not truly worked is lies in the fundamental of human nature, habit. Humans are not used to recycle as it is not measured.

The Key Facts are:

- Recycle materials are not being thrown away in the right bin
- Even if citizens put the recycle material in the right container, it is not guaranteed to get recycled
- More waste is being produced than the number of facilities available to recycle
- Asian countries that used to import materials to recycle from Europe and USA has banned it as they could not meet local demand of recycling.

Earth Friendly Products

One of the answers to the rising problem of plastic lies in the *reusable, biodegradable and compostable* products. Technology has allowed us to create products from natural fibre. These products earth friendly, meaning even if it has been mistakenly discarded, it will degrade in a landfill without releasing any harmful substance to soil, water or air.

With the current technology we can control the lifecycle of these products, making it feasible and making each product per requirement.

Not Just Anyfibre

Among all available natural fibres, we are solving the issue with Jute fibre, famously known as the *Goldenfibre*. The selection of this was an easy, but scientifically proven decision.

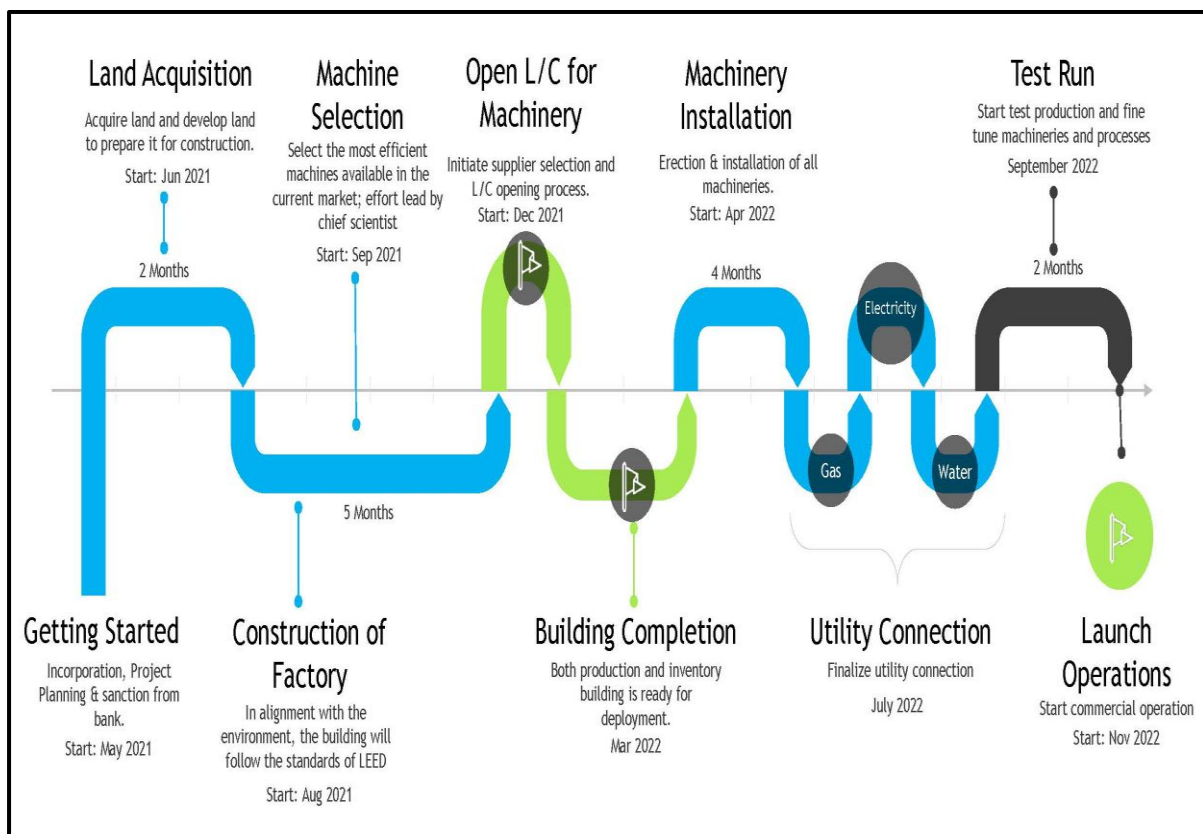
The Key Reasons are:

- High fibre content
- Well researched as an alternative for plastic alternative
- Locally available for mass consumption Government subsidy

The Plan

The following Figure 1 provides the Road Map:

Figure 1: Road Map



Product Overview – Nanocellulose: The market for Nanocellulose is expected to grow at a CAGR of 21.3%. Rising concerns regarding the environment along with the market impetus for greater sustainability in the use of products are driving the demand for Nanocellulose. The rising resource constraint is also shifting the demand for bio-based products, which is a significant driver of the Nanocellulose market.

Nanocellulose applications include pulp & paper, composites, biomedical & pharmaceuticals, electronic sensors, cosmetics, oil & gas, and food. Therefore, Nanocellulose will be manufactured from jute cellulose (after extraction of cellulose pulp from jute fiber) for the worldwide market focusing on low cost raw material as well as low production cost in Bangladesh.

Product Overview – Packaging Material: One of the most promising markets for plastic bag used to package RMG products. Under the Paris Agreement, most European countries have banned the use of single plastic. The plastic packaging used in this industry is considered single use.

Product Overview–Thermoplastic & Hanger: The manufacturers showed enormous interest to replace their current different furniture and various types of toys (which is currently made of 100% synthetic plastics) with 30% to 100% biodegradable polymer/composites materials. The local Bangladesh market is using more than 30 thousand metric tons of 100% synthetic plastics to manufacture those furniture and toys. Therefore, there is a huge opportunity to replace/reduce the 100% synthetic plastics with biodegradable polymer/composite material which is environmentally friendly.

It should be also mentioned that most current raw materials are imported. For the international market, the current hanger and button, which is 100% synthetic plastic based, could be replaced with biodegradable materials and worldwide most companies are now required to replace more and more plastic materials with biodegradable materials due to the government legislation.

Financial Analysis

The following provides a Financial Summary:

Figure 2: Jute Pro-Financial Summary

Particulars	Year - 1	Year - 2	Year - 3	Year - 4	Year - 5	Year - 6	Year - 7	Reference
Sales at attainable capacity	2,691,360	2,691,360	2,691,360	2,691,360	2,691,360	2,691,360	2,691,360	Note 6.9
Capacity Utilization	65%	75%	80%	85%	90%	90%	90%	
Sales at utilization capacity	1,702,870	2,010,259	2,149,315	2,283,988	2,418,559	2,422,137	2,422,222	Note 6.4
Gross Income/Profit	424,108	536,308	586,222	634,166	681,711	675,257	666,979	Note 6.4
Net Income after Tax	290,406	384,947	429,253	471,802	513,954	510,364	505,121	Note 6.4
Gross Income to Sales (%)	24.91%	26.68%	27.27%	27.77%	28.19%	27.88%	27.54%	Note 6.4
Net Income to Sales (%)	21.41%	23.18%	23.77%	24.27%	24.69%	24.38%	24.04%	Note 6.4
Return on Investment - ROI (%)	17.87%	17.20%	16.99%	16.98%	16.75%	15.08%	13.66%	Note 6.13
Return on Equity - ROE (%)	39.77%	35.42%	29.00%	24.60%	21.43%	17.78%	15.12%	Note 6.13
BEP on utilization capacity (%)	43.17%	34.53%	31.92%	29.86%	28.05%	27.81%	27.71%	Note 6.12
BEP on attainable capacity (%)	27.32%	25.79%	25.49%	25.34%	25.21%	25.03%	24.94%	Note 6.12
Break Even Sales (Tk.)	251,109	251,524	243,223	233,505	222,619	201,111	188,264	Note 6.12
Pay Back Period (Years)	3.19							Note 6.15
Debt Equity Ratio	70 : 30							Note 6.1
Project Loan Period	9 Years including 12 months grace period							Note 6.17
Interest Rate of Project Loan	3% for machinery loan & 9% for Project & Working capital							Note 6.17
Internal Rate of return (IRR) - %	30%							Note 6.14
Debt Service Coverage Ratio (Times)	8.72	9.78	10.61	11.44	12.27	12.81	13.39	Note 6.4
GDP Contribution based on 3rd year	766,465							Note 6.16
NB:	Summary shows only 7 years information.							

(Amount in thousands)

Comments

Gross Income to Sales (%): Net revenue earnings forecasted in first year BDT 1,702,870 at 65% capacity utilization and a good-looking progression would remain the next successive years, which originally helps to take the business decisions.

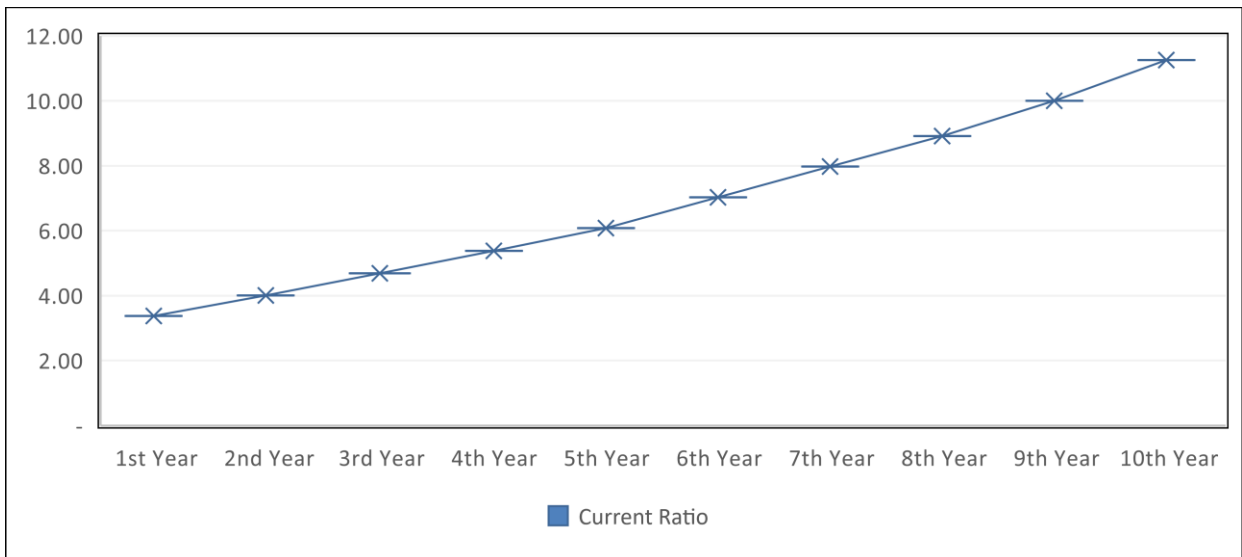
Net Income to Sales (%): Net Income to sales in first year @ 21.41% and the project secure the good growth for the next successive years.

Figure 2: Net Income to Sales



Current Ratio: The current ratio measures a company’s ability to pay off short-term liabilities with current assets:

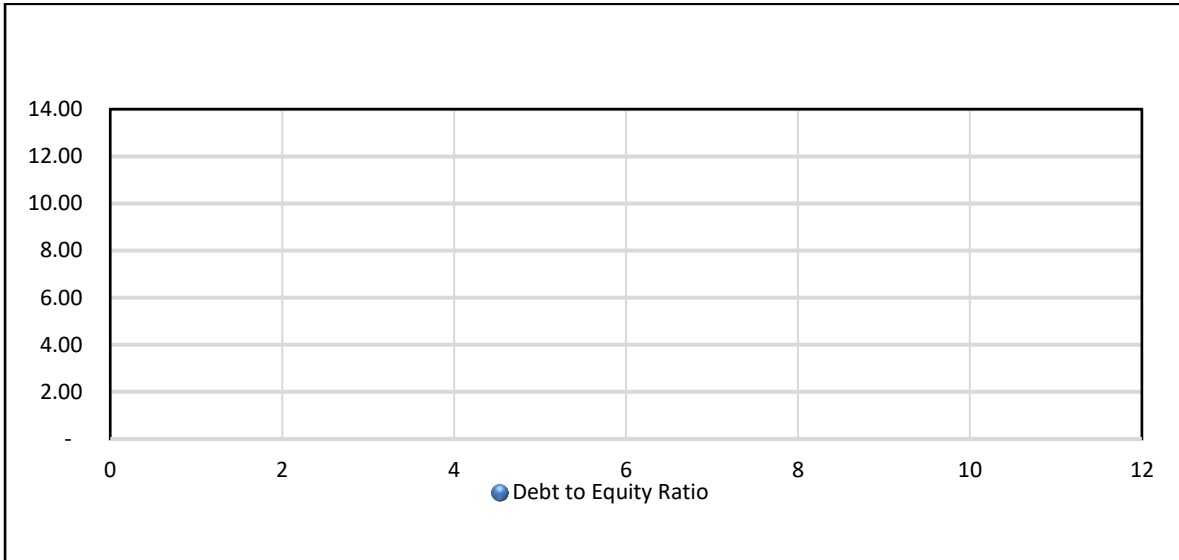
Figure 4: Current Ratio



Debt equity ratio: The debt to equity ratio determines the weightiness of total debt and financial liabilities against shareholders’ equity of the company which is satisfactory.

$$\text{Debt to equity ratio} = \text{Total liabilities} / \text{Shareholder’s equity}$$

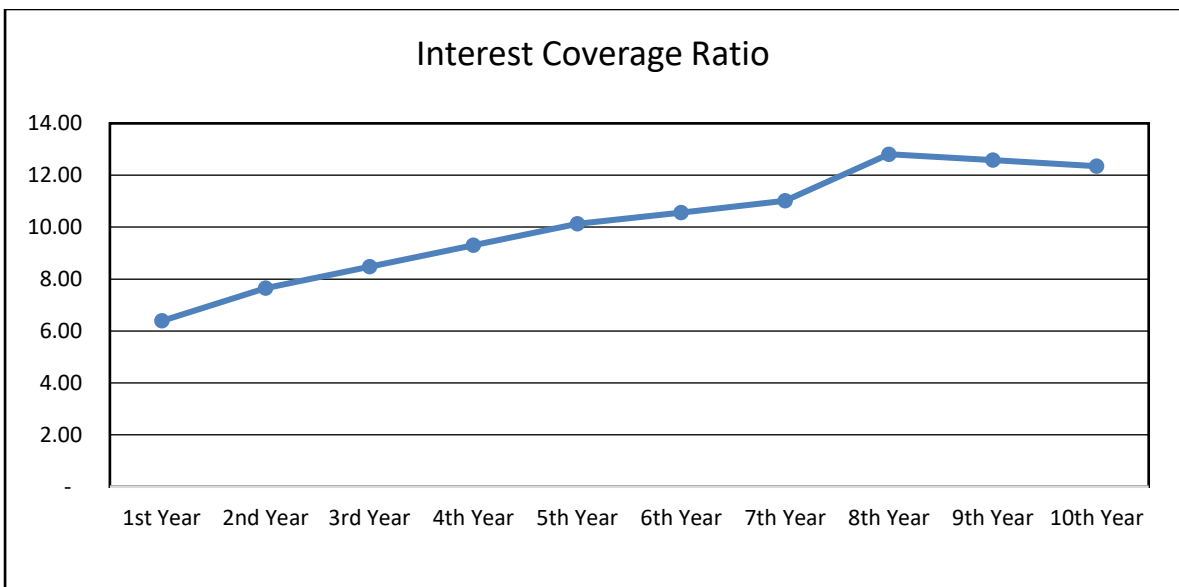
Figure 5: Debt Equity Ratio



Interest Coverage ratio: The interest coverage ratio shows how easily a company can pay its interest expenses:

$$\text{Interest coverage ratio} = \text{Operating income} / \text{Interest expenses.}$$

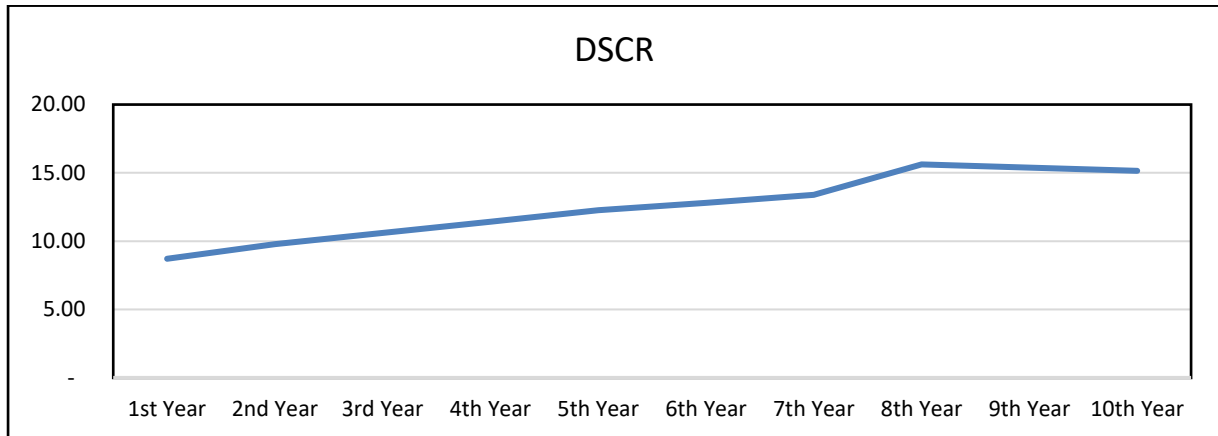
Figure 5: Interest Coverage Ratio



Debt service coverage ratio: The debt service coverage ratio reveals how easily a company can pay its debt obligations:

$$\text{Debt service coverage ratio} = \text{Operating income} / \text{Total debt service.}$$

Figure 6: Debt Service Coverage Ratio

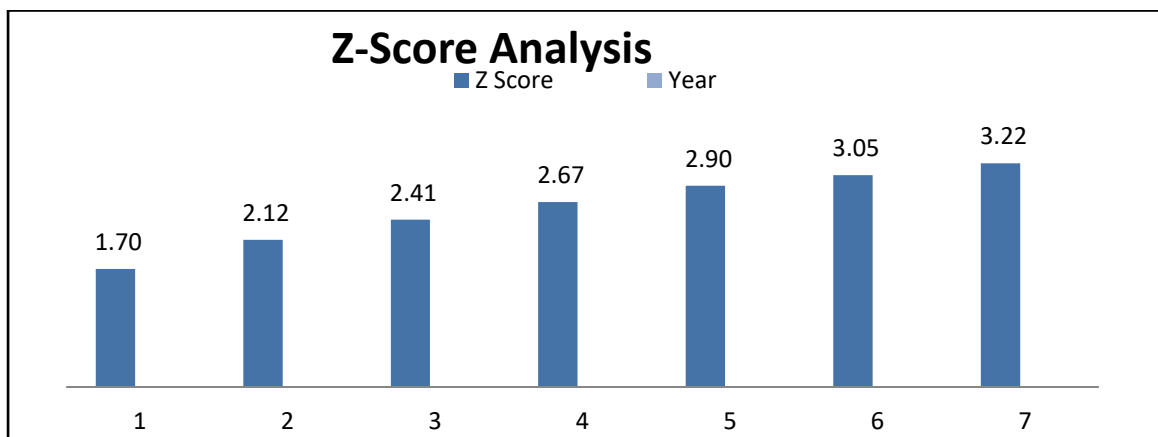


Return on Investment (ROI %): The higher the ROI percentage, the greater the return on investment which indicates increased efficiency and profitability of the company. Here the return on Investment is much higher than the cost of the investment.

Return on Equity (ROE %): ROE measure of a company's ability to generate profit and its calculated as: net income divided by average total equity. Here the ROE denotes satisfactory rates although the years.

Payback Period: The payback period denotes how the fast the project will return back the invested money. Here PBP computed 3.19 years which is much acceptable to the board.

Altman Z-score analysis: The Altman Z-score analysis its very clearly indicate that in 6 years the company will go in "safe Zone" and year 2 to 5 the company will be in "grey Zone" with the score of 2.12 to 2.9 after the first year of its operation. And in 1st year the company will be in "Distressed Zone" but it's on Turing up in 2nd year.



Summary

Being a management accountant, Considering the projected data and its related financial outcomes, the future trend of the business, the product diversification, the global needs considering health and environmental ecological balance, me and my team suggested to go for investment in this greenfield project. Successfully the board accepted the decisions. It's being mentionable that the tools and techniques we learned from ICMA, Australia its much useful and help me to do the conclusion. The reports show the decisions and explanation of the projects, but all the workings are in the excel which is an integral part of the assignments.