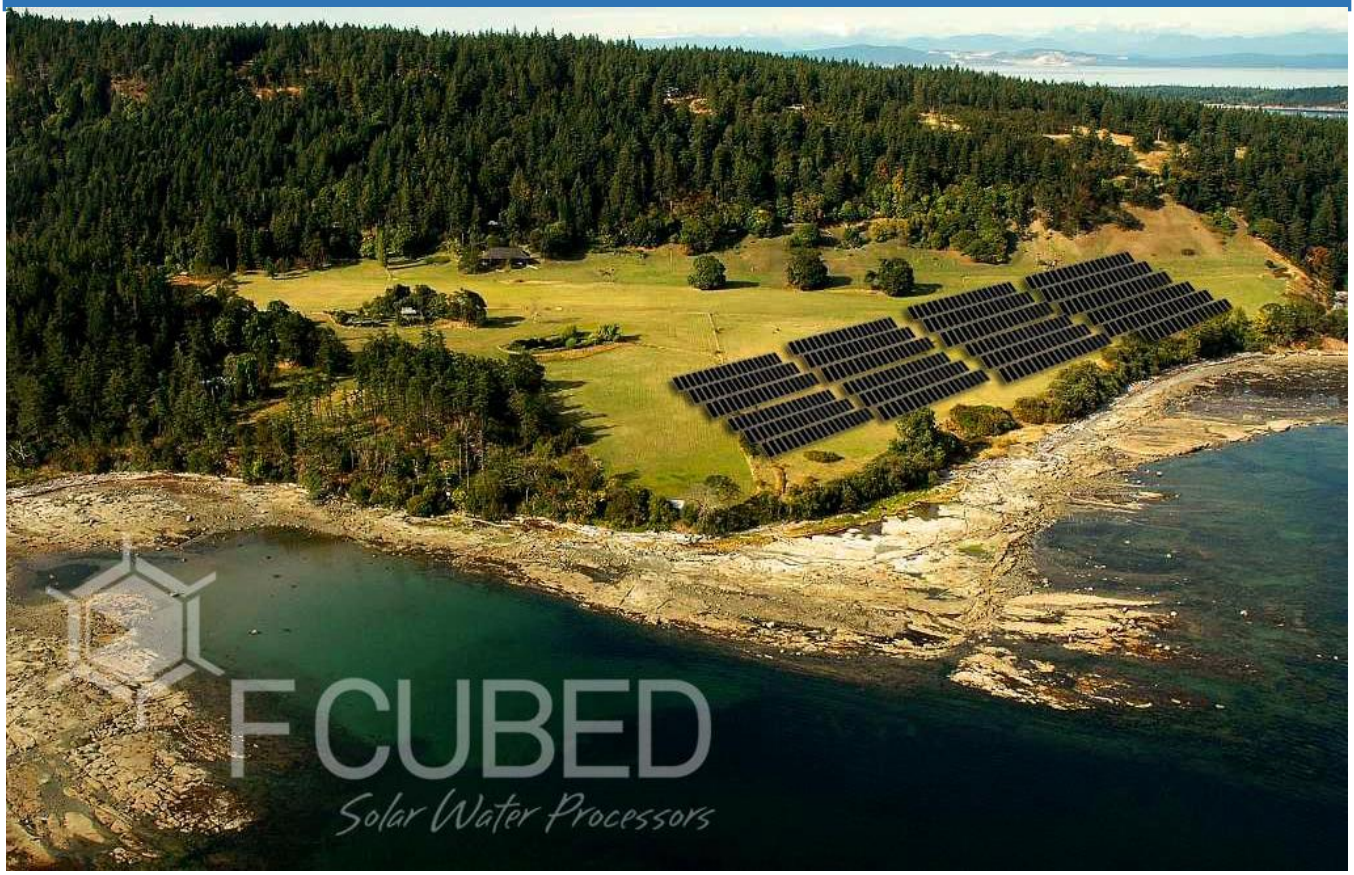
Internship Report on FCB



Internship Report on

"Overall Analysis of F CUBED Bd. Solar Water Processors Ltd."

Submitted to:

Md. Hasan Maksud Chowdhury

Assistant Professor

BRAC Business School

BRAC University

Submitted by:

Sharon Jennifer Dawson Biswas

Student ID- 13364076

BRAC MBA

Date of Submission:

December 17, 2015

BRAC University

Letter of Transmittal

17th December, 2015

Md. Hasan Maksud Chowdhury
Assistant Professor
BRAC Business School
BRAC University

Subject: Submission of Internship Report.

Dear Sir,

With due respect, I would like to inform you that, I have submitted my Internship Report on "Overall Analysis of F CUBED Bd. Solar Water Processors Ltd." as per your instruction. I hope this report will be informative as well as comprehensive.

I have found the study to be quite interesting, beneficial & insightful. I have tried my level best to prepare an effective & creditable report. The report contains a detailed study on the overall business processes and practices of FCB. I have gathered information for the report from different sources such as websites and actual interviews of my company's Managing Director and other department heads and also from my observations.

I would also like to thank you for your excellent guidelines and supervisions while preparing this report.

Sincerely Yours,

……..**.....**

Sharon Jennifer Dawson Biswas
Student ID# 13364076
BRAC MBA

Acknowledgement

The successful accomplishment of this project work is the outcome of the contribution of number of people, especially those who have given the time and effort to share their thoughts and suggestions to improve the report. At the beginning, I would like to pay my humble gratitude to the Almighty for giving me the ability to work hard under pressure.

This is a great pleasure for me to be assigned under the guidance of Md. Hasan Maksud Chowdhury, BRAC Business School, BRAC University. I am very grateful to him for all his kind cooperation and guidance in preparing this project paper. His valuable suggestions & guidelines helped me a lot to prepare this report in a well-organized manner.

Then, I would like to give special thanks to my supervisor, Md. Prottoy Khan, Managing Director of F CUBED Bd. Solar Water Processors Ltd., for his support and for granting me the permission to utilize the resources of FCB.

I would also like to thank the Department Heads and staff of FCB for cooperating with me and giving the information needed to compile this report.

I express my heartiest gratitude to everyone involved.

Executive Summary

F CUBED Bd. Solar Water Processors Ltd. (FCB) is a sister concern of F CUBED (Australia) Pty Limited. F CUBED as a whole is dedicated to the conservation, production and processing of the world's most critical resource, Water. F CUBED has pioneered a unique water treatment technology, known as Carocell solar desalination/purification technology. Carocell solar water panels can produce pure, clean drinking water on any scale from any water source (including polluted, industrial waste water, brackish groundwater, sea water and arsenic contaminated water).

F CUBED Bd. Solar Water Processors Ltd. was incorporated in May 2011 as a private limited company under the Companies Act 1994. Since its incorporation, the company has implemented several projects with different NGOs, INGOs and Government Agencies over the years.

In this report, I have tried to evaluate the current situation of the company, identify the problem areas and made some recommendations. I have divided the report into four chapters with smaller sections in each chapter.

The first chapter is the Organizational Overview where I introduced the company and briefly discussed its history, vision, mission and other aspects of the company.

In Chapter 2, I discussed My Job at the company, my duties and responsibilities and briefly discussed the specific tasks I have to perform on a daily, weekly, monthly, quarterly and yearly basis.

Chapter 3 is the main body of my report. In this part, I have discussed and analyzed the overall business processes, practices, product and other aspects of the company. I have also conducted a SWOT Analysis of the company to evaluate its current situation and identify the problem areas of the company. The biggest strength of the company is its unique product, the panels, and the biggest weakness is the high cost of manufacturing and importing the panels, making the panels too expensive.

In Chapter 4, I have provided some recommendations that may be helpful to the organization if implemented and also concluded my study.

References and an Appendix is attached in the end.

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Chapter-1
Organizational Overview

1.1 Introduction

F CUBED Bd. Solar Water Processors Ltd. (FCB) is a sister concern of F CUBED (Australia) Pty Limited. F CUBED as a whole is dedicated to the conservation, production and processing of the world's most critical resource, Water.

The World Health Organization estimates over one billion people in the world lack access to safe drinking water. At least 1.8 million children under five years old die every year from water related disease, which is one child every 20 seconds. It is estimated that close to 90 percent of diarrhea cases, killing some 2.2 million people every year, are caused by unsafe drinking water and poor hygiene. Existing water treatment technologies have failed to provide effective long term solutions to these problems. Although safe drinking water may be produced or industrial waste successfully treated, the solutions are generally not environmentally responsible or fail to offer a long term solution. They require the use of fuel and other power sources that are harmful for the environment. High energy costs are also associated with these technologies.

F CUBED has pioneered a unique water treatment technology, known as Carocell^{TM} solar desalination/purification technology. Carocell technology is the most efficient and cost effective product of its kind. It can produce pure, clean drinking water on any scale from any water source (including polluted, industrial waste water, brackish groundwater, sea water and arsenic contaminated water). It uses renewable (SOLAR) energy so there is zero carbon emission from the product. Rain water can also be collected in a very easy way using this device. With no power source required, no expensive parts and minimal maintenance and the enormous benefits to industry and from a global humanitarian perspective, the product has already attracted a significant amount of interest from overseas markets.

F CUBED sells *Carocell Solar Water Processors/Panels* in about 20 countries including Bangladesh. FCB has been working in Bangladesh since 2011 and has implemented several projects with different NGOs, INGOs and Government Agencies over the years.

1.2 History

F CUBED (Australia) Pty Ltd was established in 2004, by Mr. Peter Johnstone who is the CEO and Chairman of F CUBED. After many years of research and development, F CUBED pioneered a unique water treatment technology powered entirely by the sun, known as Carocell solar desalination/purification technology. The technology is the culmination of Peter Johnstone's extensive technical knowledge of the relationship between films, surface treatment and water and his significant financial investment in research and development over the past 25 years. Six years of research and development (pre-manufacturing) studying the interaction between solar energy, evaporation, condensation, precipitation of minerals and metals and a wide range of materials and surface treatments lead to F CUBED creating a highly efficient, complex yet affordable solar based, environmentally responsible water treatment solution.

F CUBED considers the developing countries as one of their main target markets since the crisis for safe drinking water in these parts of the world is acute. F CUBED identified Bangladesh as one the countries where significant water issues exists. Climate change has also caused rising sea levels which are claiming precious water from freshwater river deltas and rising salinity of the water. This increase in salinity affects the soil and the quality of the ground water. Not only is the potable water limited but the groundwater, which is used by nearly 90% of the population, is also contaminated with arsenic. According to the WHO, the levels of arsenic have contributed to the largest mass poisoning in history, affecting an estimated 30-35 million people in Bangladesh.

To cater to the growing need for safe drinking water in Bangladesh, F CUBED Bd. Solar Water Processors Ltd. was incorporated in May 2011 as a private limited company under the Companies Act 1994. Mr. Peter James Johnstone has ownership over 55% and Md. Prottoy Khan has ownership over 45% of the company. The company started its commercial operation on 19th May, 2011 with authorized capital of 300 million taka and paid-up capital of 37.8 million taka. FCB imports the panels directly from Australia and markets them in Bangladesh. Since its commencement, FCB has implemented several projects with different NGOs, INGOs and Government Agencies such as UNICEF: Village Education Resource Center (VERC), WaterAid, BRAC, Oxfam, Palli Daridro Bimochon Foundation (PDBF), Comprehensive Disaster Management Programme (CDMP), etc.

1.3 Corporate Information

Name of the Company	F CUBED Bd. Solar Water Processors Ltd.
Legal Status	Private Limited Company
Date of Incorporation	May 19, 2011
Date of Commencement	May 19, 2011
Registered Office	House# 5 (Ground Floor) Road# 94, Gulshan-2 Dhaka- 1212, Bangladesh
Telephone	02-9892010
E-mail	fcubedbd94@yahoo.com
Website	www.fcubed.com.au
Chairman	Mr. Peter James Johnstone
Managing Director	Md. Prottoy Khan

1.4 Company Vision, Mission, Motto, Goal and Values

VISION

"To ensure that everyone in the country has access to safe, clean and plentiful drinking water. Creating accessible, safe water supplies enables people to live healthier, fuller, more productive lives. Just as important is the preservation and conservation of the earth's natural resources. F CUBED believes there are alternative renewable energy solutions that are cost effective and more practical than current energy hungry solutions that harm the environment."

MISSION

"Conservation, production and processing of the world's most critical resource, water".

Motto

"We have not inherited the world from our forefathers, we have borrowed it from our children."

Goal

"To become a leader in renewable energy water processing solutions."

Values

Preservation and conservation of natural resources

A safer planet for future generations

Healthier lives

Quality products

1.5 Strategic Objectives

To achieve its goal of consolidating leadership in the solar treatment of water, FCB believes that it needs to secure the first mover advantage. Its strategic objectives are therefore to:

- Identify areas in Bangladesh with greatest need of safe drinking water.
- Segment the markets into:
    - In-house water treatment;
    - Water and waste water treatment and;
    - Industrial water treatment.
- To position Carocell panels as the environmentally responsible solution in its target market segments.
- Identify channels to the ultimate consumers within these markets:
    - Direct to residential consumers ;
    - Governments & NGOs – in home water and water and waste water treatment; and
    - Industrial customers – water and industrial waste water treatment.
- Open sales and marketing offices in these locations using local expertise and experience. This will include the recruitment of senior sales people with a proven record of dealing with large scale projects.
- Establish sales channels including strategic partnerships with distributors, NGOs and governmental agencies.
- Import panels from Australia initially and then establish a local manufacturing presence for local supply in key locations.
- Continue to invest in research and development to improve yields and identify further applications for the Carocell panels.
- Generate profit with qualitative business as a sustainable ever-growing organization and enhance fair returns to shareholders.
- Promote employees' well-being through attractive compensation package, promoting staff morale through training, development and career planning.

1.6 Product Offerings

F CUBED offers Carocell panels in two sizes: **3m^2** for Domestic usage and **6m^2** for Industrial usage.

Model: Carocell 3000 3m^2 Panel

Water Output
Domestic Usage

At 20 degrees Celsius: 15 liters / cloud free day
At 30 degrees Celsius: 20 liters / cloud free day

Dimensions:	1,110 x 2,700 mm
Surface area:	3m^2
Weight:	17 kg

Model: Carocell 6000 6m^2 Panel

Water Output for
Industrial Usage

At 20 degrees Celsius: 30 liters / cloud free day
At 30 degrees Celsius: 40 liters / cloud free day

Dimensions:	2,220 x 2,700 mm
Surface area:	6m^2
Weight:	30 kg

The actual output per panel is dependent on the average solar radiation at each site.

Technical Specification of Panels:

Brand: FCUBED
Model: Carocell 3000 & Carocell 6000
Country of origin: Australia
Country of manufacturer: Australia

Panel Information:

Square Meters	3	6
Dimensions	2700 X 1110 mm	2700 x 2200 mm

Input Source

- Water Type
  - Tap water, bore water, ground water, sea water, dam water, river water, recycled water
- Pre-filtration
  - Recommended to remove suspended solids down to 100 microns
- Water consumption, per hour
  - C3000 = 6-7 liters per hour
  - C6000= 12-14 liters per hour

Output: Pure Safe Drinking Water.

Average distilled water output

- Approximate daily, averaged over one year of output
  (**Note: Dependent on solar radiation and rainfall**)
  - C3000: 5 liters per square meter of area, ie, approximately 15 liters per panel per day.
  - C6000: 5 liters per square meter of area, ie, approximately 30 liters per panel per day.

Material List:

- Aluminium
- Polycarbonate
- Polyester
- Polyethylene
- Galvanised Steel Tube

Place of installation: On the roof top/any open space with direct sunlight.

1.7 Operational network organogram

The Organogram of FCB indicates channels of communication and reporting relationship. Each Head of Division/Department/Unit In-charge should ensure that the employees under her/him fully understand the Organizational Matrix and follow that reporting relationship and flow of all communications as delineated.

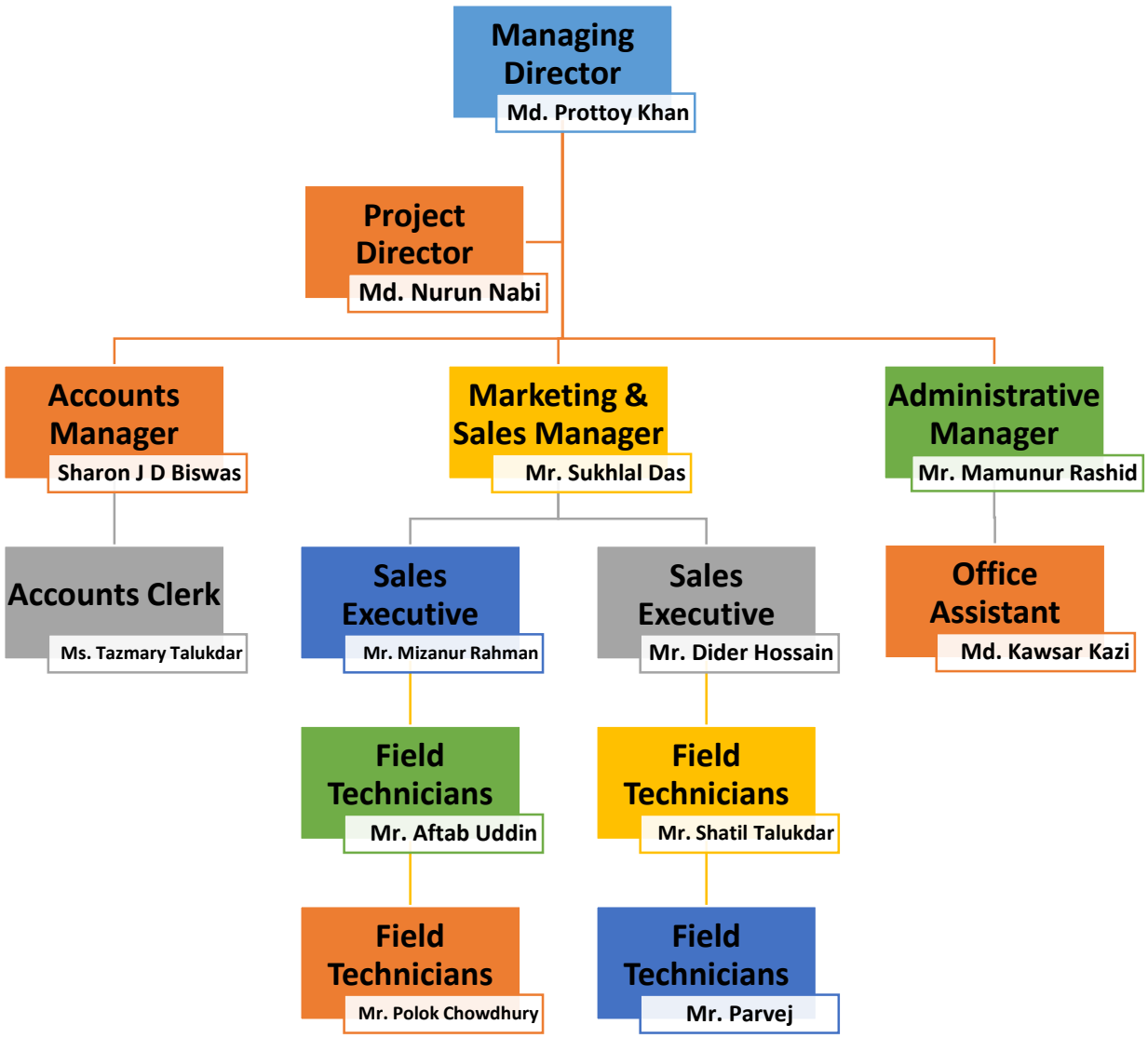


Fig: 1: Organogram of FCB

Chapter-2
Overview of My Job at FCB

2.1 Introduction

I was appointed as the Accounts Manager of F CUBED Bd. Solar Water Processors Ltd. on the 27th of October, 2011. I started working for the company from 1st November, 2011 and has been working there for the past four years. I am responsible for managing the Accounts Department of the company but my work often extends beyond the parameters of the job title. Since the company is relatively small in size and structure, most employees are expected to multitask and make contributions in any and every aspect possible.

2.2 Description of the Job:

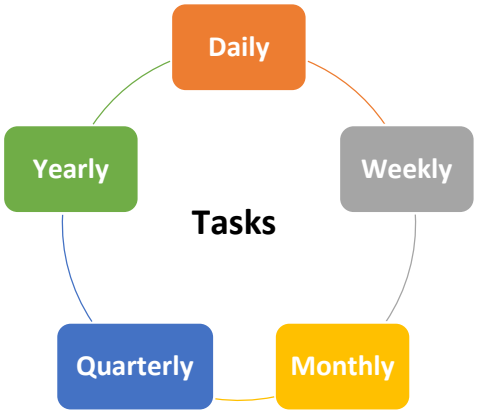
Designation	: Accounts Manager
Job Nature	: Full-time
Working Days	: Sunday to Thursday
Working Hours	: 9:00 a.m. to 5:00 p.m.
Job Location	: Gulshan-2, Dhaka- 1212, Bangladesh
Report To	: Primarily to the Managing Director (MD), and The Project Director in the absence of the MD.

Responsibilities & Duties:

- Manage the Finance & Accounts Department of the company.
- Responsible for Financial Reporting, Financial Policies and Performance Management functions of the company.
- Maintain the company accounts and ledgers and present the consolidated financial reports on a regular basis.
- Prepare and submit quarterly Foreign Direct Investment (FDI) Return Forms to Bangladesh Bank.
- Process all Sales and Purchasing Orders.
- Communicate with F CUBED Australia's CFO regarding all FCB accounts.
- Maintain a Travel Diary for the MD.
- Respond to inquiries from the MD and others.

2.3 Specific Responsibilities of the Job:

The specific responsibilities that I carry out as an Accounts Manager can be divided into five parts: daily, weekly, monthly, quarterly and yearly tasks.



1) **Daily Tasks** are the tasks that I have to carry out every day of the week. They include the following:
    a. *Examination, Preparation* and R*ecording* of all the vouchers by making Journal entries into our Oracle based accounting software. Hard copies of the vouchers, receipts, bills, etc. are also maintained.
    b. *Petty Cash Management* is also conducted by me as I am the only person, other than the MD, who is authorized to release funds. It is my responsibility to ensure that funds are put to valid and optimum usage.
    c. *Inventory Management* involves updating the inventory database whenever panels are imported or sold. Information regarding the customers, date of panel installation, installation site addresses, etc. are also maintained in the database.

2) **Weekly Tasks** are the tasks that I have to carry out at the end of every week. They include the following:
    a. *Communicating with the MD* via e-mail when he is out of the country. The MD of our company has dual citizenship in Australia and Bangladesh. So it is common for him to travel back and forth the two countries. During his absence, I have to report all official activities that took place throughout the week to him via e-mail.

b. I am also responsible for *maintaining a Travel Diary* for the MD. At the end of each week, I collect information from the MD regarding his schedules, meetings, places he visited, etc. throughout the week. I then record the information in a excel spreadsheet.

3) **Monthly Tasks** comprise of the tasks I perform either once every moth or at the end of each month. They include the following:
   a. *Monthly Financial Reports* have to be prepared at the end of each month to summarize current financial status. Income Statement, Balance Sheet and other reports have to be prepared and sent to the CFO of F CUBED Australia
   b. *Prepare payments* by verifying documentation and requesting disbursements. All bills like office rent, rent-a-car charges, utilities, etc. are examined and payments are made after receiving clearance from the MD.
   c. *Managing Payroll* is another important monthly task I am responsible. Fixed salaries are paid to permanent employees and allowances are paid to the driver and office guards.

4) **Quarterly Tasks** are usually carried out in every quarter, i.e., in every three-month interval.

   They include:
   a. Preparing quarterly *Foreign Direct Investment (FDI) Return Forms*. This is a requirement imposed by Bangladesh Bank on all companies that are foreign owned. All FDI Enterprises have to submit properly filled in FDI Reporting Form (Form FI-1) along with supporting documents (Audited/Unaudited Financial statements related to reporting quarter, Documents related to inward and outward remittances, etc.) to their reporting AD Banks.
   b. *Company budgeting* is also done on a quarterly basis to keep the business and finances on track. This is done in collaboration with the CFO of F CUBED Australia and the MD of FCB. During this task, budget for the next quarter is prepared and the performance of the last quarter is also evaluated.

5) Yearly Tasks are the ones I have to carry out once a year, generally after the year ends. They include:
    a. *Year-end Financial Statements* have to be prepared at the end of each year. All the revenue, expenses, etc. accounts are closed and the assets and liabilities accounts are carried forward. Balance Sheet, Income Statement and other reports have to be prepared.
    b. *Submit Tax Return documents* along with audited Financial Statements to the Income Tax Authorities with the help of our Chartered Accountant.
    c. *Renewal of Trade License, IRC, etc.* is also done once a year when the validity of the documents expire. The renewal fees have to be paid and all official documents have to be updated to ensure the smooth flow of the business.

Chapter-3: The Project

3.1 Description of the Project

The project is descriptive in nature and has a more qualitative approach rather than a quantitative one. Since the company and the product that we sell is quite unique and comparatively new in the Bangladeshi market, the overall business processes, practices, product and other aspects of the company are discussed and analyzed in the project instead of focusing on any particular sector of the business. The main focus of the project is to evaluate the current situation of the company, identify the problem areas and provide solutions to the problems.

3.2 Objectives of the Project

In this project, I tried to gather and present extensive information about the company, the product it sells, the procedures followed and the policies applied in day-to-day business operations.

The objectives of the Project are:

- To explain what the product is and how it works.
- To analyze the viability of the product in the Bangladeshi market.
- To explain the business processes and practices of the company.
- To briefly highlight the projects conducted by the company.
- To discuss the company's vision for the future.
- To briefly evaluate the strategies that are being implemented.
- To identify the strengths, weaknesses, opportunities and threats of the company.
- To find out suitable solutions to the identified problems in the recommendations part.

3.3 Methodology

Methodology is the systematic study of methods that are, can be, or have been applied within a discipline or a particular procedure or set of procedures. It consists of both primary and secondary data.

Primary data is data observed or collected directly from first-hand experience. For my primary research, I collected the data myself by observing common practices at the company. I also interviewed our Managing Director, Md. Prottoy Khan, and asked him about his visions for the company's future among other things. I also informally interviewed other department heads to gain their perspectives on the company.

Secondary data is data that has already been collected by someone else for a different purpose and is available to outside users. For my secondary research, I browsed the company website (*fcubed.com.au*). I also included information we collected during a workshop that we arranged in September 2012. We gained a lot of insight regarding our panels from our direct customers during that workshop. Representatives from various NGOs, INGOs and government agencies were present at the workshop. I also utilized some of the information that was collected by our field technicians during panel monitoring trips. They interviewed many of the beneficiaries (final users of the panels) regarding the performance of the panels, the benefits they were receiving from using them, the difficulties they are facing, etc.

3.4 Limitations

- Limitation of this project is that the report does not follow the prevalent structure that internship reports usually have. The report is mostly qualitative and to some extent, subjective in nature. A quantitative research would have been more effective.
- Time is a constraint since I could not fully explain all the complexities involved in the procedures.
- Confidentiality of information also prohibited me from disclosing all the information publicly.
- My limited knowledge and ability to conduct the study more efficiently is also a limitation of the project.

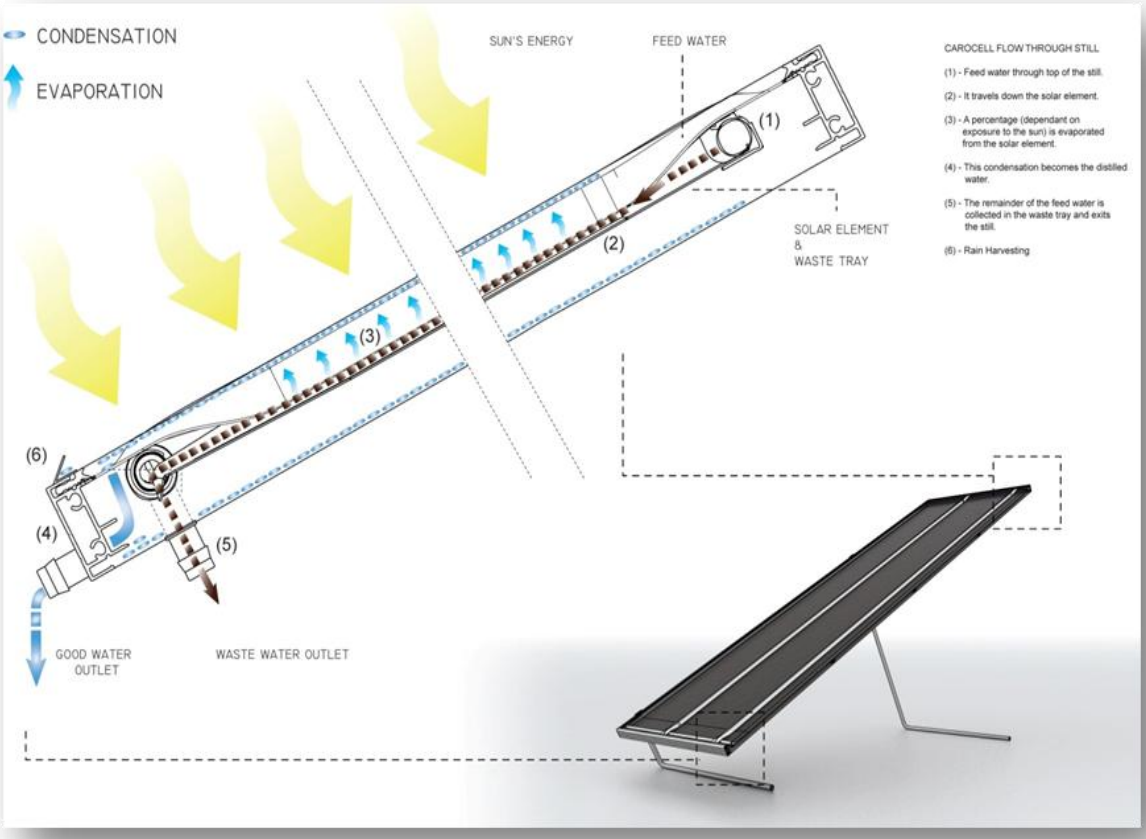
3.5 Research Findings, Analysis & Discussion

All information collected from observations, interviews and secondary sources is used to accomplish my objectives of the study. They are provided in a cumulative form in the next sections.

3.5.1 How does the Panel work?

Carocell technology is based on the natural process of distillation and this ability to separate water from a wide range of contaminants.

Solar energy passes through the plastic panel on the front of the Carocell unit resulting in the evaporation of the source water. The evaporated water then condenses and the resulting distilled water travels to a safe water outlet and is available for drinking. In addition, the Carocell panel collects rain water thus providing daily fresh water from all sources.



The secondary water has been disinfected by solar energy and may be used for other household or agricultural needs. The secondary water can also be reintroduced to the system for further treatment reducing the amount of water that initially needs to be collected.

The key differentiating factor has been the efficiency with which the Carocell panel uses solar energy to generate distilled water. With an average solar conversion efficiency factor of 60% and a maximum of 80%, the Carocell panels are achieving outputs that are at least 50% greater than their comparable competitors.

The Carocell panels can operate independently for a single user or can be connected in series making the technology scalable and therefore available for industrial use.

FCUBED offers $3m^2$ and $6m^2$ panels for flexibility within the retail and industrial markets. This gives the panels a wider market appeal and the opportunity for greater penetration into the diverse global water market.

When installed in series, the Carocell panels separate distilled water from salty water with a zero liquid discharge. Other contaminated water sources can also be treated - where a zero liquid discharge outcome is required - producing by-products for commercial sale.

The research and development into achieving the Carocell panel's unparalleled yields has been significant and the associated science complex. The design and operation of the panels is user friendly and requires little or no ongoing maintenance.

Carocell panels are a breakthrough in Solar Desalination, providing:

- 55 – 65% efficiency solar energy to distilled water
- 50% more efficient than most comparable products
- 5 – 25% of the installed cost of comparable products

Carocell panel is a unique patented modular panel that has the capability of producing millions and millions of liters of pure distilled water per day. Alternatively Carocell - Direct Solar Desalination can be used for smaller domestic, rural and village applications.

3.5.2 The viability of the product in Bangladesh

Bangladesh is one of the most climate vulnerable countries of the world. Flood, cyclone, storm, tidal bore etc. are the common phenomenon for the country. The destruction caused by the cyclone and tidal bore is devastating, especially in the coastal and sub-coastal areas of Bangladesh. Total coastal belt area is about 32% of the whole area of Bangladesh and nearly 3 crore people live here. All the fresh water sources in these areas are contaminated by salt due to tidal bore. Diarrhea and other water borne diseases breakout throughout the affected area due to scarcity of safe drinking water. Thousands of people especially, children lose their lives to these diseases every year.

Deep tube-wells of the coastal and sub-coastal belt areas are also contaminated by salt sea water is seeps into the subsurface area. Shallow tube-wells in the coastal and sub-coastal belt areas are contaminated by both salt and arsenic.

Torrential rainfall of the monsoon and meltwater from the Himalayas cause floods almost every year. Acute scarcity of fresh drinking water appears in all affected areas. Diarrhea breaks out throughout the area and causes loss of human life.

Due to lack of proper sanitation systems, all surface water in the country is contaminated by bacteria, viruses, chemicals, etc. Availability of safe drinking water is very limited, especially in the rural areas.

The common practice among the people who are conscious about their health is to boil water before drinking. By boiling water they can get rid of the germs but they cannot remove the chemicals or arsenic or salt from the water. Also wood, gas or fuel is needed to boil water which harms the environment by emitting carbon and by depleting natural resources. The use of filters in urban homes is harmful to health as they contain chemicals and the environment is also affected as the filters used in these systems have to be changed frequently and are not bio-degradable.

To solve the above problems, a sustainable water treatment system is needed. F CUBED Carocell Solar Water Panels that run on solar energy will be the best solution as it does not need any extra energy to run it and there is no maintenance cost. One device can solve all the problems of salinity, arsenic, iron, bacteria and any other contamination.

Bangladesh's environment provides support for a technology that is solar based and captures rainfall. Figure 2 below demonstrates the theoretical water production from a single Carocell™ panel over the course of a year. This includes high solar energy periods when more water is produced and lower solar energy periods where production is supplemented by rainfall.

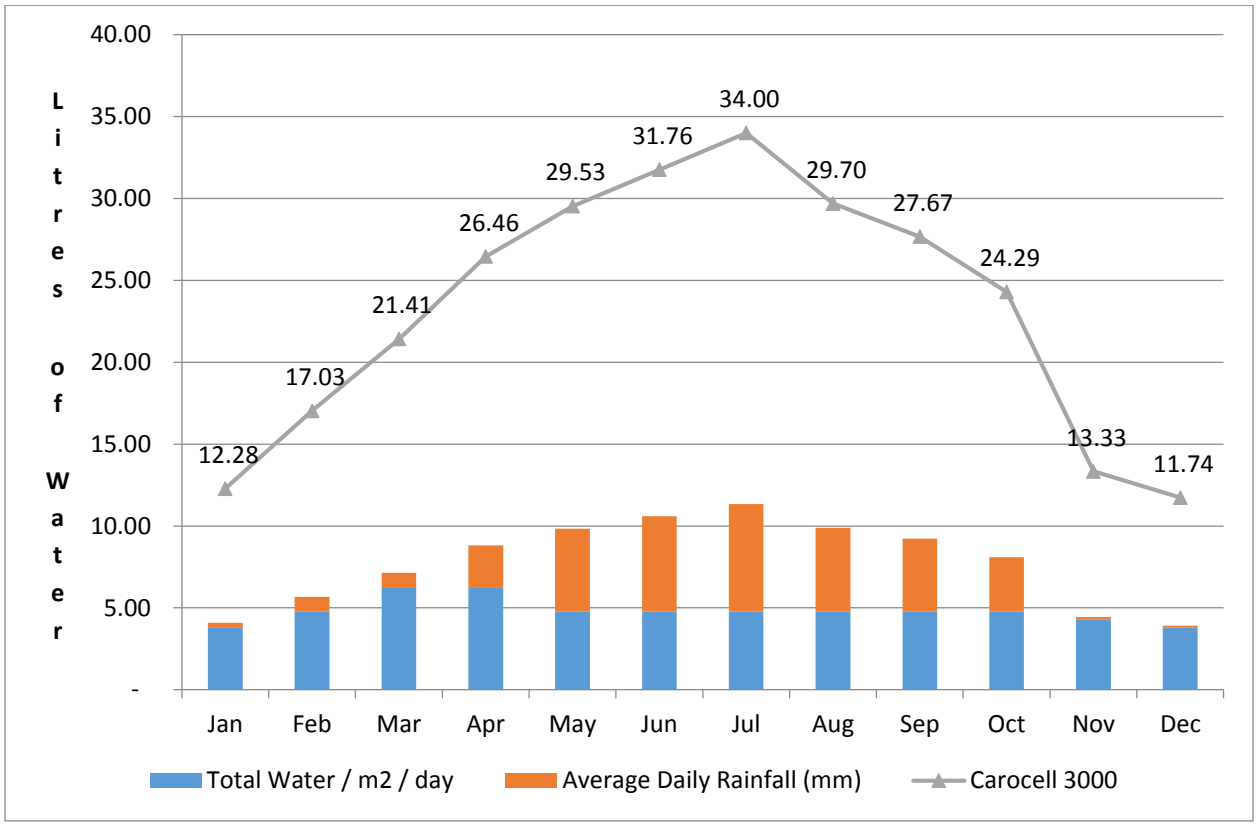


Figure 2– Average Daily Water Production per month based on historic solar radiation levels and rainfall

When safe water production is combined with the collection of rainwater, the average theoretical daily water output is 24 litres per day. Overall we can say, the product is a viable solution to the country's water crisis.

3.5.3 The business processes and practices of FCB

In this section, the entire process of how the company currently conducts business and generates sales is highlighted.

Step 1: Identifying Potential Customers

In this phase, the company determines who its potential customers are. So far, the targeted customers of FCB have been various NGOs, INGOs and institutions that collaborate with different Government Departments and Ministries. The institutions are chosen on the basis that they are somehow involved in projects aimed at providing or improving access to safe drinking water of underprivileged people or of people geographically located in places where safe water is not readily available. The institutions may or may not be the final users of the panels. Usually, they are involved in development work and they purchase the panels for certain communities who are financially disadvantaged and do not have access to safe drinking water. The people these institutions provide support to are called their beneficiaries.

Step 2: Building Professional Relationships with the Customers

After selecting particular institutions, FCB representatives contact and meet with the representatives of those organizations. At the meeting, the potential clients are introduced to the panels. A small promotional video is shown and brochures, laboratory test results, testimonies of other customers, etc. are also provided to them. FCB stays in contact with the organizations in an effort to build a strong and lasting professional relationship with them. If the clients are convinced and are willing work on a project with FCB, the latter steps follow.

Step 3: Preparing and Submitting Project Proposals & Quotations

a) If the pursued customer is a Government agency, a Project Proposal is prepared based upon mutually agreed terms and conditions. The PP is usually prepared collaboratively by representatives of both organizations. After that, the PP is submitted to appropriate Ministry or Department under which the agency operates for approval.
b) If the customer is an NGO/INGO, the procedure is much simpler. The NGO sends a request letter for quotations and a quotation is sent to the organization.

Step 4: Approval for the Projects

After submission of the PP and quotation, usually there is a waiting period before the documents are accepted and approval for the projects are attained. If any necessary amendments have to be made to the PP or quotation, they are done in this stage.

Step 5: Securing the Projects

a) Acquiring a *government project* is a lengthy and complicated process. If the projects are approved, Government Agencies publish an **Invitation for Tender** (Appendix 1) as per government law to ensure that the use of public fund is open, fair and free from bribery and nepotism.

   FCB then has to participate in the tender by completing and submitting the **Tender Form** along with all necessary documents. A certain amount also had to be provided as Tender Security Deposit.

   Since our panels are unique and no other tenderers can provide the products that match the technical specifications provided in the tender invitation, the **Notification of Award** (NOA) (Appendix 2) for the tender is generally granted to FCB.

   After that, 10% of the Project Worth has to be provided to the government agency as Performance Security, usually in the form of a **Bank Guarantee** with validity of one year. It has to be provided in order to ensure that FCB will not breach its obligations under the Contract conditions. If the project is implemented properly, the Bank Guarantee document will be returned after one year.

   After the Bank Guarantee is submitted, a legally binding **Contract Agreement** containing all terms and conditions is signed by both parties. The project is then finalized.

b) In the case of any *non-government institution*, if the project is approved by its higher authorities, it simply issues a **Purchase Order** (Appendix 3) for the panels.

Step 6: Import Panels

If adequate number of panels needed to implement the projects are not in stock, then FCB imports necessary number of panels from F CUBED Australia. A Letter of Credit (LC) account is opened at our official bank after filling out a LC From and submitting all necessary documents like Trade License, VAT Registration, TIN certificate, IRC, Board Resolution, Pro Forma Invoice, etc.

The panels are usually sent by sea, inside large containers. The panels are then cleared from the Chittagong port and delivered to FCB office by our C&F Agent HOMEBOUND. Since it usually takes about one and a half months to carry out all the procedures and import the panels, this step is often carried out ahead of Step 5.

Step 7: Installation of Panels at selected sites

Panels and other accessories are then sent to all the installation sites mentioned in the Contract or Purchase Order by trucks. Two accessories that accompany the panels are a plastic drum for the feed water and an iron drum-stand. Other accessories include pipes, spare parts, etc. The installation work is carried out by our Field Technicians. Most panels are installed at individual households on a one-panel-per-house basis. Panels may also be installed in a series at schools or offices, according to the requirements of customers. After the installation of panels in each site, the beneficiaries/recipients of the panels are asked to sign a document termed as Installation Certificate.

Step 8: Submission of Bill

After the installation work is complete, the Bill is submitted to the customers along with a Forwarding Letter, Delivery Challan, Installation Certificates and a copy of the Purchase Order or Contract.

Step 9: Collect Payments

If all the documents are in order, the payments are released in the form of Bank Cheques, Drafts, Direct Transfers or any other form previously agreed upon. Before making the payment, a certain percentage of VAT and Tax are deducted at source as per government regulations.

3.5.4 The Projects of FCB

Currently we are working with *Palli Daridro Bimochon Foundation (PDBF),* one of the leading Microfinance Institutions (MFIs) under the Ministry of Local Government Rural Development, and Cooperatives, Government of the Peoples Republic of Bangladesh. We have entered into a contract with PDBF for the project "Supply, Installation, Testing Commissioning of 2,160 Unit Solar Managed Desalination or Purification Panel in 18 upazilas of 9 different districts". For this project, PDBF is purchasing 2,160 Solar Water Panels from us. We have worked with PDBF once before in September 2013 on a project called "Supplying of Safe Drinking Water by Solar Desalination/ Purification Panel to the Climate Vulnerable Areas of Bangladesh". PDBF purchased 291 Solar Water Panels from us which were installed in various schools, colleges and households in 17 Sub-districts in Bangladesh in 10 Districts. The source water in these areas was mostly contaminated by salt.

In September 2014, we worked with the *Education Ministry* on a project called "Supplying of safe drinking water by solar Desalination/ Purification panel to schools/colleges/madrasas in the climate vulnerable areas of Bangladesh". This project was under the Secondary Education Quality and Access Enhancement Project (SEQAEP). 100 panels we installed in 20 schools and madrasas located in 5 upazilas of 4 districts.

BRAC installed the 20 panels it purchased from FCB in July 2013 in Khulna and Bagerhat. The source water in these areas is mostly contaminated by salt.

In December 2012, *Comprehensive Disaster Management Programme (CDMP)* purchased 50 Solar Water Panels which were installed in the households of 50 handicapped individuals in Satkhira and Bagerhat districts. The source water in these areas is mostly contaminated by salt.

In November 2012, *WaterAid* purchased 20 Solar Water Panels through Rupantar for piloting. The panels were installed in 20 households belonging to financially disadvantaged people living in Koira, Khulna. The source water in these areas is mostly contaminated by salt.

Other than those mentioned above, we have also conducted several pilot projects with organizations like *Rural Reconstruction Foundation (RRF)*, *Village Education Resource Center (VERC)*, *Oxfam*, *World Concern Bangladesh*, *Grameen Shakti*, *DPHE*, *Dhaka WASA*, *BCSIR*, *Rahimafrooz*, etc.

3.5.5 Company's Vision for the Future

FCB's Vision for the future are:

- **Secure larger Government Projects:**

  FCB is currently pursuing larger projects with the government. The projects completed so far were small-scale pilot projects implemented to check the effectiveness and practicality of the panels. FCB believes that its panel is the solution to Bangladesh's growing water crisis problem. All other water treatment solutions have drawbacks like they cause air pollution, emit carbon, use harmful chemicals, require electricity or fuel, etc. To make a significant impact on the people and environment of Bangladesh, large scale projects have to be implemented.

- **Build Manufacturing plant in Bangladesh:**

  FCB plans on constructing its own manufacturing facility in Bangladesh in the near future. Opening the facility would benefit the people of Bangladesh as many job opportunities will be created. The cost of imports will be significantly reduced, if not eliminated. Price of the panels may also decrease in the long run as cost of manufacturing in Australia is much higher than the cost of manufacturing in Bangladesh. Economies of scale can also be achieved during large scale production. If FCB can secure a few large scale government projects, setting up a manufacturing plant would be its next initiative.

- **Enter the Industrial and Private Sector:**

  Since its commencement in May 2011, FCB's marketing efforts has been primarily focused on the Government Agencies and NGOs. FCB wants to enter the industrial and private sector in the near future. Selling directly to residential consumers has been an objective of FCB from the beginning but has not been accomplished yet. FCB also wants to work with industrial customers who are looking for environmentally friendly industrial waste water treatment systems.

3.5.6 The Current Strategies of FCB

- **Competitive Strategy:**

  FCB is currently following a Focused Differentiation Strategy since it has a Differentiated Product and is targeting a small group of customers (Government and non-Government institutions). But the company wants to change its competitive strategy in the near future and follow a Broad Differentiation Strategy by moving into the private and industrial sector.

- **Pricing Strategy:**

  Currently FCB is following a Premium Price for Premium Products strategy. Each Carocell Solar Water Panel costs Tk. 26,400/- ($330 @ BDT 80). The cost of accessories and installation are not included in the cost. So the final cost of each panel may add up to Tk.34,400/- or more.

- **Marketing & Promotional Strategy:**

  FCB does not have any budget for mass marketing or promotional activities. It relies most on building face-to-face relationships with prospective customers. It also relies on Word-of-Mouth recommendations.

- **Procurement & Distribution Strategy:**

  So far, FCB is the sole distributor of its panels. The company imports ready-made panels directly from Australia and sells them to its customers. In the future, FCB may share its distribution rights with other companies.

- **Human Resource Management Strategy:**

  FCB has a very small structure with only 13 full time employees. All decisions are centralized and follows a top-down approach.

3.5.7 SWOT Analysis of FCB

Strengths

- **Unique product and product features**

  The biggest strength of the company is its one of a kind product. The panels can purify contaminated water from any source. No other product can simultaneously remove salt, arsenic, pathogens, iron and all other contaminants. The product has a simple robust design and can be carried to remote locations. The panels can be installed on the ground and also on rooftops. The panels do not emit any greenhouse gas, has no ongoing energy costs, no filters or costly membranes and uses no chemicals. There are no maintenance costs associated with the panels.

- **No direct competitors**

  FCB does not have any direct competitors as the product and the technology is patent proofed. The company has been enjoying the first mover's advantage by utilizing the opportunity to establish a leadership position across a range of segments and position its products as the environmentally responsible solution in its target market segments.

- **Large market size**

  The climate and geographic location of Bangladesh has made it a country with wide-spread water crisis. 80% of Bangladesh's population does not have access to safe drinking water. So there is huge market for the panels and abundant growth opportunities for FCB in Bangladesh.

- **Government support**

  The Bangladeshi Government has been investing heavily in various projects to fight the adverse effect of climate change on the people of Bangladesh. As of June 2015, 360 projects have been undertaken with an estimated cost of around Tk. 2 thousand 3 hundred 20 crore funded by the Bangladesh Climate Change Trust Fund (BCCTF). The projects that FCB has done and are currently doing with the government agencies are also funded out of the BCCTF. Carocell panels have been identified as green products which can help combat the adverse effects of climate change by the government and this is a huge strength for the company. Government support is vital to the survival of FCB.

Weaknesses

- **High costs, high price of products**

  High manufacturing and import costs increase the total cost of the panels significantly. High costs results in the company charging high prices for the panels in order to cover the costs and earn profit. Although the panels have a long life span, it is often difficult to convince prospective buyers to payout such a large sum for the panels. People in general are not willing to spend so much money at once on something as basic as drinking water.

- **Dependency on the weather**

  The panel's dependency on the weather can sometimes be a weakness for the company. Since the panels run on solar energy, the output quantity is highly dependent on the levels of solar radiation. The humidity in the air is higher in Bangladesh than in Australia, so actual output varies from the expected output. During hot sunny days, the output per panel per day ranges between 16 to 18 liters. On cloudy days, the output per panel per day ranges between 12 to 15 liters.

- **Dependency on Government Projects**

  Government projects are the main sources of income for FCB. The Government has access to adequate funds to implement large scale projects which most NGOs lack. However, it is very difficult and time consuming to secure government projects as described in Section 3.6.3. The time it takes to convince the agencies and then implement the projects may span over a period of 1.5 to 2 years!

- **No marketing budget**

  FCB does not have any budget for marketing or promotional activities. As a result the panel is not as well recognized as it should be. Without advertising or promotional activities, it is very difficult to introduce the panel to potential customers and persuade them to purchase it.

- **Space requirement**

  Another shortcoming is the fact that the panels need to be installed in open spaces with access to direct sunlight. The panels are not suitable for households with limited space. Especially in urban areas where space is a huge constraint. Although panels can be installed on the rooftops, a lot of pipes are required to feed water into the panels and collect water from it.

Opportunities

- **New market segments**

  FCB has the opportunity to enter new market segments like the private sector in which FCB can sell panels directly to end users. FCB may also pursue the industrial customers who are looking for green solutions to treating industrial waste water.

- **Sale of bottled water**

  FCB may also consider selling bottled water. Alongside selling panels, FCB can sell purified water from the panels in bottles.

- **Sale of Distilled water**

  FCB can also sell distilled water to other businesses who need distilled water for their products like battery sellers to top off lead acid batteries used in cars and trucks.

Threats

- **Lack of health consciousness amongst people**

  Majority of the people, especially in rural areas, are not very conscious about their health. Even though they suffer a great deal from water borne diseases, they are not very mindful about the type of water that they drink. They have become accustomed to drinking the contaminated water without realizing what the long-term effects that will have on their health. If people are not bothered about these things, it is very difficult to help them. It has been found during field surveys that some of the beneficiaries who were given the panels chose not to use them. They did not want to make the extra effort of feeding contaminated water into the panels and collecting purified water from them. They preferred drinking the contaminated water instead.

- **Alternative water solutions**

  FCB faces threats from alternative water solutions like Reverse Osmosis (removes salt from saline water), Drinkwell Systems (removes arsenic and fluoride from water), etc. Although no other product can solve all the water related problems at once, alternative products can be found that can solve one problem or another at a much larger scale than the panels.

Chapter 4
Recommendations & Conclusion

4.1 Recommendations

- **Reduce the price of panels**

  The price of the panels should be reduced in order to make the products affordable and competitive to other water treatment solutions. The feedback received from the customers and from the field is that the panels are too expensive compared to the output received per day. Many large projects are also in the pipeline but the only thing that is stopping them from materializing is the high price of the products. If the price of the panels are reduced, the volume of sales will increase significantly.

- **Shift manufacturing plant**

  The only manufacturing plant that F CUBED has, is currently located in Australia. All the costs related to land, labor, materials, etc. are much higher in Australia than in Bangladesh. FCUBED should shift the manufacturing plant to Bangladesh where the cost will be the lowest. High cost of production is reflected in the high prices being charged for the panels. Locating the plant in this country will also eliminate the import costs of the panels that have to be brought all the way from Australia.

- **Increase the efficiency of panels**

  The efficiency of the panels also has to be increased. The output capacity of the panels needs to be enhanced in order to justify the prices being charged for them. More investment in research and development is needed to make the panels perform better, even on cloudy days with low solar radiation. Otherwise, people will not receive adequate drinking water during winter and monsoon seasons when the humidity in the air is high.

- **Invest in marketing activities**

  Investing in advertising and promotional activities is a must if the company wants to spread awareness about its panels among the mass population. Advertisements and promotions are needed not only to inform people and educate them on the related benefits of the panels, but also to raise awareness about health issues caused by intake of polluted water.

- **Focus on other segments**

  FCB also needs to reduce its dependency on government projects by focusing on the other market segments like the private sector and industrial sector. It should also consider entering the bottled water and distilled water production market.

4.2 Conclusion

In conclusion, I would like to say that F CUBED Carocell Solar Water Processors/Panels is a revolutionary product in the arena of water treatment solutions. It is an environmentally friendly and sustainable solution to the world's growing water crisis. Although FCB is a profit seeking company, the panels it sells have the potential to better the lives of millions of people who are deprived of something as basic as clean drinking water. It is the only product in the market that can uplift the lives of people without causing any harm to the environment. All other products and processes either emit carbon, depletes natural resources, pollutes the environment further, or costs a lot of money.

However, the product is not at its optimum state yet. There are still many issues that need to be addressed and many improvements have to be made to the panel in terms of capacity and endurance. Continuous improvement is a must for any technology based product as technology evolves every minute.

At the same time, FCB needs to make many changes to its strategies in order to remain competitive in the market. It has to alter its strategies according to market needs and consumer expectations.

If FCB can make some of the changes that I have recommended, I believe the company has the potential to grow into a much larger and more profitable company in the future.

References

- www.fcubed.com.au
- http://thewaterproject.org/water-in-crisis-bangladesh
- www.bcct.gov.bd/index.php/trust-fund
- http://drinkwellsystems.com/
- https://en.wikipedia.org/wiki/Reverse_osmosis

Appendix

Appendix 1: Invitation for Tender Example

Palli Daridro Bimochon Foundation (PDBF)

Supplying of Safe Drinking Water by Solar Desalination/ Purification Panel to the Climate Vulnerable Areas of Bangladesh(Piloting) Project

House #05, Avenue #03, Rupnagar, Haji Road, Mirpur-2, Dhaka-1216

Invitation for Tenders

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

1	Ministry	Ministry of Local Government, Rural Development, and Cooperatives.
2	Agency	Palli Daridro Bimochon Foundation (PDBF)
3	Procuring Entity Name	Palli Daridro Bimochon Foundation (PDBF)
4	Procuring Entity District	Dhaka
5	Invitation for	**Tender for Procurement of Goods**
6	Invitation Ref No. & Date	PDBF/DSW/G/2013/06 Date: 02/05/2013
7	Procurement Method	**Open Tender Method(OTM)**
8	Budget and Source of Funds	GoB
9	Project Name	Supplying of Safe Drinking Water by Solar Desalination, Purification Panel to the Climate Vulnerable Areas of Bangladesh(Piloting) Project
10	Tender Package No.	GD1
11	Tender Package Name	Supply, Installation, Testing Commissioning of 291 Unit Solar Managed Desalination or Purification Panel.
12	Tender Publication Date	06/05/2013
13	Tender Last Selling Date	20/05/2013
	No Conditions Apply for Sale, Purchase or Distribution of Tender Documents	
14	Tender Closing Date and Time	21/05/2013 UPTO 12.00 Noon
15	Tender Opening Date and Time	21/05/2013 at 12.15pm
16	Name & Address of the office *Selling Tender Document* *Receiving Tender* *Opening Technical Proposal*	Palli Daridro Bimochon Foundation (PDBF) House No. 05, Avenue 03 Haji Road, Rupnagar, Mirpur-2, Dhaka-1216
17	**Eligibility of Tenderer**	Manufacturer or authorized dealer or local assembler/fabricator having (1) Min. 01(One)) years experience in similar supply contract (2) Experience of supply, installation, testing & commissioning of Min. 20 Nos. Solar Managed Desalination or Purification Panel in one year in Bangladesh (3) Min. cash-flow/liquid assets/credit facilities of Tk. 50,00,000.00(Fifty Lac) (4) Having management & technical personnel and logistics to provide after sales service.
18	Brief Description of Goods	Solar Managed Desalination or Purification Panel for Costal area use.
19	Brief Description of Related Services	Supply, Installation, Testing and Commissioning
20	Price of Tender Document	Tk. 1,500.00 (Taka One thousand & Five hundred) only

	Lot No	Identification of Lot	Location	Tender Security	Completion Time
21	01	Supply, Installation, Testing Commissioning of 291 Unit Solar Managed Desalination or Purification Panel.	06 Nos Costal District area in Bangladesh	Tk. 2,00,000.00 (Two Lac)	04 Weeks from the Date of Contract Agreement

22	Name of Official Inviting Tender	**Md. Mahbubur Rahman**		
23	Designation of Official Inviting Tender	Project Director		
24	Address of Official Inviting Tender	House No. 05, Avenue 03 Haji Road, Rupnagar C/A, Mirpur-2, Dhaka-1216		
25	Contact details of Official Inviting Tender	Telephone 9004045	E-mail pdbfsolar@gmail.com	Fax 8031597
26	The procuring entity reserves the right to reject all tenders or annul the Tender proceedings.			

Md. Mahbubur Rahman
Project Director

Appendix 2: Notification of Award Example

Palli Daridro Bimochon Foundation (PDBF)

Supplying of safe drinking water by solar Desalination/ Purification Panel to the climate vulnerable areas of Bangladesh (Piloting) Project

Notification of Award (Form PG3 - 7)

ReferenceNo:PDBF/SWDP/559/2013/17 Date: 22/05/2013

To:

F CUBED Bangladesh Solar Water Processors Ltd
House-05/A, (G-floor)
Road-94, Gulshan-2
Dhaka-1212

This is to notify you that your Tender dated *21/05/2013* for the supply of Goods and related Services for Supply, Installation, Testing Commissioning of 291 Unit Solar Managed Desalination or Purification Panel for the Contract Price of [redacted] as corrected and modified in accordance with the Instructions to Tenderers, has been approved by *Managing Director,* Palli Daridro Bimochon Foundation (PDBF)

You are thus requested to take following actions:

i. accept in writing the Notification of Award within seven (7) days of its issuance pursuant to ITT Sub-Clause 59.3

ii. furnish a Performance Security in the specified format and in the amount of [redacted] ***million)*** ,within fourteen (14) days of acceptance of this Notification of Award but not later than ***04/06/2013,*** in accordance with ITT Clause 61.2

iii. sign the Contract within twenty eight (28) days of issuance of this Notification of Award but not later than ***17/06/2013,*** in accordance with ITT Clause 64.2

You may proceed with the execution of the supply of Goods and related Services only upon completion of the above tasks. You may also please note that this Notification of Award shall constitute the formation of this Contract, which shall become binding upon you.

We attach the draft Contract and all other documents for your perusal and signature.

Md. Mahbubur Rahman

Project Director

Supplying of Safe Drinking Water by Solar Desalination/ Purification Panel to the Climate Vulnerable Areas of Bangladesh(Piloting) Project, PDBF

Cc to:
1. Managing Director (Additional secretary), Climate changes trust (for kind information).
2. Executive secretary to Managing Director (for kind information) PDBF.
3. DPD, Supplying of Safe Drinking Water by Solar Desalination/ Purification Panel to the Climate Vulnerable Areas of Bangladesh (Piloting) Project, PDBF.
4. Project file

Appendix 3: Purchase Order Example

brac

July 03, 2013

PO. No : BPD/WASH/2013/PO-1308

To

F Cubed BD. Solar Water Processors Ltd.
House # 5, Ground Floor, Road # 94, Gulshan-2, Dhaka-1212.

Req No : 847180

Date of Req : 2013-06-09

Attention : Dr. Md. Nurun Nabi, Project Coordinator

Subject : Purchase Order for FCubed Solar Panel.

Dear Sir,

Refer to your quotation dated 30.06.2013 regarding FCubed Solar Panel, the BRAC Management has been pleased to accept your offer and request you to supply & install the below mentioned items under the following terms and conditions.

1. Name of Item and Specification :

Name of Item	Specifications	Unit	Quantity	Unit Price	Total Price
Solar Panel					
Fcubed Solar Panel	FCUBED Solar Water Panel Model: CAROCEL 3000 Water Output: 15 L/day plus rainfall harvesting Dimensions: 1110 X 2880 mm Surface Area: 3.0m² Weight : 17 kg Expected life: 20 Years Country of Origin: Australia	Nos.	20.00	[redacted]	[redacted]
			Total :		[redacted]
			Grand Total :		[redacted]

In Word: [redacted]

2. Warranty and After Sales Service :
01 (one) Year

3. Place and Date of Delivery :

Place of Delivery	Due Date of Delivery	Quantity
Solar Panel		
Dakop Upazilla of Khulna & Morelgonj Upazilla of Bagherhat Districts respectively. Details delivery & installation schedule and contact details are attached herewith the purchase order.	18/07/2013	20.00

4. Mode of Payment :
Payment will be made by an automatic cash transfer directly into your bank account through e-transfer system in favor of your company after satisfactory delivery and received by the authority of BRAC and a notation on the Delivery Challan & Installtion certficate by the recipient (with name, Designation, & date) that the item has been supplied as per specification. Income Tax & VAT will be deducted at source as per Govt. Rule.

03-7-13

BRAC
BRAC CENTRE
75 Mohakhali
Dhaka 1212

T: 880-2-9881265
F: 880-2-8824525
E:procurement@brac.net
W:www.brac.net

Registered in Bangladesh under The societices Registration Act of 1860

Name:Md. Shamim Ahmed, PIN: 137266, Designation:Deputy Manager, E-Mail :shamim.ah@brac.net