

An internship report on

Financial Analysis of Introducing Renewable Lithium Battery
Storage System for Dongjin Longevity Industry Limited

By

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

BRAC Business School
Brac University
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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:

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Letter of Transmittal

To

Dr. Mohammad Enamul Hoque

Assistant Professor,

Brac Business School

Brac University

Kha 224 Pragati Sarani, Merul Badda, Dhaka 1212, Bangladesh

Subject: Request for Consent on preparing Internship Report on Dongjin Longevity Industry Limited

Dear Sir,

It is my great pleasure to submit my internship report titled “*A Financial Analysis of Introducing Renewable Lithium Battery Storage System for Dongjin Longevity Industry Limited*”, which I have prepared under your kind supervision.

I hope that the report will suffice the criteria and will be successful to accomplish its purpose. I am grateful to you for your guidance and support for me.

Sincerely yours,

SHAHIDUL ISLAM

SHAHIDUL ISLAM

22264060

BRAC Business School

BRAC University

Date: September 29, 2025

Non-Disclosure Agreement (NDA)

This Non-Disclosure Agreement (“Agreement”) is made on August 25, 2025, by and between:

Dongjin Longevity Industry Limited (“Disclosing Party”), headquartered at 6th floor, Plot 32-D/E, Road-2, Sector-3, Uttara, Dhaka 1230, Bangladesh, and

Shahidul Islam (“Receiving Party” or “Intern”), a Finance Intern at Dongjin Longevity Industry Limited, residing at 11/14 Tajmahal Road, Mohammadpur, Dhaka 1207, Bangladesh.

Both parties shall collectively be referred to as the “Parties.”

1. Purpose

The Intern has been engaged by Dongjin Longevity Industry Limited to complete an internship project titled “A Financial Analysis of Introducing Renewable Lithium Battery Storage System for Dongjin Longevity Industry Limited.” In the course of this internship, the Intern may receive or have access to confidential and proprietary information belonging to Dongjin. This Agreement is intended to protect such information from unauthorized use or disclosure.

2. Definition of Confidential Information

For purposes of this Agreement, “Confidential Information” includes, but is not limited to:

- Financial data, business plans, pricing strategies, and cost structures;
- Research and development (R&D) information related to lithium and solar battery projects;
- Technical specifications, processes, and designs;
- Customer lists, supplier details, and contractual agreements;
- Any other information marked as “confidential” or reasonably understood to be confidential.

3. Obligations of the Intern

The intern agrees to

- Maintain the confidentiality of all confidential Information received during the internship.
- Not disclose confidential information to any third party without prior written consent of Dongjin.
- Use confidential Information solely for the purpose of completing the internship project.
- Return or destroy all documents, notes, or materials containing confidential information upon completion of the internship or upon request by Dongjin.

4. Exclusions

Confidential Information does not include information that:

- Is publicly available at the time of disclosure;
- Becomes publicly available through no fault of the Intern;
- Is lawfully obtained by the Intern from a third party without restriction;
- It is independently developed by the Intern without use of Dongjin's confidential information.

5. Term

This Agreement shall remain in effect for a period of three (3) years from the date of execution, unless extended by written agreement of the Parties.

6. Governing Law

This Agreement shall be governed by and construed in accordance with the laws of Bangladesh, without regard to conflict of law principles.

7. Remedies

In the event of a breach of this Agreement, Dongjin Longevity Industry Limited shall be entitled to seek legal remedies, including but not limited to injunctive relief, damages, and specific performance.

8. Entire Agreement

This Agreement constitutes the entire understanding between the Parties with respect to the subject matter and supersedes all prior discussions or agreements, whether oral or written.

Signatures:

For Dongjin Battery Company

Name: Robbie Wang

Designation: Director

Signature & Date:



02.01.2025

For Finance Intern (Receiving Party)

Name: Shahidul Islam

Signature & Date:

SHAHIDUL ISLAM
2024.10.15

Acknowledgement

I would like to begin by expressing my deepest gratitude to **Dongjin Longevity Industry Limited**, a prominent name in the battery manufacturing industry, for granting me the opportunity to pursue my internship and complete the study titled “*A Financial Analysis of Introducing Renewable Lithium Battery Storage System for Dongjin Longevity Industry Limited*.” Dongjin is an innovative organization. It has allowed me to learn about the Bangladeshi battery market and understand its challenges and opportunities of introducing renewable energy storage solutions in Bangladesh. This experience has helped me to develop my professional and academic development. I am grateful to the company for their support and resources that made my internship work possible.

Then, I thank my external supervisor, Mr. Robbie Wang, Director of R&D for the Lithium Project at Dongjin Longevity Industry Limited. He has helped me in my internship journey with his regular guidance, insights, and inspiration. He has taught me about the technical aspects of lithium battery development. Also, he has provided me with essential market data and financial thoughts. His teaching has helped me establish the relationship between financial theories and industry data. Thus, his contribution has helped me enhance the quality of my analysis. He was very patient toward my many queries. He has simplified technical matters to me into easy terms. It has been helpful to my learning.

Equally, I thank my academic supervisor, Dr. Mohammad Enamul Hoque, Assistant Professor, BBS. He has always guided me. He has also given me beneficial feedback. Those have helped me a lot in this study. His knowledge and advice have helped me a lot to make the financial modeling, structuring the report, and lining it up with BRAC University’s academic standards. Therefore, my supervisor has been crucial to the successful completion of this project. Additionally, he has encouraged my critical thinking and analytical clarity. As a result, I was able to strengthen my capacity for financial evaluation with accuracy and neutrality.

Additionally, I am grateful to my academic co-supervisor, Dr. Md. Arif Hossain Mozumder. He was my ACT501 faculty member. Under him, I learned the basics of accounting and finances. His teaching and knowledge sharing throughout my MBA has deepened my understanding of financial accounting.

Moreover, I want to thank Brac University. It has outstanding infrastructures and faculty members. Thus, it has facilitated me with all the resources to accomplish my internship.

Finally, I would like to show my gratitude to the colleagues and staff members of Dongjin Longevity Industry Limited. The employees of Dongjin helped me with all the essential information, guidance, and cooperation. They were spontaneous in helping me out. Some of them were very inspiring and encouraging. Their assistance truly helped me complete my journey in this organization.

My internship journey was very educational and experiencing. It has improved my analytical skills, increased my financial knowledge, and provided me with insights into the renewable energy sector, particularly solar and lithium battery applications.

To conclude, any mistakes, or inadequacies in this report are entirely my own responsibility.

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Executive Summary

I have been recruited as a Finance Intern at Dongjin Longevity Industry Limited. I have analyzed the market feasibility for introducing a lithium renewable battery storage system in Bangladesh. The nation's energy demands have been increasing. There are possibilities of supportive government policies for renewable energy in the future. On the contrary, electricity costs have been rising. Thus, the lithium renewable battery market has potential growth opportunities. Dongjin has good networks with engineering firms, biomedical equipment manufacturers, and government projects. Thus, the company can think about introducing renewable energy storage solutions. Nevertheless, a complete analysis provides major opportunities and challenges. Regulatory unpredictability, huge initial investment costs, technological adaptation challenges, and economic instabilities affect consumer behavior and are the major challenges in this regard. Furthermore, environmental awareness regarding battery disposal as well as uncertainty regarding supply chain carry probable risks. Though these challenges linger in the corner, my analysis shows that going into this market would align with Bangladesh's sustainability goals. In the long run it will benefit Dongjin. To achieve the goal, Dongjin needs to focus on selecting strategic partners and exhaust their existing resources. Dongjin Longevity Industry Limited may avail a big piece of cake in the growing demand for sustainable energy solutions. They should foster an environment of long-term growth and profitability. This analysis will shed light on these vital points.

Introduction

Dongjin Longevity Industry Limited is a leading manufacturer of Sealed Maintenance-Free (SMF) batteries. They supply batteries to a wide range of fields such as autorickshaw battery market, motorcycle battery market, industries for uninterruptible power supply (UPS) systems. Dongjin is a well-known reliable provider of high-quality products. They have factories in several countries. The company has been influential in the auto-rickshaw, charger, motorcycle and ups battery sectors in Bangladesh. The company is working closely with root-level distributors, engineering firms, biomedical equipment manufacturers, and government agencies. Dongjin is looking for new opportunities to expand its product line in the renewable battery market as the county is now shifting gradually towards renewable energy. Dongjin can capitalize on its expertise in battery manufacturing to get the big chunk of the renewable market.

The global push toward sustainability, rising electricity costs, and proposed government incentives have fueled the demand for renewable energy solutions in Bangladesh. It has growing energy demand yet shortage of energy supply. Renewable energy is an alternative to traditional energy sources. For that reason, Bangladesh is focusing on renewable energy. However, there are odds like higher initial costs, technical knowledge deficiency, and political instability.

The main purpose of this Internship Report is to assess the financial viability of introducing Lithium solar storage system products for Dongjin Longevity Industry Limited. In this report, I will opt for a deep analysis of the market viability considering internal and external factors using PESTEL, SWOT, Porter's five forces and ratio analysis. Later, I will propose a mathematical model to assess the financial viability of launching this product. To do that, I have to focus on product pricing strategies, supply chain management, and other regulatory obligations. Furthermore, I will try to find how Dongjin's existing resources can help it launch the new products.

Finally, this report will provide doable recommendations for Dongjin to effectively enter into the renewable battery market in Bangladesh by strategic analysis of the market conditions and financial implications.

Chapter 1: My Internship Experience

Overview of my internship journey at Dongjin Longevity Industry Limited

Getting into a leading battery manufacturing company like Dongjin Longevity Industry Limited, was a great opportunity for me. In the beginning, I was trying to make my plan and strategy to achieve my goals. The colleagues and managers at Dongjin helped me a lot to figure out how I should start my work.

My first work was to analyze the market. I tried to recognize the existing players, industry trends, and regulatory policies. I analyzed the internal factors of the organization such as its strengths and weaknesses. I evaluated its financial health using ratio analysis. Then I also looked for the external factors that can have influences over the new products. I used different frameworks, tools to find those factors.

To evaluate the financial viability of the new product line, my first task was to collect relevant data to understand the business model of Dongjin. I tried to find their cost structures and revenue streams. Secondly, I prepared a financial model using the collected data. This model helps me to assess the financial viability of launching renewable battery storage systems. I have used some financial material such as return on investment (ROI), net present value (NPV), and internal rate of return (IRR). The analysis helped me get significant insights about the profitability and long-term sustainability of the new products.

To achieve my work data, I had to contact various departments in Dongjin such as the Finance and accounts department, sales department, supply-chain department, engineering department, etc. By contacting them I was able to gather my data for analysis. I analyzed the obtained data to find production costs, distribution costs and pricing strategies.

Then I searched for potential investors to invest in this project. I recommended a few financing parties. Looking for potential investors will help Dongjin enrich its financial resources and mitigate the heavy capital expenditure in the beginning.

This journey helped me improve my financial ability, critical thinking and problem solving. The working environment was pretty good. The organization environment was energetic. It helped me understand corporate finance, business expansion and sustainability. With all the ability gained, I set my goal to come up with the best recommendations for these new products.

It was my pleasure to make a contribution to Dongjin's probable renewable energy expansion. Besides, I have gained practical knowledge and skills throughout my journey.

Tasks at Dongjin Longevity Industry Limited

The main task was to evaluate the outcome able investment into renewable Lithium storage systems. To do that, first, I investigated the business structure, cost structures, and all the revenue streams of the company. Then I measured the key financial metrics. These metrics provided important inference about profitability and sustainability.

I have collected financial data from their finance and accounts department and then conducted a financial ratio analysis. Afterwards, I have contacted the sales department to learn about sales volumes and sales costs, pricing Strategies and distribution networks. These things help me understand cost subtleties, market competition, and consumer behavior.

I studied the market thoroughly. I have identified major competitors, industry trends, and government policies. The PESTEL framework helped me in this regard. I also assist external risk and possible opportunities.

Afterwards, I searched for different financing and funding sources who can possibly invest into this project.

Hindi and I summarized my analysis and made recommendations for this project. I prepared a financial report addressing profitability. In the recommendations, I prescribed strategies that can reduce risk and maximize profit return.

My roadmap of Financial Analysis

Market Review:

Renewable battery market in Bangladesh is increasing. The market is around 250 million dollars. The growth rate is around 7%. It means that the organization has a very good opportunity in this industry if they can make calculative decisions.

Financial Analysis:

I examined the financial statements of the organization. I mainly focused on cash flow statements, profit and loss statements, profitability and capital expenditures. I evaluated the organization's ability to expand for new ventures.

Cost Structure:

I had coordinated with several departments Supply chain and production teams. It helped me determine the unit production cost of renewable storage systems.

Revenue and Sales prediction:

I had to consider different scenarios to estimate revenue and sales volume during the process. I consider the existing resources the organization already had.

Inputs from Other Departments:

As mentioned earlier I had to cooperate with different departments to obtain data for analysis.

Financial workout:

High calculated the most important financial metrics. I calculated those metrics using the gathered data.

Presentation to Management:

I presented my analysis and reports to the R&D department of the organization. I emphasized on the recommendations and financial feasibility and potential risk of the new products.

Skill Development

Technical skills:

Financial Structure Development:

I learnt how to prepare financial structures. It includes financial modelling, educated financial guess, calculating metrics like, return on investment, net present value, internal rate of return, and payback period.

Data Analytics:

I learned how to analyze data. I worked on different data sets from the organization's financial reports. I used different analytics tools such as Excel to complete the Analytics.

Financial Record Preparation:

I learned about making financial records which include different financial matrices.

Planning and Cost Prediction:

I learned how to make an educative guess about planning and cost prediction. I learned about the production cost pattern, operation expenses and pricing models. It helped me to determine the future cost and product pricing.

Excel Function Expertise:

I have thoroughly used Excel and mastered different financial tools to complete my analysis. It was a great experience to learn more in excel and achieve experience on using excel.

Soft skills:

Analytical Ability:

This journey improved my analytical ability. I was able to critically analyse the situation of the market and ongoing trends. Then I came up with solutions to the problems and how to break through the market. This hands-on experience helped me improve my analytical capacity.

Interpersonal Skills:

As I had to collaborate with different departments and employees. It helped me to build up my interpersonal skills, how to communicate with clarity and convey my messages. Overall, it helped my interpersonal skills to develop.

Becoming a team player:

I had to work with several teams and departments. For that reason, I was needed to act like a part of the team and try to understand how to cope with all the teamwork. I became a better team player all and all.

Discernment:

I was very careful about the financial Calculation and projections as my analysis would give a good projection to a future business. I was very careful about how to analyses the data and market prospects. It helped me to develop my discernment.

Flexibility:

To work with different people, I needed to make myself flexible to any situation. I was very welcoming and encompassing. I was always abiding by the instructions given by my supervisors and co-workers.

Project Handling Capacity:

Throughout the journey I learned about how to handle a project efficiently and effectively. My financial and market analysis provided good insights into the future business of the new product line. Besides, it will help my project handling capacity.

Chapter 2: Product and Company Overview

What is renewable battery

Renewable batteries are the most important part of the renewable energy storage system. Batteries are devices that store electrical energy by the form of chemical energy and supply energy for the later use. Renewable batteries are the most important part of renewable systems. Batteries are used for storing solar power for future use. It helps ensure non-stop supply of electricity during nighttime or when sunlight is not enough. (Akinyele & Rayudu, 2014). Battery technology is improving day by day from traditional voltaic cells to photovoltaic cells and Lithium

based batteries. Batteries reduce the usage of fossil fuels using renewable batteries to promote sustainable energy solutions.

There are a few types of renewable batteries based on their technology. Each type has its own advantages and disadvantages some of those types are:

1. **Lead-Acid Batteries:** leadership batteries are the traditional batteries found in the market. Lead acid is very old. They are cost effective and widely used but they have your comparatively shortened life cycle formula batteries. (Luo et al., 2015).
2. **Lithium-based Batteries:** Lithium based batteries are a new technology and getting popular day by day. They have these kinds of batteries that have longer lifespans and lightweight designs with high efficiency but the prices are very high. (Dunn et al., 2011).
3. **Electrochemical (Flow) Batteries:** This battery uses liquid electrolytes to store energy. This battery can be used for scale-up and longer life cycles. It helps for large-scale energy storage (Alotto et al., 2014).
4. **Nickel-Cadmium Batteries:** this battery has comparatively less market share. Even though the price is very high, they offer durability and excellent performance in high temperatures. (Luo et al., 2015).

Usage of renewable batteries is diverse. Some of them are listed below.

1. The first one is housing energy storage applications. This storage energy can be used during night time and power outages like a backup source. It helps energy reliability and cost minimization. (Meng et al., 2018).
2. Second one is various applications in the commercial and industrial sectors. Energy storage systems help businesses and industries use their energy efficiently. It also increases the system reliability by having an alternative source of energy. These can help comparing is to reduce electricity cost and continue their operations during power outages. This type of usage also helps organizations attain CSR goals. (Zakeri & Syri, 2015).

3. The third one is application in rural areas. Battery storage systems are very useful in rural and remote areas where the main grid is impossible to reach. This alternative way of energy provides our reliable and sustainable energy solution to the rural area electrification board that can utilize this setup. This kind of development can help the area to develop healthcare, education, and communication. (González et al., 2015).
4. Number four application is peak-hour demand management and grid stabilization. The demand for electricity is different throughout the day. It is very hard to balance between the demand during off-peak and peak hours. Stabilization of the grid is very important yet hard to achieve. Renewable batteries can help achieve this stability during higher energy demand hours. (Denholm & Margolis, 2018).
5. Another application is in Electric Vehicles (EVs). Electric vehicles are getting popular day by day. They are powered by lithium storage batteries. Renewable powered charging stations are the backbone of electrical vehicle development. This kind of battery store system helps the charging stations to maintain continuous power supply. It improves the infrastructure of the electrical vehicle system. (Hossain et al., 2019).

The relation between renewable batteries and renewable energy systems is very deep. Renewable energy can be stored by energy storage systems. Therefore, renewable energy cannot be utilized without using this kind of storage systems. Renewable storage system gives independence and energy security across a country it helps the country to reduce for fuel-based energy sources. Government can maintain energy security and fuel price. (Luo et al., 2015). By reducing fossil-based energy sources, government can achieve carbon emission reduction and air pollution which help it fight climate change. (Dunn et al., 2011). Renewable battery storage system is beneficial for long term economic values. Even if the initial cost is very high, it has better payback period out of the investment. Prices of energy storage systems are decreasing and government also encouraging for energy storage gradually. (Zakeri & Syri, 2015). Renewable storage systems can be used in smart and micro grid. Actually, micro-grid and smart grid are new concepts relying on renewable energy inputs. Smart grid creates improve energy efficiency, reduce system outages, and improve the demand-side management. (Denholm & Margolis, 2018).

There is not out that renewable storage systems have numerous benefits however they also face major challenges. Research working to lower the production cost of renewable battery storage systems (Hossain et al., 2019). Whenever batteries are shipping the landscape of renewable systems. They are usable for residential households. They are usable to large-scale industries. They can be integrated with the grid. Thus, they are vital components of sustainable energy alternatives. New technologies are emerging. Renewable battery storage will play a fundamental role in obtaining a cleaner and more robust energy future.

Renewable Battery Market Overview

Bangladesh has abundant renewable irradiance. Studies show that the average irradiance ranges from 4.0 to 6.5 kilowatt-hours/square meter daily. Thus, the country has ample opportunity to harness renewable energy. The renewable power integrating into the national energy supply is gaining popularity. The key factors are government initiatives and a growing demand for sustainable energy solutions. At this moment, this sector is the focus of development. The country is now developing a renewable battery market. The goal is to create an efficient energy storage and management system.

The renewable battery market in Bangladesh is developing rapidly. The need for reliable energy storage solutions exceeds its expansion. Renewable batteries store electrical energy generated from solar panels. It enables a consistent power supply during non-sunny occasions. It alleviates the country's frequent power outages. The acceptance of renewable batteries has been expanding from remote electrification to urban areas. They are present in industrial sectors. More and more businesses and households are investing in renewable battery systems. The goal is to achieve freedom of energy and curb utility bills. The government policies are supportive. The incentivization from government authority has encouraged this uprising.

An ambitious target has been set by the Bangladeshi government. According to the UN, the country aims at increasing renewable energy in the country's energy sector to 15% by 2030, 40% by 2041, and 100% by 2050. It highlights the country's commitment to sustainable energy. According to a report of the Department of Commerce, USA in December 2024, the government of Bangladesh is implementing numerous policies to promote the

adoption of renewable energy. Some of the government initiatives are the Renewable Energy Policy and the National Renewable Energy Action Plan (2021-2041). They have frameworks for the development and integration of renewable power. The framework has incentivization for renewable energy storage systems.

Bangladesh is gradually shifting from traditional battery solutions to renewable battery solutions. Technological advancement is a catalyst. Lithium batteries have higher energy density, longer lifespan, and less maintenance requirements. More people are looking for lithium solutions. The Bangladeshi lithium market will increase from 200 million USD to 450 million in the next 5 years, maintaining a growth rate of approximately 8%.

Regardless of the potential, the renewable battery market is highly risky. Initial investment is very high. It is a big challenge for the middle-class family of Bangladesh. Moreover, people do not know about the benefits of renewable storage systems. The sector also lacks technical expertise. The Bangladesh government also lacks incentive to the sector. Government and non-government organizations should come forward to promote this new technology and its benefits.

Despite the challenges, Bangladesh has a bright future for renewable storage systems. The Government of Bangladesh is looking forward to developing the sector. More people are now aware of renewable energy. Even, rural populace is also accepting this kind of new technology. Moreover, this adoption will help Bangladesh fight climate change more effectively.

Synopsis of the Renewable Battery Business and Profitability Prospects in Bangladesh

The market prospect of renewable battery storage systems in Bangladesh is very optimistic. Bangladesh has an electricity shortage. Fossil fuel cost is very high. Bangladesh's supply chain of fossil fuel is very complicated. On the other hand, Bangladesh does not have a vast reserve of natural fossil fuel. Gradually, Bangladesh is shifting toward renewable energy. By 2040 the Government of Bangladesh aims at producing 50% of its electricity from renewable sources. Renewable storage systems can deliver electricity to rural households where electricity outage is worse. Renewable energy Storage systems have many applications relevant to the Bangladeshi market. Thus, it has a very good prospect in the future. It is due to the country's growing dependence on renewable energy.

Government support needs to be stronger. Market demand is rising. Technological improvement is happening. New companies entering this sector can achieve substantial profitability. They can also contribute to a sustainable energy future.

Company Overview of Dongjin Longevity Industry Limited

Dongjin Global: International Presence and Operations

Dongjin Group was founded in 1993. Their headquarter is in Shenzhen, China. They are a leading manufacturer of batteries. They are experts in the production, research, and development of lead-acid batteries, lithium battery packs, and lithium battery cells. They have experience of over 30 years in the battery industry. The company has stretched its operations internationally. It has established factories in Bangladesh, Pakistan, India, the Philippines, Turkey, and Brazil. Their multiple international facilities have a robust workforce of more than 10,000 employees. Their workforce includes a dedicated research & development team of over 325 experts.

Dongjin has a wide range of products for a variety of applications. Some of the products are renewable energy storage, uninterruptible power supplies (UPS) batteries, telecommunications batteries, electric vehicle batteries, and autorickshaw batteries. The company is committed to quality and environmental standards. They have standard certifications such as ISO9001 and ISO14001. Moreover, they have product-specific approvals like CE, FCC, ROHS, UN38.3, and IEC.

Recently, Dongjin is trying to enter into the renewable energy sector. They are now producing the DJDC 550W renewable panel. They are also producing a range of lithium iron phosphate (LiFePO₄) batteries. These are designed for home energy storage and backup power applications.

Now, the company is focusing on producing renewable energy storage systems for the growing renewable market in Bangladesh.

Dongjin is a multinational company. They have production facilities in different countries. They have a global presence. They partake in exhibitions and fares to showcase their latest products. They are now planning to promote renewable energy storage systems in such events.

Dongjin Bangladesh: Local Presence and Operations

Dongjin started its journey in Bangladesh in 2016. It established its manufacturing factories in Narayanganj. Primarily, Dongjin produces auto rickshaw batteries. They have been the market leader for many years. They also produce motorcycle batteries, UPS batteries, and charger batteries. Dongjin Bangladesh has helped the country stop import dependency of batteries. They have been producing high quality products from the beginning. At this moment, due to the demand of renewable alternatives, Dongjin Bangladesh is focusing on producing renewable energy storage systems. They already have a strong production line, organized distribution channels, and mature marketing and sales department. They can leverage those available resources to develop a market for the new products. The Bangladeshi government is introducing new policies and incentives to endorse renewable energy and in-country manufacturing. They are trying to adopt tariff reductions on raw materials, subsidies, and tax benefits for renewable energy projects. It will create an advantageous environment for Dongjin's expansion. Some examples of government projects are rural electrification and large-scale renewable farms. It presents significant business opportunities for Dongjin's renewable battery division. Industrialization and economic expansion of Bangladesh is growing day by day because the demand for consumption is increasing. Both businesses and customers have started to invest in alternative power solutions because of regular blackouts and unstable grid infrastructure. Dongjin is offering high-performance batteries which are alternative for diesel generators. It is providing an affordable and environmentally friendly energy storage solution. Dongjin Bangladesh can reduce import, customs and logistics costs because most of the batteries are manufacturing in local in-house factories. Additionally, it can offer a competitive market price as its production cost is lower than other market players. So, it is easier for Dongjin to expand its market. Moreover, local production ensures quick delivery and better post-purchase assistance. It is really helpful to enhance consumer confidence and brand loyalty.

Dongjin Bangladesh has created a dominant position in Bangladesh's energy storage market because of tremendous opportunity for expansion in the industrial, telecommunications and renewable sectors. A favorable business climate for Dongjin's renewable battery is another competitive product which has increased the use of renewable energy. With its expertise in battery technology, local manufacturing capabilities, and alignment with Bangladesh's sustainable energy goals, Dongjin is well-positioned to expand its market share and play a crucial role in the country's energy transition.

Foundational overview of Dongjin

In 1993, Dongjin Group was founded in Jiangxi province, China and their main core of business is Sealed Lead Acid battery manufacturing. They specialize in SLA battery research and development from plate to battery. Their products have 2 main brands, KINON and DONGJIN. In 2012, Dongjin invested approximately USD 75 million in a factory in Xingang, Jiangxi province with an area of 240,000m² with more than 1,000 employees. For the next few years, Dongjin distributed the company strategy to global market and brand awareness. Their DONGJIN brand, Long-life series battery has been sold to more than 80 countries and areas, like Europe, USA, Latin America, Asia, Middle East and South Africa etc. In the Middle East, their brand, KINON is greatly recognized in Israel, Afghanistan, Syria and Lebanon. In Asia, especially in the Bangladesh market, their brand DONGJIN has been the leading brand. With a strong sales & marketing team, service and support in Bangladesh, their brand is established successfully and rapidly captured more than 90% market share. In 2016, Dongjin invested about USD 30 million to set up a factory in Bangladesh with an area of 40,000m² and they expect to become the largest sealed lead acid production base locally. In 2018, Dongjin group decided to set up more factories in Philippines, India and Brazil to save transportation costs for their customers worldwide which will greatly help us to realize their sales target of USD 900 million in 2019. Each enterprise development is inseparable from the support of customers. Dongjin sincerely hopes that customers can continue to support us, and they will do more to join hands with you for win-win improvement. Dongjin adhere to 'quality first, integrity innovation' for the guidelines, with excellent quality and first-class after-sale service to meet customers' requirements for quality. Dongjin has an

experienced QC team, classic advanced assembly line, and a strict management system, to ensure the whole production process.

Vision and Mission of Dongjin Longevity Industry Limited

Vision: creating more value for customers, partners, employees, and society as a whole

Mission: becoming world-class new energy battery manufacturer

Key points about Dongjin Battery's mission and vision:

Customer-centric: They prioritize creating value for their customers through quality products and excellent service.

Sustainability focus: Environmental protection is a core value in their mission.

Market leadership: Their vision is to be a top global player in the new energy battery market.

Product range: They aim to provide batteries for various applications including UPS systems, renewable energy storage, and motive power.

Organizational structure of Dongjin Longevity Industry Limited

Dongjin Bangladesh's organizational structure is semi-autonomous, that is, its top management and finance department are centrally controlled from the China headquarters, but the sales and marketing teams are locally controlled. Mr. Lu Pin is the Country Managing Director of Dongjin Bangladesh.

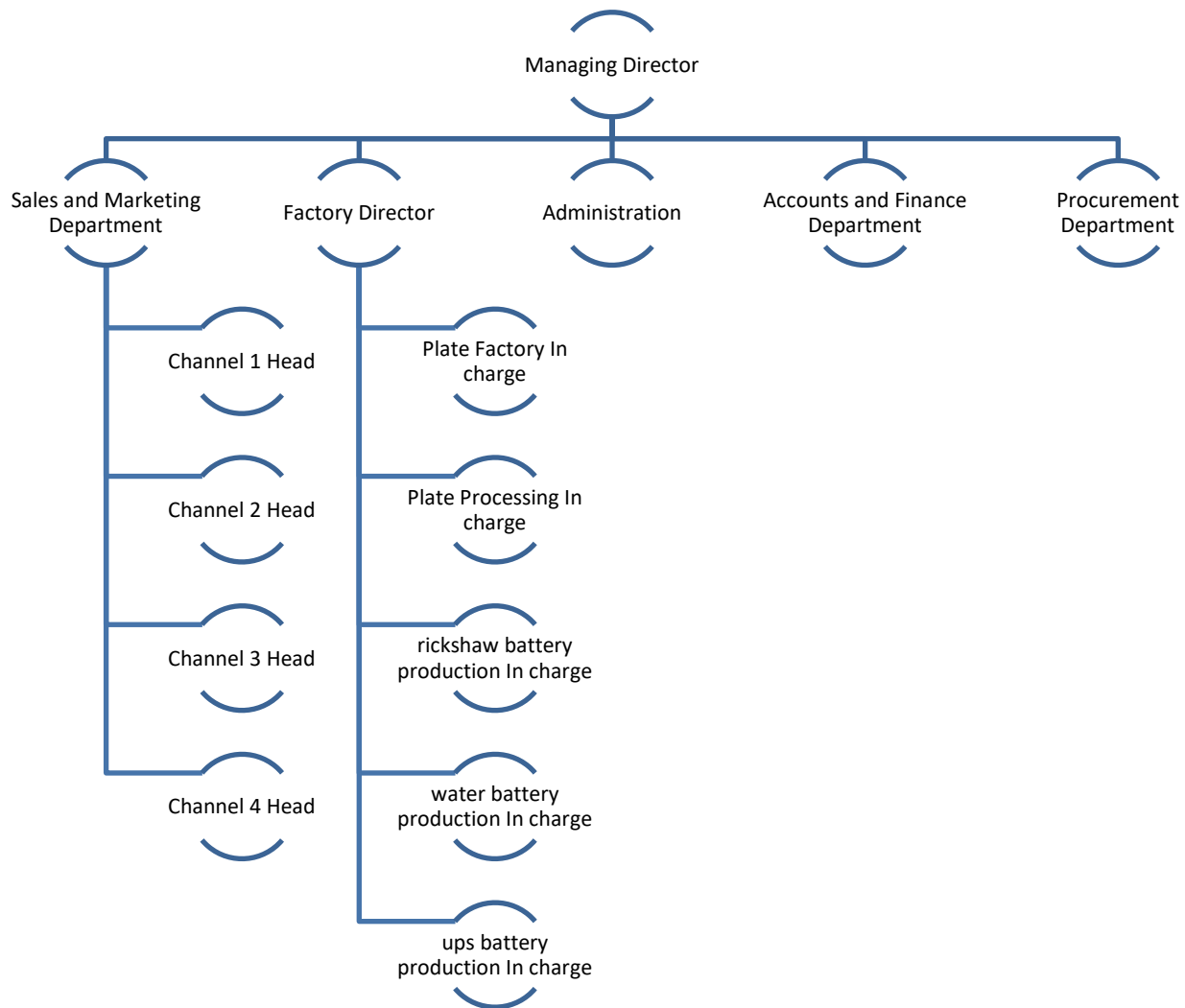


Figure 1: Organogram of Dongjin

Dongjin of Bangladesh has two parts: one factory side, another corporate side. The head of the factory side is the director Mr. Wang. The departments of the factory include plate factory department, plate processing department, rickshaw battery production department, water battery production department, UPS battery department, production quality control department, packaging department and delivery department. Every department is managed through ERP system. Each department has its own department head and under him there are production

officers and workers. And on the corporate side, the finance and Accounting Department, Sales and Marketing Departments are under the Managing Director. The sales and marketing department is divided into four channels. These four channels divide Bangladesh into four regions. Each channel has a channel head and under each channel specific districts of Bangladesh are divided. Each district has a District Representative who interacts one-to-one with the dealers of each district.

Products provided by Dongjin Longevity Industry Limited

The products are provided by Dongjin Longevity Industry Limited includes:

- Dry Battery for Auto rickshaw
- Auto rickshaw motor, motor driver and bearing
- Water battery for Mishuk
- SMF battery for charger fans
- UPS Batteries

Financial ration and health analysis of Dongjin Longevity Industry Limited

A Ratio analysis means comparing different numbers from a company's financial statements such as income statement, balance sheet, and cash flow to get an insight on how well the company is doing. Financial ratios give you an idea of a company's profitability, liquidity, efficiency, and risk. This analysis simplifies big data as ratios give a quick summary instead of looking at hundreds of numbers. It also helps compare performance across years or against competitors. It helps decision-making. Investors, lenders, and managers use ratios to decide if the business is worth investing in, lending to, or if improvements are needed.

In the Appendix- 4, ratios from Dongjin's 2023–2024 Financials were summarized.

1. Profitability Ratios

Gross Profit Margin

Formula: $(\text{Gross Profit} \div \text{Revenue}) \times 100$

Meaning: money left after covering production costs.

Dongjin: Dropped from 36.9% to 31.3% , it means that costs rose faster than sales $\rightarrow$ profit per unit reduced.

Operating Profit Margin

Formula: $(\text{Operating Profit} \div \text{Revenue}) \times 100$

Meaning: profit after paying for operations before interest and tax.

Dongjin: a little increase from 13.9% to 14.8%, which means better cost control outside production.

Net Profit Margin

Formula: $(\text{Net Income} \div \text{Revenue}) \times 100$

Meaning: profit after all expenses and taxes.

Dongjin: Increased from 12.6% to 13.3%, indicates overall efficiency increased.

ROA (Return on Assets)

Formula: $(\text{Net Income} \div \text{Total Assets}) \times 100$

Meaning: how efficiently assets are used to generate profit.

Dongjin: Stable between 7.4% and 7.5%, efficiency stayed the same.

ROE (Return on Equity)

Formula: $(\text{Net Income} \div \text{Shareholders' Equity}) \times 100$

Meaning: Profitability indicator for the owners and shareholders.

Dongjin: between 10.8% and 10.7%, means steady returns for owners.

2. Liquidity Ratios

Current Ratio

Formula: $\text{Current Assets} \div \text{Current Liabilities}$

Meaning: ability of the company to pay short-term debts with short-term assets

Dongjin: reduced from 2.42 to 1.99, so far, safe (>1), but less flexible than before.

Quick Ratio

Formula: $(\text{Current Assets} - \text{Inventory}) \div \text{Current Liabilities}$

Meaning: same as current ratio but excludes inventory.

Dongjin: reduced from 2.14 to 1.58, indicates liquidity tightening.

Cash Ratio

Formula: $\text{Cash} \div \text{Current Liabilities}$

Meaning: Worst-case scenario: can debts be paid only with cash?

Dongjin: Dropped from 0.45 to 0.22, meaning less immediate cash safety.

3. Efficiency Ratios

Asset Turnover

Formula: $\text{Revenue} \div \text{Total Assets}$

Meaning: How well assets generate sales.

Dongjin: Slight drop from 0.59 to 0.57, sales generation per asset slowed.

Receivables Turnover

Formula: $\text{Revenue} \div \text{Accounts Receivable}$

Meaning: How fast customers pay.

Dongjin: Improved from 2.69 to 2.92, collections faster.

Inventory Turnover

Formula: $\text{COGS} \div \text{Inventory}$

Meaning: How fast inventory is sold.

Dongjin: Slowed from 4.72 to 2.85, meaning more stock is sitting unsold.

4. Leverage & Coverage Ratios

Debt Ratio

Formula: $\text{Total Liabilities} \div \text{Total Assets}$

Meaning: How much of assets are financed by debt.

Dongjin: Fell from 0.32 to 0.30, debt usage reduced.

Debt-to-Equity

Formula: $\text{Total Liabilities} \div \text{Equity}$

Meaning: Balance between debt and equity funding.

Dongjin: 0.47 to 0.43, less reliance on debt.

Interest Coverage

Formula: $\text{EBIT} \div \text{Interest Expense}$

Meaning: Ability to pay interest.

Dongjin: Jumped from 13.98 to 178.08, outstanding ability to cover interest in 2024.

5. Cash Flow Ratios

Operating Cash Flow Ratio

Formula: $\text{Operating Cash Flow} \div \text{Current Liabilities}$

Meaning: Can operations alone cover short-term debts?

Dongjin: from 0.32 to 0.27, weak liquidity from cash flow.

Cash Flow to Debt

Formula: $\text{Operating Cash Flow} \div \text{Total Liabilities}$

Meaning: Ability of cash flow to repay total debt.

Dongjin: increased a little from 0.28 to 0.30, but still low.

Ratio analysis indicates that Dongjin has performed well in profitability interest coverage, and reducing debt dependency. To the contrary, Dongjin did poorly in managing liquidity, inventory management, and operating cash flow. It means that the company is still profitable but they have to be careful about their large investments.

Porter's 5 Forces Analysis of Renewable Battery Business for Dongjin Longevity

Industry Limited

Porter's five forces is a very important tool to assess the market condition of an industry. It helps a company to understand their position in the market, their strategic advantages and the things they lack behind. Michael Porter indicated 5 forces to assess the market condition. Dongjin can evaluate the market condition using this Framework before introducing the renewable storage systems.

1st force: The first force is the threat from the new entrants. The potentiality of the renewable battery market can easily attract new entrants. However, the industry poses considerable entry barriers. Firstly, it requires a significant capital investment. The manufacturing of renewable batteries needs large investments for R&D, technology acquisition and production facilities. The infrastructure that Dongjin Battery is already equipped with could offer an advantage over other possible rivals. Secondly, Dongjin has advanced technological batteries like rechargeable and lithium-ion batteries. These types of batteries usually need particular expertise. As Dongjin is an established player in the market, it can motivate the new market players. Thirdly, in this industry market trust and brand loyalty are extremely important. Dongjin has the capacity to sustain its market leadership through the

use of its solid reputation. Lastly, government rules and regulations are very important. It will be challenging to enter the new market due to import/export regulations, environmental regulations and quality certifications. Government is supporting for renewable energy as new businesses can be motivated

2nd force: The 2nd force is the bargaining power of suppliers. The production of renewable batteries is dependent on raw materials like nickel, cobalt, and lithium, which are mostly controlled by a small number of international suppliers. As a result, they can easily control the market dynamics. They have an extensive bargaining power over raw materials. Dongjin needs to build solid relationships with those suppliers so that they can easily get the resources. Cable supply chain is very important to penetrate through the market and perform well in sales.

3rd force: The third force is the bargaining power of buyers. The consumers of the renewable storage market are diverse. Different groups have different bargaining power. These products are price sensitive. Increase in price means decreasing in sales. At the same time, competitors can provide better products with comparatively lower prices. The technology is now open to all over the industry.

4th force: The fourth force is the threat of Substitutes. Renewable energy competes with other alternative sources of energy. The main competitors are nuclear power plants, fuel based small generators, and expansion of main grids. The main point is renewable energy is expensive but long-term payback is better than other alternatives. However, consumers can focus on initial costs rather than the long-term benefits, which can be a great threat to this industry.

5th force: The fifth force is industry rivalry. Companies like Walton, Rahimafrooz, and other new foreign investors are looking into the renewal market in Bangladesh. The market landscape is very competitive due to the potential of the growth.

SWOT Analysis of Renewable Battery Business for Dongjin Longevity Industry Limited

SWOT analysis is an important framework to assess the capability and hindrance of a company to achieve its long-term goal. SWOT analysis is a framework to stand for strength, weakness, opportunities and threat of a company.

Strengths as internal factors: The first strength is strong market presence and brand value. Dongjin is a well-known company in the battery market. People all over the country know this company for autorickshaw batteries and other products. Second, the company has manufacturing skill and technical knowledge for producing energy storage products. It can easily use its available manufacturing plant and human resources for the new product development. Third, Dongjin has strong financial health. Dongjin has the financial capacity to invest in R&D, production facilities and market expansion because to its strong market presence.

Weaknesses as internal factors: Dongjin has a lack of experience in producing lithium-based storage systems. Lead-acid and SMF batteries are Dongjin's areas of expertise, but lithium-ion and other renewable battery technologies have a separate market. It could be harder to compete with established players in the renewable energy market like Walton, Rahimafrooz and foreign brands. Moreover, there is a high initial cost of investment. The production of renewable batteries, mainly those based on lithium, requires the development of infrastructure, R&D and technological advances. Importing raw materials (such as cobalt and lithium) can be expensive, thus the operation costs are rising. Thirdly, there is a low customer awareness and adoption trend in the market. Many customers do not understand the long-term advantages of renewable batteries in Bangladesh. So that it reduces market adoption. Despite long-term benefits, Bangladeshi consumers might feel hesitant to make significant initial investments due to price sensitivity.

Opportunities as external factors: The expanding renewable energy market is a great opportunity of itself. The government of Bangladesh hopes to produce 10% of its electricity from renewable sources. The renewable home system (SHS) market is expanding, with over 6 million units installed, requiring energy storage solutions. Reward and policies of the Government is a great opportunity for this market. The market for renewable batteries is profitable because of tax incentives, government support and low-interest loans for renewable energy projects. Storage battery demand increases because of net billing rules. This market has off-grid and rural electrification potential. Remote areas in Bangladesh lack reliable access to the national grid. This can be a great opportunity to expand the market in those areas. The technological advancements and cost reductions can help produce better quality products with affordable pricing which can attract consumers on a large scale.

Threats as external factors: There is a high competition in the renewable battery market. Existing players such as Rahimafrooz, Walton, and emerging Chinese and Indian manufacturers can offer cheaper products. Moreover, there is a risk of price volatility of raw materials, such as Lithium, cobalt, and nickel. Besides, regulatory and environmental challenges can impact the market.

Dongjin needs to invest in R&D to develop high-tech renewable batteries to succeed in the market. It requires the formation of strategic partnerships with government agencies and NGOs. It will help penetrate the off-grid market. Moreover, the company needs to improve its supply chain management so that it may reduce costs as well as mitigate raw material price fluctuations. Dongjin can endorse learning programs to make consumers informed about the lasting cost benefits of renewable batteries. Dongjin Longevity Industry Limited can position itself as a major company in the Bangladeshi renewable battery industry as well as achieve profitability with the right strategic approach.

PESTEL Analysis of Renewable Battery Business for Dongjin Longevity Industry Limited

Macro environmental elements influence Dongjin Longevity Industry Limited to analyze the economic sustainability of renewable battery products. A PESTEL analysis can highlight the political, economic, social, technological, environmental and legal factors which are impacting Bangladesh's renewable battery industry.

Political factors: Dongjin needs government assistance for renewable energy. The government of Bangladesh encourages people to use renewable batteries through regulations, grants and incentives. On the other hand, the government has an impact on import tariffs and trade policies. Also, free trade agreements can provide economic advantages. But high import taxes on battery raw materials can increase production prices.

Economic factors: Bangladesh's growing GDP and use of energy offers different opportunities for the renewable battery industry. Fluctuations of element prices such as; cobalt and lithium can affect product rate and profits.

Social factors: The market for renewable batteries has been influenced by a growing public interest in renewable power alternatives. This market is dominated by popular local brands like Walton and Rahimafrooz, thus Dongjin needs to compete in the market.

Technological factors: The solid-state and lithium-ion battery innovations increase longevity and efficiency of renewable storage. The worldwide sudden decrease of the price of renewable panels and batteries makes renewable energy more accessible to consumers. So, it is necessary to use IoT and AI-powered energy storage systems which can increase productivity and attract tech-savvy clients.

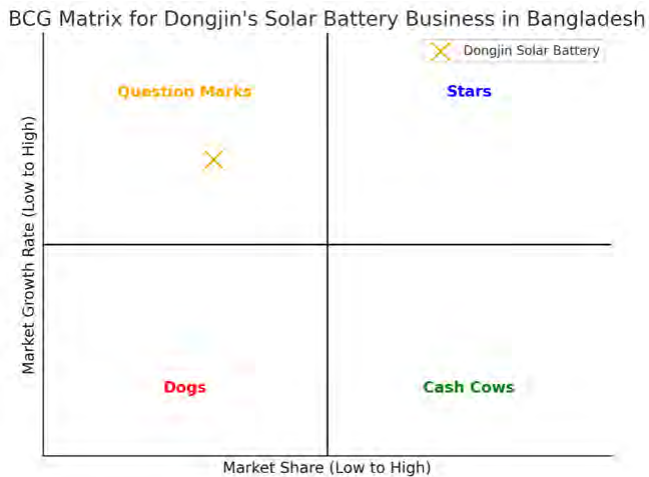
Environmental factors: Bangladesh is facing climate change and it has increased demand for low-carbon energy sources like renewable batteries. To minimize environmental risks, used batteries need to be discarded and recycled properly. The use of sustainable renewable battery storage for backup power is encouraged due to regular power disruptions.

Legal factors: To enter in a market it requires compliance with foreign certifications and the Bangladesh Standards and Testing Institution (BSTI). When producing new products, Dongjin should make sure that it meets with international patents on battery technology.

In Bangladesh's growing renewable energy sector, Dongjin Longevity Industry Limited has major potential for the market. Furthermore, it is necessary to maintain laws and regulations, cost control, raise awareness among customers and using new technologies for sustainability. In this market, Dongjin can become an important competitor for renewable batteries.

BCG Matrix Analysis for Renewable Battery Business of Dongjin Longevity Industry

Limited in Bangladesh



The Boston Consulting Group (BCG) Matrix is an advertising strategy that makes use of comparative market penetration and market growth rate to evaluate a company's product portfolio. Dongjin Battery can classify its position in the BCG matrix for its renewable battery industry in Bangladesh as follows:

BCG Matrix for Dongjin's Renewable Battery Business

1. Stars (High Market Growth, High Market Share): This kind of product is the best seller in a company.
2. Question Marks (High Market Growth, Low Market Share): This kind of product has good potential but the market share of that company is not great.
3. Cash Cows (Low Market Growth, High Market Share): this kind of products are stable products which has constant market share and revenue flow.
4. Dogs (Low Market Growth, Low Market Share): this kind of product is under performer in a market.

Explanation of the BCG Matrix for Dongjin's Renewable Battery Business:

The BCG matrix shows that renewable storage systems will be a question mark for Dongjin. To make it a star product the company needs to improve its product quality focus on sales and marketing and offer best quality. At the end, Dongjin should take some initiatives for customer awareness and brand recognition. In Bangladesh's growing renewable energy sector, Dongjin's renewable battery sector has an opportunity to become a "Star" with high income and long-term profitability if it works out well.

Chapter 3: A Financial Evaluation of Introducing Renewable Lithium Battery Storage System in Bangladeshi Market

Background of the Project

The demand for solar energy storage systems is increasing rapidly as Bangladesh is looking for sustainable energy sources. The recent development of solar batteries provides manufacturing of batteries with a profitable opportunity. Moreover, the government is focusing on increasing renewable energy, particularly through solar household energy storage systems (SHESS), commercial solar projects and industrial energy backup solutions. Dongjin Battery has become an important participant in the sealed maintenance-free (SMF) Valve Regulated Lead Acid (VRLA) battery sector and wants to expand its investment portfolio. The company's long-term goal is to utilize the industrial knowledge, distribution network with financial stability to enter into the expanding renewable energy sector. However, it is necessary to evaluate the profitability, investment sustainability and market challenges related to solar batteries to enter in Bangladeshi market

This organization wants to conduct a financial evaluation before launching the solar batteries by analyzing significant factors like initial investment, production costs, pricing strategy (revenue stream), capital structure (WACC analysis), net present value (NPV), internal rate of return (IRR), profitability and future market boom (growth potential). Additionally, external factors such as government incentives (tax cut), competition, supply chain constraints, and regulatory requirements will be considered. The findings will help Dongjin make informed investment decisions, mitigate risks, and develop an optimal market entry strategy for the solar battery sector in Bangladesh.

Objective of the Analysis

In chapter 2, I have assessed the existing activities and analyzed the existing financial health of Dongjin Longevity Industry Limited, we identified the opportunity, threat, strength and weakness of the business for building a solid strategic action to overcome the weakness from the activities. One way to improve it, is to diversify the business portfolio by taking new project utilizing the existing resource or with minimum additional resource and the other is to strengthen the existing opportunity and strength to become undisputed leader in the market. As a finance intern at Dongjin, the objective of this analysis is to evaluate the financial feasibility of introducing solar battery products in the Bangladeshi market. This involves assessing key financial metrics, including initial investment, production costs, pricing strategy, NPV, profitability, and IRR. By conducting this financial evaluation, the goal is to provide data-driven insights that will help Dongjin make informed investment decisions and develop a sustainable market entry strategy for its solar battery business in Bangladesh.

Methodology of the Financial Viability Analysis

The methodology of the Financial Viability Analysis is to make reasonable assumptions based on previous years data, mostly, compounded annual growth rate (CAGR) of revenue. Based on the growth rate of revenue, I will forecast future revenues mainly, sales volume growth rate and price growth rate. Additionally, based on cost of sales vs revenue ratio, I will forecast future cost of sales. Methodically, I will forecast cost of goods sold, operating expenses: sales expenses, admin expenses, R&D expenses in term of revenue. I will break down the cost of goods sold (COGS) for accurate costing and pricing of the products. Initial capital investment will be assessed thoroughly for budget planning, and to find a reasonable number for that. Furthermore, I will follow 8-year straight-line depreciation method for depreciable assets. As a result, I will find the total cost of sales. Then, I will find a reasonable sustaining capex for future capital demand throughout the project period. Then, I will calculate working capital percentage of revenue. The effective tax rate and VAT will be the ones set by national bureau of revenue (NBR) and will affect the cashflow accordingly. Next step is the calculation of free cash flow (FCF).

Consequently, I will find the weighted average cost of capital (WACC) of the company for this investment. In WACC estimation, global lithium market trend will be considered. The risk-free rate will be according to the Bangladeshi financial market and country risk premium. The cost of debt will follow corporate tax rate. Afterwards, plugging all these numbers into the NPV and internal rate of return (IRR) formula will yield the NPV and IRR of the project. The values will help taking financially informed decision on whether to go for the project or not. NPV and IRR are some of the best parameters to determine the viability of a future project as they are calculated considering all revenue, deducting all the operational and financial expenses, it also considers WACC of the financial part and consider the present value of all the future cash flow with time value of money by discounting cash flow. Lastly, I will present a comprehensive financial decision analysis for the proposed lithium battery project in Bangladesh, based on the outcomes of the analysis. In the following paragraphs, I will discuss each of the steps in details.

Analysis of Historical Financial Report

The historical financial reports [see Appendix- 1, 2, 3] (Balance Sheet, Income Statement, and Cash Flow Statement) have been highly relevant while preparing the financial model for the lithium battery project. They have provided the baseline financial health and assumptions for projections. In the balance sheet, equity base & leverage have helped determining the company's capital structure (debt vs equity), which has been fed into the WACC (discount rate) used for NPV. The company has not been over-leveraged and still has debt capacity. Finance expenses have dropped massively from BDT 24,200,000 in 2023 to BDT 2,300,000 in 2024. Fixed assets (PPE) have provided reference for capex scaling (how much investment is typical for a plant/factory setup). Fixed assets have increased by 44% from BDT 670,477,851.95 in year 2023 to BDT 964,779,642.58 in year 2024, which indicates that the company has been spending actively on new plant and equipment for expansion. Working capital (current assets – current liabilities) has been used to estimate working capital % of Revenue (20% in my model) for future projections. In the income statement part, revenue has grown by 15.83% from year 2023 to year 2024, which has set a benchmark for growth rates and realistic sales assumptions for lithium batteries. Additionally, net profit has increased by 22%. Profits have been growing and margins have been improving. That

is a good sign for sustaining a new project. Historical margin levels have been used to justify the COGS ratio (65%) in the project model. Historical ratios have guided the assumptions: Selling % of revenue is 4%, Admin % of revenue is 3%, R&D % of revenue is 1%. Cashflow statement has showed that core operations have been cash positive and growing, yet high investment outflows has been eroding liquidity. Still, around 365,000,000 BDT cash buffer has been retained. Cashflow statement has helped to find capex spending which eventually has been used to justify the Initial capex (BDT 800,000,000) and ongoing Sustaining capex % of Revenue (10%). The sum of retained earnings and cash has been BDT 2,098,913,879.61, which is 262% of capex. It has also helped in free cash flow (FCF) calculations in the lithium model as well as guided me assumptions about the timing of cash inflows/outflows in the projection. Based on its financial strength, Dongjin can realistically aim for the 800M BDT lithium battery project. On top of that, the best path for the company is to use a 50–50 mix of internal funds and external financing.

Assumptions

The project horizon is 5 years (2026-2030). [See Appendix- 5] The products are the Essential Home Package (3.5 kW), the Comfort Package (5.5 kW), the Whole-Home & Small-Business Package (11 kW). Sales volume growth rate assumed at 25%. The renewable energy market is still unexplored by different manufactures. Dongjin can capitalize this opportunity to expand its market share rapidly. On top of that, the lithium-ion battery market in Bangladesh is projected to grow from USD 297.88 million in 2025 to USD 435.06 million by 2030 (Mordor Intelligence, 2025). While sales are expected to grow, the price of the technology is projected to decline. The cost of lithium-ion batteries and solar PV components has been on a long-term downward trend. The cost of a lithium-ion battery pack fell significantly from 2019 to 2022, and this trend is expected to continue. Local competition and global supply chain efficiencies will continue to put downward pressure on prices. Thus, I assumed price growth rate to be -1%. This is a crucial factor in the renewable energy sector. Then, COGS percent of Revenue is assumed at 65%. It is justifiable for a lithium battery project in Bangladesh targeting renewable, industrial, or UPS applications. In my assumptions, COGS break down is: COGS Raw Material share 80%, COGS Labor share 12%, COGS Utilities share and COGS Maintenance share 4%. Selling percent of Revenue is 4%, which is

justifiable as the company already has a mature sales and distribution channel. However, it has to invest on selling for early market entry & branding if as the plan is to offer long warranty (5–10 years), penetrate market directly, and build strong brand recognition against imports. Administrative cost percent of revenue of 3% is realistic, efficient, and lean for a medium-scale factory. R&D percent of revenue is 1%, which is slightly low unless it plans deep tech development. Sustaining capex percent of Revenue is assumed at 10%. After the initial capex (BDT 800,000,000), the factory will still need ongoing sustaining capex to replace and/or upgrade machinery, expand production line capacity, meet new safety and compliance standards, maintain competitiveness. Sustaining capex of 10% of Revenue means I am assuming a modest, ongoing reinvestment strategy, which is realistic for a Bangladesh-based lithium pack line. Companies in high-growth sectors, such as renewable lithium battery market, typically spend 10% to 20% of revenue or more on capex during periods of rapid expansion. On top of that, to achieve a 20% annual sales growth rate, a manufacturing business must increase its production capacity by the same amount. This requires significant investment in new machinery and potentially facility expansion every year. Depreciation Years is 8. 7–8 years depreciation is common for renewable battery pack lines in Asia. Hence, an 8-year depreciation period is reasonable for a lithium battery pack line in Bangladesh, which balance among physical life of equipment (roughly, 7–10 years), tech obsolescence risk, and tax/accounting alignment.

Working Capital percent of Revenue is 20%. It means that for every BDT 100 in sales, Dongjin must tie up BDT 20 in cash to keep operations going. 20% is normal due to long production cycles and warranty reserves. A 20% increase in sales means a 20% increase in production inputs: importing cells, BMS chips, and raw materials. It means the company needs 2–3 months of stock due to LC lead times and port delays. Large clients such as, utilities, EPCs, government often demand 30–90 days credit term. Thus, working capital of 20% is reasonable and realistic for a Bangladeshi lithium battery pack line targeting renewable storage markets.

Estimation of Initial Investment (Initial Capital Expenditure)

In my financial model [see Appendix- 6], the initial investment is BDT 800,000,000. This budget fits a small to medium-scale pilot production line setup, which is realistic for renewable storage applications e.g., household, commercial entities. My estimate is that if the focus is renewable integration, UPS, or industrial backup then this budget is reasonable. In this budget, Factory Line & Production Equipment are BDT 360,000,000 which is 45% of total capex. The factory line is always the biggest chunk because battery manufacturing requires high precision automation. These include automated assembly line, electrode coating, calendaring, cell assembly, formation, and pack line. Testing & Quality Assurance is BDT 120,000,000, which is 15% of total capex. Testing & QA is critical since lithium batteries for renewable applications must meet IEC, UN38.3, and BSTI quality & safety standards. These include Safety test equipment (short-circuit, thermal abuse, nail penetration, crush), cycle-life testers, environmental chambers. Battery Management System (BMS) Development & Tooling budget is BDT 96,000,000, which is 12% of initial investment. BMS & Tooling ensures competitive edge e.g., localization and intellectual property. These include hardware, firmware development, testing rigs, diagnostic tools, licensing software. Other categories are Tooling & Molds (BDT 64,000,000 (8% of capex)), R&D Lab & Pilot Line (BDT 56,000,000 (7% of capex)), Utilities & Infrastructure Setup (BDT 40,000,000 (5% of capex)), Training & Technology Transfer (BDT 24,000,000 (3% of capex)), Contingency Reserve (BDT 40,000,000 (5% of capex)). A contingency buffer is essential in Bangladesh due to import dependency (currency fluctuations, LC issues).

Calculation of Weighted-Average Cost of Capital (WACC)

WACC is the discount rate used to find the present value of future cash flows. I have created a WACC analysis model tailored for lithium battery project in the Bangladeshi renewable market. I will assume a capital structure of 50% debt and 50% equity [see Appendix- 7], which is a common and balanced approach for a new venture. This includes risk-free rate (Bangladesh 10-year government treasury bond) of 9%. Market risk premium is conceived as 8%. For an emerging economy like Bangladesh, the market risk premium is higher than in developed markets, which may justify the relatively higher value. Beta (β) is assumed to be 1.3 for lithium battery sector.

For a new manufacturing business in a developing market like Bangladesh, a Beta (β) of 1.3 is a reasonable estimate, reflecting slightly higher-than-market risk. Commercial loan interest rates for manufacturing are around 15% in Bangladesh. A non-publicly traded manufacturing company in Bangladesh is subject to a corporate tax rate. We will use a rate of 27.5%. Perpetual growth rate (g) is assumed to be 5% reflecting the potentiality of renewable sector and alignment with Bangladesh's long-term GDP growth forecasts. The calculated of WACC of the project is 15.14%.

Calculation of Revenue and Costs

Given the initial BDT 800,000,000 investment, I can assume a more efficient and optimized production model as Dongjin can use its existing resources [see Appendix- 8]. This means the plant could achieve higher production volumes across all three product lines. In year 2026, production outputs are perceived to be: Essential Home Package (3.5 kW): 400 units, Comfort Package (5.5 kW): 150 units, Whole-Home / Small-Business Package (11 kW): 50 units. This total of 600 units is a more optimistic, yet still plausible, target for a business that successfully optimizes its operations and market strategy in its first year. The market standard prices for the three products are BDT 182,500; 305,000; 600,000; respectively. On the other hand, the total annual COGS determined to be BDT 96,687,500, whereas, the total annual operating expense (OpEx) determined to be BDT 11,900,000. Depreciation expenses are calculated as 85% of the investment for depreciable fixed assets like machinery, buildings, and equipment. Thus, the amount of depreciable fixed assets is (BDT 800,000,000 $\times$ 0.85) BDT 680,000,000. Salvage Value is calculated to be (BDT 680,000,000 $\times$ 0.10) BDT 68,000,000. Therefore, annual depreciation is (initial cost of asset – salvage value)/useful life i.e., (BDT 680,000,000–BDT 68,000,000)/8 years, or BDT 76,500,000. The value of the total costs consisting of COGS, OpEx, and depreciation expense in the first year has been estimated to be BDT 185,087,500.

Calculation of Free Cash Flow

Free Cash Flow (FCF) is defined as the excess cash a company generates from its core operations after accounting for all the money it must spend to maintain and expand its assets. Fundamentally, it is the cash a business has

spared that can be used freely for flexible purposes e.g., paying dividends, investing in new ventures, paying debts. Free cash flow is the remaining amount after subtracting net working capital and capital expenditure from net operating income. In the first year, free cash flow (FCF) is a big negative number as the initial investment was accounted for capex. The number is calculated to be BDT -759,837,500. In the following 4 years, FCF amounts have been calculated to be BDT 24,227,656; BDT 29,981,725; BDT 37,102,384; BDT 41,049,643, respectively [see Appendix- 10].

Finding Net Present Value (NPV) and Internal Rate of Return (IRR)

Net present value (NPV) is the value of an investment in today's money. It takes all the cash flows a project is likely to generate (both income and expenses) and discounts them back to their current value, by weighted average cost of capital (WACC). In other words, NPV is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. A positive NPV implies that the project is expected to earn more than the cost of capital whereas, a negative NPV indicates that the project will likely eat up initial investment. In the calculation of NPV, I discounted all the FCFs using WACC as the discount rate. In my financial model, WACC was estimated to be 15.14%. After discounting all the FCFs, I calculated the terminal value of FCF for the period beyond 5 years. It captures the value of all future cash flows beyond the explicit forecast horizon. I used Gordon Growth method. I optimistically assumed long-term growth rate (g) to be 5% for future renewable market potential. The method a terminal value of BDT 425,175,094. Then, I discounted it as fifth year cashflow. After adding all the present values of the future cash flows, the net present value of the project became BDT -370,492,848 [see Appendix- 10].

Internal rate of return (IRR) is the actual rate of return a project is expected to earn. It is the exclusive rate of interest that makes the NPV of the project exactly zero. Using Excel formula, the IRR is found to be -6.7%.

Findings of the Financial Viability Analysis

All the assumptions were based on the historical financial report and justified by real world implication. The outcome of the financial analysis not optimistic. The net present value of the project is BDT -370,492,848 and

the internal rate of return (IRR) is -6.7%. This result indicates that, based on these realistic financial assumptions for the Bangladeshi market, the project would not generate enough cash flow to justify the initial BDT 800 million investment within the 5-year horizon. The primary reason is that the projected revenue and subsequent cash flows are not high enough to cover the large initial investment and ongoing operational costs, especially in the early years. Even if the investment of BDT 800 million is substantial for many businesses, but it is a very modest sum for a high-tech manufacturing plant such as, renewable lithium storage system. There are several main cost drivers that limit capacity at this investment level. Firstly, all the tools and machineries are expensive. A large portion of the capital went towards specialized machinery for cell sorting, module welding, and battery management system (BMS) installation. The complete, automated assembly line accounted for 80% initial investment (BDT 640,000,000). Secondly, development of facility and infrastructure such as, a clean, climate-controlled environment with sophisticated fire suppression systems and high-voltage electrical infrastructure required additional significant fixed costs. Thirdly, a substantial amount of capital was needed for the initial purchase of raw materials, particularly the lithium cells, which are the most expensive component of the finished battery pack. On the other hand, the finished goods are very compact high-end products. The output units are very limited. Therefore, such a small-scale operation would not benefit from the economies of scale. While BDT 800m is a significant investment for a business in Bangladesh, it is a very small budget in the context of global high-tech manufacturing. Establishing a single, basic assembly line for electronics requires a large portion of this capital. A true high-volume lithium-ion battery or inverter factory requires billions of dollars in investment for automated gigafactories. This factory is designed for a niche market and a small production run, not for mass production. With an annual operational budget of approximately BDT 96.7 million, the factory can only afford to purchase enough raw materials to produce a limited number of high-value products, which was previously calculated to be around 600 units in an optimistic scenario. This high-cost structure acts as a natural ceiling on the total number of packages that can be produced, regardless of sales demand. Based on the analysis, Dongjin should not invest in this new project.

Recommendations

If Dongjin Longevity Industry Limited still wants to go for the project, they can consider following recommendations. First one is increasing future cash flows. This is the most impactful way to boost the NPV. The company can boost its revenue growth beyond projections. The previous model assumed a 24% effective annual revenue growth rate. This can be increased through aggressive market penetration, strategic partnerships, enhanced sales and marketing. Reducing values of COGS & OPEX can also increase future cash flows. The previous model used a 65% COGS and 8% OPEX as a percentage of revenue. These can be lowered by optimizing the supply chain, improving manufacturing efficiency and betterment of operations. Secondly, focus on reducing initial investment. Reducing it can significantly improve the NPV. This can be achieved through step-by-step investment, leasing expensive equipment, and going for less expensive technologies. Thirdly, the company should focus on lower the Cost of Capital (WACC). A lower WACC increases the present value of all future cash flows and can be achieved through government incentives, securing subsidized financing with lower interest. By instigating a combination of these recommendations, Dongjin can improve its financial model and achieve a positive NPV, making the project a viable and attractive investment.

Appendices

Appendix-1

Balance Sheet (2023-2024)

Dongjin Longevity Industry Limited

	Item	31-Dec-23	31-Dec-24
Assets (BDT)	Monetary capital	550,520,068.68	416,407,854.65
	Trading financial assets	890,810,969.78	1,122,477,301.25
	Notes receivable	3,224,408.72	17,633,346.77
	Accounts receivable	899,047,882.51	961,709,882.04
	Financing of receivables	49,297,205.76	21,674,650.06
	Prepayments	17,872,829.55	26,922,944.92
	Other receivables	11,740,804.31	13,036,835.21
	Inventory	324,332,472.87	675,989,398.35
	Held-for-sale assets	20,312,777.89	
	Other current assets	21,364,173.55	59,056,169.48
	Total current assets	2,789,198,593.62	3,314,907,932.73
	Long-term equity investment	74,141,622.68	1,467,622.49
	Other equity instrument investment	51,900,000.00	81,900,000.00
	Investment real estate	83,158,454.28	80,112,219.07
	Fixed assets	670,477,851.95	964,779,642.58
	Construction in progress	196,011,552.04	119,094,458.97
	Right-of-use asset		20,506,956.71
	Intangible assets	159,970,607.64	229,951,591.65
	Goodwill	481,726.20	5,147,637.34
	Long-term unamortized expenses	10,494,680.75	14,509,568.71

	Deferred income tax assets	74,213,769.94	81,982,296.26
	Other non-current assets	23,818,299.28	36,192,648.87
	Total non-current assets	1,345,028,564.76	1,633,644,578.65
	Total assets	4,134,227,158.38	4,950,552,111.38
Liabilities & Equity (BDT)	Short-term borrowings	30,000,000.00	31,891,786.51
	Notes payable	399,211,481.31	493,193,931.35
	Accounts payable	485,917,041.04	854,398,317.90
	Advance receipt	243,997.58	243,997.58
	Contract liabilities	69,203,254.88	108,104,037.45
	Staff remuneration payable	65,547,964.53	80,018,563.35
	Taxes payable	45,941,566.83	53,091,936.19
	Other payables	51,592,267.22	34,980,763.22
	Non-current liabilities due within 1 year		4,974,849.47
	Other current liabilities	4,882,257.12	6,927,755.82
	Total current liabilities	1,152,539,830.51	1,667,825,938.84
	Lease liabilities		15,556,531.18
	Long-term accounts payable	105,000,000.00	105,000,000.00
	Expected liabilities	18,984,720.00	20,527,820.00
	Deferred income	44,137,022.30	37,072,033.33
	Deferred income tax liabilities	527,815.65	1,680,368.30
	Total non-current liabilities	168,649,557.95	179,836,752.81
	Total liabilities	1,321,189,388.46	1,847,662,691.65
	Paid in capital (or share capital)	582,445,394.00	582,445,394.00
	Additional paid-in capital	503,422,270.01	503,422,270.01
	Minus: treasury stock	1,998,699.00	1,998,699.00
	Other comprehensive income	126,992.89	124,395.88

	Surplus reserves	213,286,143.80	244,220,151.36
	Undistributed profits	1,508,328,722.80	1,734,150,192.17
	Total shareholders' equity attributable to the parent company	2,805,610,823.90	3,062,363,704.42
	Minority equity	74,266,946.02	40,526,115.31
	Total shareholders' equity	2,813,037,769.92	3,102,889,819.73
	Total liabilities and shareholders' equity	4,134,227,158.38	4,950,552,511.38

Appendix-2

Profit and Loss Statement (2023-2024)

Dongjin Longevity Industry Limited

Item	2023	2024
Total operating revenue	2,422,548,801.93	2,805,919,771.70
Total operating costs	2,082,707,522.31	2,450,921,114.64
Operating costs	1,529,849,287.91	1,927,463,302.56
Taxes and surcharges	30,582,541.42	39,528,476.15
Selling expenses	272,478,300.63	238,719,937.06
Administrative expenses	74,846,331.57	88,912,900.31
R&D expenses	155,441,717.71	153,595,673.05
Finance expenses	24,191,342.99	2,332,435.51
Interest expenses	3,180,111.12	2,685,846.98
Interest income	12,784,210.00	7,555,513.96
Other income	29,332,480.26	26,104,954.17
Investment income	23,435,000.80	26,038,667.82
Operating profit	338,146,285.71	415,365,010.96

Non-operating revenue	639,816.11	258,520.89
Non-operating expenses	4,291,427.43	2,785,579.92
Total profit	334,474,834.40	412,837,951.93
Income tax expenses	30,369,217.40	40,466,570.15
Net profit	304,105,620.07	372,371,381.78
Net profit attributable to shareholders	303,102,677.97	373,200,496.33
Profits/losses of minority shareholders	1,002,942.03	(829,114.55)
Other comprehensive income	(26,054.74)	(2,597.01)
Total comprehensive income	304,079,565.26	372,368,784.77
Basic earnings per share	0.52	0.64
Diluted earnings per share	0.52	0.64

Appendix-3

Cashflow Statement (2023-2024)

Dongjin Longevity Industry Limited

Item	2023	2024
Cash received from sales/services	2,492,968,853.39	2,839,726,267.67
Tax refunds received	61,542,979.65	59,515,645.17
Other cash from operations	86,915,233.45	83,565,160.36
Subtotal inflows from operations	2,641,427,066.49	2,982,807,073.20
Cash paid for goods/services	1,532,707,064.27	1,765,341,879.11
Cash paid to employees	372,584,147.56	402,442,426.41
Taxes paid	115,766,780.15	111,359,095.67
Other cash outflows from operations	245,956,015.55	253,223,846.66
Subtotal outflows from operations	2,267,014,007.53	2,532,367,247.85

Net cash from operating activities	374,413,058.96	450,439,825.35
Cash from withdrawal of investments	2,019,800,122.62	2,579,579,274.45
Cash return from investments	27,732,097.01	26,350,675.54
Net cash from fixed asset disposal	13,748,920.00	119,435.40
Subtotal inflows from investing	2,061,281,139.63	2,606,049,385.39
Cash paid for asset acquisition	214,368,481.71	190,900,562.23
Cash paid for investments	2,283,250,000.00	2,841,411,055.55
Net cash for acquiring subsidiaries	1,400,000.00	67,002,648.08
Other investing cash payments	-	1,325,030.10
Subtotal outflows from investing	2,499,018,481.71	3,100,639,295.96
Net cash from investing activities	(437,737,342.08)	(494,589,910.57)
Cash from borrowings	30,000,000.00	34,847,768.08
Other financing inflows	78,969.00	9,899,357.20
Subtotal of cashflow from financial activities	30,078,969.00	44,747,125.28
Repayment of borrowings	-	33,061,768.08
Interest/dividend payments	119,090,546.76	117,977,730.14
Other financing outflows	140,603.60	6,008,136.60
Subtotal outflows from financing	119,231,150.36	157,047,634.82
Net cash from financing activities	(89,152,181.36)	(112,300,509.54)
Effect of forex rate changes	(1,690,292.98)	(2,228,661.59)
Net increase in cash	(169,383,757.46)	(158,679,256.35)
Opening cash balance	692,826,701.25	523,442,943.79
Closing cash balance	523,442,943.79	364,763,687.44

Appendix- 4

Title: Ratio analysis of Dongjin Longevity Industry Limited

Ratio	Formula	Numerator (2023)	Denominator (2023)	Value (2023)	Numerator (2024)	Denominator (2024)	Value (2024)
Gross Profit Margin	(Revenue - Operating Costs) / Revenue	892,699,514	2,422,548,802	36.85%	878,456,469	2,805,919,772	31.31%
Operating Profit Margin	Operating Profit / Revenue	338,146,286	2,422,548,802	13.96%	415,365,011	2,805,919,772	14.80%
Net Profit Margin	Net Profit / Revenue	304,105,620	2,422,548,802	12.55%	372,371,382	2,805,919,772	13.27%
ROA (Return on Assets)	Net Profit / Total Assets	304,105,620	4,134,227,158	7.36%	372,371,382	4,950,552,111	7.52%
ROE (Return on Equity)	Net Profit / Shareholders' Equity	304,105,620	2,813,037,770	10.81%	372,371,382	3,062,380,420	12.16%
Current Ratio	Current Assets / Current Liabilities	2,789,198,594	1,152,539,831	242.00%	3,314,907,933	1,667,259,389	198.82%
Quick Ratio	(Current Assets - Inventory) / Current Liabilities	2,464,866,121	1,152,539,831	213.86%	2,638,918,534	1,667,259,389	158.28%
Cash Ratio	Cash / Current Liabilities	550,520,069	1,152,539,831	47.77%	416,407,855	1,667,259,389	24.98%
Asset Turnover	Revenue / Total Assets	2,422,548,802	4,134,227,158	58.60%	2,805,919,772	4,950,552,111	56.68%
Receivables Turnover	Revenue / Accounts Receivable	2,422,548,802	899,047,883	269.46%	2,805,919,772	961,709,882	291.76%

Inventory Turnover	Operating Costs / Inventory	1,529,849,288	324,332,473	471.69%	1,927,463,303	675,989,398	285.13%
Debt Ratio	Total Liabilities / Total Assets	1,321,539,838	4,134,227,158	31.97%	1,487,662,663	4,950,552,111	30.05%
Debt-to-Equity	Total Liabilities / Shareholders' Equity	1,321,539,838	2,813,037,770	46.98%	1,487,662,663	3,062,380,420	48.58%
Interest Coverage	EBIT / Interest Expense	338,146,286	24,191,343	1397%	415,365,011	2,332,436	17808%
Operating Cash Flow Ratio	Operating Cash Flow / Current Liabilities	374,413,059	1,152,539,831	32.49%	450,439,825	1,667,259,389	27.02%
Cash Flow to Debt	Operating Cash Flow / Total Debt	374,413,059	1,321,539,838	28.33%	450,439,825	1,487,662,663	30.28%

Appendix- 5

Title: Assumptions for the financial modelling

Parameter	Value
Currency	BDT
Project Horizon Years	5
First Year	2025
Sales Volume Growth Rate	25.00%
Price Growth Rate	-1.00%
COGS percent of Revenue	65.00%
Selling percent of Revenue	4.00%
Administrative cost percent of Revenue	3.00%

R&D percent of Revenue	1.00%
COGS Raw Material share	80.00%
COGS Labor share	12.00%
COGS Utilities share	4.00%
COGS Maintenance share	4.00%
Initial CapEx BDT	800,000,000
Sustaining CapEx percent of Revenue	10%
Depreciation Years	8
Working Capital percent of Revenue	20.00%
Tax Rate	27.50%
Discount Rate WACC	15.14%

Appendix- 6

Title: Initial Investment Budget

Category	% of Total	Amount (BDT)
Factory Line & Production Equipment	45%	360,000,000
Testing & Quality Assurance	15%	120,000,000
Battery Management System (BMS) Development & Tooling	12%	96,000,000
Tooling & Molds	8%	64,000,000
R&D Lab & Pilot Line	7%	56,000,000
Utilities & Infrastructure Setup	5%	40,000,000
Training & Technology Transfer	3%	24,000,000
Contingency Reserve	5%	40,000,000
Total	100%	800,000,000

Appendix- 7

Title: WACC Analysis

Parameter	Value	Notes
Risk-Free Rate (Rf)	9.00%	10Y Bangladesh Govt Bond
Market Risk Premium (Rm - Rf)	8.00%	Global Renewable Equity Premium
Beta (β)	1.3	Lithium battery sector
Cost of Equity (Re)	19.40%	CAPM
Cost of Debt (Pre-tax)	15.00%	Industrial loan rates
Tax Rate	27.50%	Corporate Tax Bangladesh
Cost of Debt (After-tax)	10.88%	Adjusted for tax shield
Weight of Equity (We)	50%	Assumed 50:50 structure
Weight of Debt (Wd)	50%	Assumed 50:50 structure
WACC	15.14%	Weighted Average Cost of Capital

Appendix- 8

Title: Revenue Analysis

Year	Base Saled Growth Rate =		25.00%	Price Growth Rate =		-1.00%	Revenue (BDT)
	The Essential Home Package (3.5 kW)	Price per Unit (BDT)	The Comfort Package (5.5 kW)	Price per Unit (BDT)	The Whole-Home / Small-Business Package (11 kW)	Price per Unit (BDT)	
2026	400	182,500	150	305,000	50	600,000	148,750,000
2027	500	180,675	188	301,950	63	594,000	184,078,125
2028	625	178,868	234	298,931	78	588,060	227,796,680
2029	781	177,080	293	295,941	98	582,179	281,898,391
2030	977	175,309	366	292,982	122	576,358	348,849,259

Appendix- 9

Title: Cost Analysis

Year	COGS (Raw Materials+ Labor+ Utilities+ Maintenance)	Total OpEx (Selling+ Admin+ R&D)	Depreciation (straight-line 8 years)	Total Costs (COGS+ OpEx+ Depr)
2026	96,687,500	11,900,000	76,500,000	185,087,500
2027	119,650,781	14,726,250	76,500,000	210,877,031
2028	148,067,842	18,223,734	76,500,000	242,791,576
2029	183,233,954	22,551,871	76,500,000	282,285,826
2030	226,752,018	27,907,941	76,500,000	331,159,959

Appendix- 10

Title: NPV and IRR analysis

Year	2026	2027	2028	2029	2030	Terminal Value
Revenue	148,750,000	184,078,125	227,796,680	281,898,391	348,849,259	
Total Costs	185,087,500	210,877,031	242,791,576	282,285,826	331,159,959	
EBIT	(36,337,500)	(26,798,906)	(14,994,896)	(387,434)	17,689,300	
Taxes (27.5%)	-	-	-	-	4,864,557	
Net Income	(36,337,500)	(26,798,906)	(14,994,896)	(387,434)	12,824,742	
Depreciation	76,500,000	76,500,000	76,500,000	76,500,000	76,500,000	

CapEx	800,000,000	18,407,813	22,779,668	28,189,839	34,884,926	
FCF	(759,837,500)	24,227,656	29,981,725	37,102,384	41,049,643	425,175,094
PV	(659,939,203)	18,275,860	19,642,928	21,112,256	20,287,354	210,127,958

NPV	(370,492,848)
IRR	-6.70%

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