Report On

"Sustainable automated carton making factory: How value for money procurement can add value to the Palmal group of Industry and gain competitive advantage. (2019)"

By

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ID: 18182019

A report submitted to the BIGD in partial fulfillment of the requirements for the degree of Masters in Procurement and Supply chain management (MPSM)

BRAC Institute of Governance and Development (BIGD)
Brac University
April, 2020

Declaration

It is hereby declared that

1. The submitted report is my 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 have acknowledged all main sources of help.

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Letter of Transmittal

Dr Md. Shanawez Hossain

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BRAC University

Subject: Final submission of the dissertation for MPSM program.

Dear Sir,

I am delighted to submit the final copy of the dissertation (Report) for my Masters in Procurement and Supply chain Management (MPSM) program. I am humbly acknowledging your continuous support and guidance for the MPSM program.

I have attempted my best from my end to finish the report with the essential data and recommended proposition in a significant compact and comprehensive manner as possible.

I trust that the report will meet the desires.

Sincerely yours,

Md Al Amin
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Date: 4/14/2020

Non-disclosure Agreement

This Agreement is been made between BRAC University, Bangladesh and Md Al Amin, ID: 18182019. BRAC and the Examiner hereinafter referred to as "the report" may be referred to as "Party" and jointly referred to as the "Parties" in this document. Whereas BRAC has requested that a Masters report entitled "Sustainable automated carton making factory: How founding a sustainable factory can add value to the Palmal group of Industry and gain competitive advantage. (2019)" written by Md Al Amin to be examined by the Examiner for the purpose of academic assessment and evaluation as part of the requirements of the post graduate program of BRAC in which the student named above is enrolled; and The Examiner conceded to BRAC is requested for such examination. BOTH PARTIES HAVE NOW AGREED AS FOLLOWS: 1. Definition of Confidential Information "Confidential Information" means the whole content of the report including any annexure, schedule, table to the report and any or part of confidential or proprietary information, know-how, techniques, and specifications including relevant records, data, book or report, trade secret, and technology which is made known or made available by BRAC to the Examiner. Such disclosure shall be for the purpose of academic assessment and evaluation as part of the requirements of the post graduate program enrolled by the student, whether or not such information is labelled in writing as confidential or proprietary. 2. Usage and Nondisclosure of Confidential Information (a) The Examiner agrees not to use any confidential information disclosed to him by BRAC for any purpose other than to asses and evaluate the report and to write report pertaining to the report. -2- (b) The Examiner agrees to take all actions necessary to protect the confidentiality of the confidential information, including without limitation, implementing and enforcing operating procedures to minimize the possibility of unauthorized use or copying of the confidential information. Without limiting the foregoing, the Examiner further agrees to utilize the same degree of care, to avoid unauthorized disclosure or use of the confidential information of the discloser that the Examiner would normally use with respect to its own confidential

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Executive Summary

Bangladesh is the second largest Ready-made Garments (RMG) exporter in the world and Palmal group of Industries takes the pride of being 2nd biggest RMG manufacturer in the country.

As on 2018 the "**yearly turnover**" of the industry was $292 USD with 58 operating factories. Few more projects are ongoing and "**Sustainable"** Palmal automated carton factory is one of them. However, before starting the project and from procurement perspective, we have conducted numerous studies on its establishment. Amongst those **"Feasibility report", "Value chain analysis", "Product category management**", projects "**Sustainability**" and its management analysis are mostly mentionable.

"**Financial analysis**" shows its own capability of financing the whole project**,** "**Peter kraljic model**" shows that how it will manage its category wise product, "**Value chain analysis**" model shows that how much value it will be adding to the industry with the establishment of the project and "**Sustainability**" analysis shows that how it will be accepted by its stakeholders as sustainable project. We have maintained different constructive ways of collecting required data. Real data was collected mostly from the "**supplier base**", Director & management team of the industry, one to one interviews with technical personnel and field workers.

Based on all analyses, we have a come to a conclusion saying the project will be a successful one and it will add value to the industry and gain "**competitive advantages**".

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List of Acronyms

RMG	Ready-made Garments
ETP	Effluent Treatment Plant
VFM	Value for Money
SLA	Service Level Agreement
AGM	Assistant General Manager
ESI	Early Supplier Involvement
GoB	Government of Bangladesh
DOE	Department of Environment
ILO	International Labour Organization
NBR	National Board of Revenue
DPM	Direct Procurement Method
BVFM	Best Value for Money
R&D	Research and Development
JIT	Just in Time
QA	Quality Assurance
ERP	Enterprise Resource Planning
ISO	Organization of International Standardization
WASA	Water Supply and Sewerage Authority
DESCO	Dhaka Electric Supply Company Limited
CSR	Corporate Social Responsibility
ADB	Asian Development Bank

Chapter 1

Concept Note of the report

1.1 Area of Study

The concept of sustainability and value for money is much broader, however, we will be specific to the concept at the sustainable sourcing and the project itself and providing environmental friendly output, best value for money capital machineries procurement and how that will add value to the industry and give an ultimate advantage over competitors. In addition to that feasibility of the project will be conducted.

1.2 Background of the topic

Bangladesh is the second largest exporting RMG country in the world following China. The demand of Bangladeshi product is going higher because of its quality and low price. Palmal is one of the leading RMG manufacturer who already has one manual carton factory to meet the whole demand. However, we have to outsource in some cases to fulfil customer demand bearing extra cost. However, it becomes difficult to ensure outsources standard as per Accord and Alliance (External Auditor). Considering the environment, goodwill of our company, and the compliance from Accord & Alliance, our top management has taken the initiative to build our own setup for Automatic carton making factory what will be the most environmental friendly and value for money at the same time.

1.3 Statement of the Problem

The quality, skills, manpower, compliance, and capacity of Plamal Group is up to the mark & comply with international standard and that is why more international brands are attracted and order volumes are at its peak level. As the company is fully export based, cartons are one of the vital parts as means of carrier. Even though Palmal already has one manual carton making factory but capacity is not as per current requirement. Subcontracting becomes essential in some cases for meeting the customer

demand. On top of that Accord & Alliance is continuously monitoring the supplier base and ensuring all compliances are followed as per their standard. Some subcontractors are failing to meet the compliance and failing to provide required quality. Company legs behind to meet the targeted date and has to consider air freight with extra cost and loses its goodwill. Therefore sustainable automated carton factory has become prioritized necessity.

1.4 Objective of Study

The main objective of this report will be to assess how infrastructural, socially, financially, technologically, and legally feasible the project will be and how much socially, economically, and environmentally sustainable the automated carton factory project will be that will add value to the industry and help to gain competitive advantages.

1.5 Literature Review

I will be using some procurement theories for justifying the establishment of the project. Out of many, I will be using some designated theories for covering specific areas.

I. ***Feasibility Study of the Project***

- To check the financial, social, environmental, technological, and legal feasibility of the project.

II. ***Sustainability of the project***

- To check that how sustainable the factory will be. From social, economic, and environmental perspective.

III. ***Peter Kraljic's supply matrix***

- At the time of procurement, category wise, how procuring entity should maintain relationship and what kind of strategy should follow, we will be discussing these at this theory.

IV. **Porter's Value Chain**

- By using Porter's value chain, we will be assessing that how a series of activities will add value to the industry and help to gain competitive advantages.

Few other procurement theories will be used depending of the necessity of the report.

1.6 Proposed research design

The design of the report will be participatory based where few one to one and group interviews will take place.

No.	Data Types	Concern Person/Data Collection from	Methodology	Remarks
1.	Primary Data	Project Director	One to One Interview	
2.	Secondary Data	Project Manager, Supplier, & Concern Staff	Group interview, Field Visit	
3.	Qualitative Data	Supplier & Concern Staff	Collective data, Group Interview and Observation	
4.	Quantitative Data	Production Manager, Production Staff & Supplier Data	Production Report analysis, Group Interview and Observation	

Table 1: Proposed research design

The research will be based on mixed methods. I will be doing research by following few steps.

Step 1: I will be selecting my priorities and practicalities.
e:g:- how sustainable the project will be? How will the project will ensure value for money, How show feasible the project will be and so on.

Step 2: Determine type of data I will be using.
e:g:- Primary Data, Secondary data, qualitative data, Quantitative data

Step 3: I will be deciding the way of collecting data

e:g:- Survey, Interview, Experiment, Secondary Data, User review.

Step 4: use of different methodologies for analyzing data.

Step 5: Writing proposal for the report.

Step 6: Writing literature review.

Step 7: Conducting various interviews. (One to One, Group)

Step 8: Analyzing data using primary and secondary data.

Step 9: Draft submission of the report

Step 10: Final Submission of the report

Chapter 2

Literature Review

2.1 Company Overview

Palmal Group of Industries, one of the promising RMG manufacturing business organizations, emerged in 1984 from the sole initiative of Late Engr. Mr. Nurul Haque Sikder, the former and founder Chairman and Managing Director of the Group. He started the business from a small enterprise but died leaving 4 factories. Since his absence, his son, Nafis Sikder, took over the responsibility as Managing Director and extended the business, till now, to 58 factories. Currently, it is one of the leading RMG suppliers in Bangladesh. Palmal has its own fabric composite factory, trims factory, garments factory, ETP plant, and carton factory.

Even though Palmal has one manual carton factory but because of its high volume of orders only one manual factory is not serving the full purpose and that is why Palmal has to engage subcontractors to meet the capacity. The necessity of an automated carton factory has become essential. Considering all factors, we will be starting to build an automated carton factory in near future. Before that all related literature will be verified and check that how feasible the project will be.

2.2 Peter Kraljic Model

In 1983, Peter kraljic invented a matrix known as Kraljic purchasing portfolio model that could be used to analyse to purchasing portfolio of a company. This model segment all products to be purchased and how department should spend time on various projects. This model also describes that how dept should maintain relationship with suppliers and what could be risk factors.

Following that, I have adopted the Karljic matrix to my project to have a clear view about the segmented product we will be buying and nature of relationship will be maintained for minimizing risk.

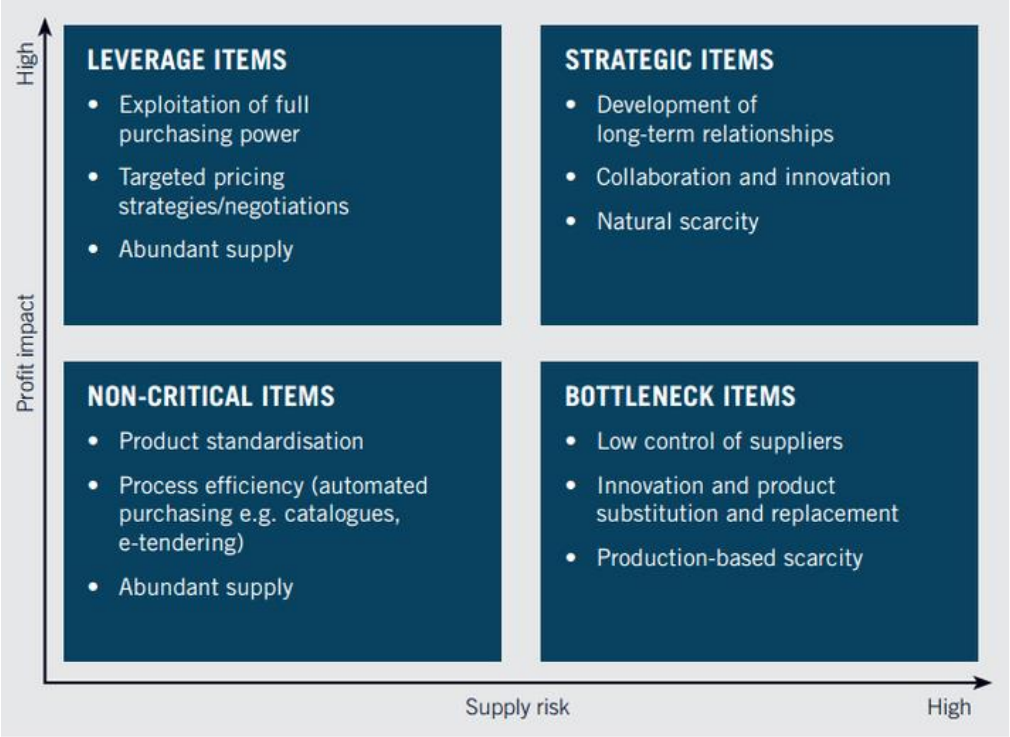

Figure 1: Peter Kraljic model

2.2.1 For non-critical item,

This segmented item has low impact upon organizational profitability and is low risked item.

Most commonly used example for this segment is stationery items and regular items. Different types of chemical like, H2SO4, HCL, Urea, ammonia will also be bought for regular production and ETP (Effluent Treatment Plant), Industrial water treatment plant. Framework agreement will be the best way to manage purchasing on a regular basis where call-off purchase method may be implemented.

2.2.2 For leverage item,

This segmented item has high profitability with low risk factors where bargaining power of buyer is high therefore buyer has the leverage to obtain a greater return.

We will be buying raw materials like papers, mostly brown paper, plastic sealable rope, recycle bags packing, vehicles, and other production related accessories. All these items are available to source locally and availability of these items is high. Therefore, we will be following Value for Money (VFM) concept for sourcing any suppliers.

2.2.3 For bottleneck items,

This segment is the opposite side of leverage item. Item can be very critical & machine can be stopped because of this and there could be very few sources available for that particular item, which is why the bargaining power of supplier is very high.

For our project, we will be installing giant sized, long machine where one full automated carton machine will be consisted of many small machines. Therefore maintenance cost might be higher and after warranty period, need for spare parts might be high and there will be very limited suppliers available at the market along with machine supplier. Considering all, we will consider Service Level Agreement (SLA) for optimal price and availability of required item.

2.2.4 For Strategic items

Finally, High supplier risk and high profit impact items covers all strategic suppliers. This segment explains the key supplier of the company so need to maintain a predictable and effective relationship with sources.

We will be buying some core machines like auto feeder machine, thin blade slitter scorer machine, plateform mould die-cutting machine, partition slotter machine, bundling machine etc. Only few critical and core suppliers build those machines so that we will have to maintain and establish collaborative relationship for commissioning and after sales services. Besides that, we will have to hire expertise for operating those machines as well.

2.3 Porter's Value Chain

When companies create or implement something different from its competitor and that add value to the company with series of activities are known as value chain. Value chain was first developed by Michael porter, 1985, in his book, competitive advantage. Following Porter's theory, as example, manufacturing companies create value by acquiring raw materials with optimizing price and ensuring its effective use. Electric gadget manufacturer introduces different featured item in the market what distinguishes them from its competitor and help the company get more market share and competitive advantages. That is value adding for that particular company.

Now, using Porter's value chain model, we will be analysing how an automated carton factory will add value to Palmal.

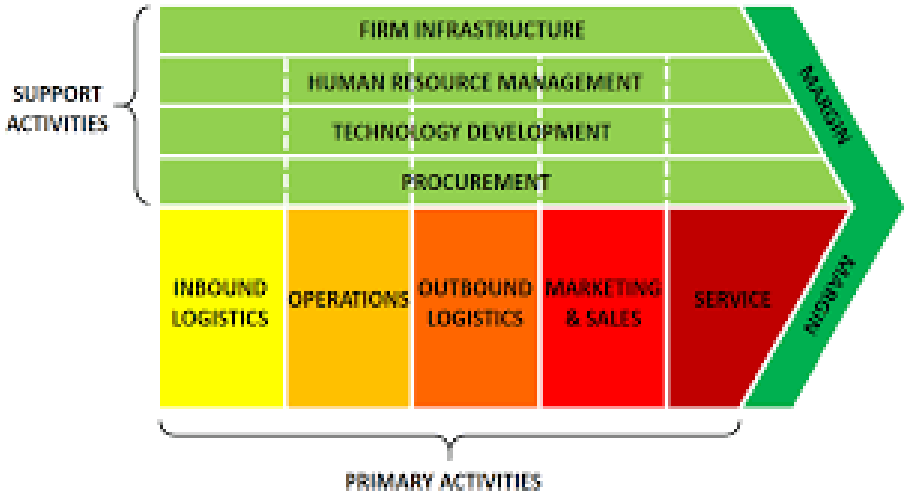

Figure 2: Porter value chain

Porters Value chain consists of numbers of activities. All activities are under two segments named primary activity and support activity. Primary activity has direct effect on production, maintenance, sales, and support service. Secondary activity support all primary activities and

they form the basis of any organization. Together both primary and secondary activities create the margin for the organization and that is value adding.

2.3.1 Primary Activity

2.3.1.1 Inbound logistic

Inbound logistic process is involved in receiving, storing, and internal distribution of all raw materials. Optimistic relationship with supplier is essential to create the value.

The key raw material for carton will be “Paper”. Reusable aluminum tips and binding rope will also be raw materials. The pre-condition for the smooth production will be the availability of raw materials and that is why both financially and professionally smooth relationship will be maintained by Palmal.

2.3.1.2 Operation

In the operation process, all activities are included regarding converting inputs to outputs means final product or semi-final products. Operation processes are the guideline for adding value.

Palmal will be using fully automated machine for making all cartons. The machine will be about 130 feet long and operation process will be done without human interaction. The input will be raw materials, papers, and will be processed to final product.

2.3.1.3 Outbound logistic

All processes related to delivering final product to customers, including storage, distribution, and transport.

Storage and distribution will be more applicable for Palmal carton factory as the raw material and corrugated cartons as final product will be mainly stored at the factory. Beside that all

Palmal garments factory will be getting carton delivered by its own logistic which will be part of outbound logistic.

2.3.1.4 Marketing and sales

This is related to get the final product to the market and create a demand for it. It is including maintaining a good relationship with customers.

Even though Palmal carton factory will be serving mostly its own factories but at the off-peak season it will also need to get orders from outside and do sub-contracting.

2.3.1.5 Service

Customer satisfaction brings profit and goodwill to the organization. Providing quality product is also the part of good service.

Majority of Palmal's customers are world renowned brand. Selling quality product is in their DNA, therefore, it will be unprofessional to provide them any of below standard product. So, providing quality product, maintaining good communication and being up for any conflict or query arises will be Palmal carton factory's core focus.

2.3.2 Support Activities

2.3.2.1 Firm's Infrastructure

Feasibility of the factory has been assessed and all aspects of the feasibility report, production line to Human resource, has been found sustainable. Palmal has its own Civil engineer and team. They will work with procurement, Accord & Aliance, compliance, and other related concern as a cross functional team for making a successful infrastructure of the factory.

2.3.2.2 Human Resource management

As a start-up, carton factory will be under a Director's supervision with an Assistant General Manager (AGM) and few other core members who will be in-charge of the foundation and primary work. With the progression of work and procurement of core machines, related employees will be hired with practical experiences and necessary raining will be provided as per requirement.

2.3.2.3 Technology Development

As the whole machine will be fully automated so that the necessity of the technology is tremendous. Most upgraded versioned machine is allocated at the procurement plan of this project so as employee. Most technologically sound person will be hired and engineer from machine will also be the part of the technical team as long those employees become more expert.

2.3.2.4 Procurement

Before proceeding for actual procurement, *Early Supplier Involvement* (ESI) method will be chosen for getting the right product for right job with the right quality.

2.4 Sustainability

According to the united nation, "sustainability means meeting our own needs without compromising the ability of future generations to meet their own needs."

Sustainability is a new terminology and is does not mean the environmentalism only. Sustainability includes economic development and social equity along with green environment.

Figure 3: Elements of Sustainability

2.4.1 Social aspects

It is the universal human rights and actual needs what are attainable by all people. However, people have to have the accessibility to enough resources and facilities in order to keep their family and community healthy.

Keeping in mind the social aspect of sustainability, Palmal has the strong compliance of NOT utilizing any child labor, equal opportunity of women and their payment, easy access to safe water and sanitary of workers. All those compliances and social aspects are monitored and evaluated in a regular basis by Accord and Alliances.

2.4.2 Environmental aspects

Environment first that is the motto of sustainability. All necessary works are done by maintaining the ecological integrity. Environment Systems are kept in balance while natural resources are consumed by humans at a certain rate while they are able to replenish themselves.

Corrugated carton is made with 100% recycle materials. Materials like, papers, carton binding pin, binding rope, will be recycled and re-used. In addition to those, Effluent Treatment Plant (ETP) will add value in terms of sustainability. ETP is one type of waste water treatment plant what aims to produce fresh and safe water from waste water. Everyday thousands of litters of water will be needed for paper processing so ETP will help the environment by re-using water.

2.4.3 Economic aspects

Economy is conserving resources and the concept is used to define and explain the value resources have today and their possible value in the future. For example, the value can be explained with the help of indicators like added value, assets and debts, savings, patent and intangible assets.

Raw material will be bought from local market what will help the local community to grow economically. Besides that, the factory itself will increase the value of property and assets of that local area in terms of development. In terms of Bangladesh, the future value of local property will be high be because of community development.

2.5 Feasibility Report

Generally feasibility report is conducted before initiating any development project, like factory. Investors and Principle of companies want to ensure that any project plan is actually feasible before investing any project. A feasibility study includes such vital information and data as the funding needs to complete the project, the market opportunity, government regulations, risk factors, strength and weaknesses, the management team and the financials of the company.

Palmal will finance the entire project. Before initiating the project we will conduct the feasibility report based on few aspects.

2.5.1 Financial aspects

Palmal has own financed most of its project. Currently 3(Three) projects are running where one project named "Arkay Composite Mill" will be the biggest project since Palmal's establishment. Another 2 projects including Palmal automated carton factory will be underway soon. Palmal's yearly turnover is $292 million, as on 2018. So the project is financially feasible.

2.5.2 **Environmental aspect**

Palmal owns one, out of only few Green factories in Bangladesh. In addition to that Palmal has ETP for water recycling and reusing in all dying and composite project, what helps the environment. Besides that, all factories are accredited and certified by Accord and Alliance for maintaining world standard compliance and sustainability.

2.5.3 Social aspect

Automated carton factory will be established in Dhamrai, Ashulia, where our print and embroidery factories are situated. Compared to density of population in Bangladesh, Ashulia area was less populated therefore social and infrastructural development wasn't that visible. However, after the establishment of our factories, more people had started to habitat there including our own staffs. Local council had accepted Palmal as prosperity of the community therefore more roads were built and now that area is becoming a commercial area. Besides that, Palmal is maintaining strong compliances in terms of child labour, equal payment, women empowerment that is why we have been able to create value to the society.

2.5.4 Technological aspect

Even though all machines will be newly installed with new technology so there could be an issue of using new tech efficiently. However, we will be recruiting skilled personnel who has the experience of using those, likewise our expert technician in print and embroidery factory where all machines are new with new technology and own recruited skilled people are running

whole factory with trained helpers. Not only that but also expert people from supplier will be with us for practically teaching operational manual to our employees.

2.5.5 Legal aspect

Palmal is accredited and certified by Accord and Alliances. It is also certified from DOE (Department of Environment) and registered by GoB (Government of Bangladesh). It respects and maintains the regulation of ILO (International Labour Organization). Besides that, the owner and Managing Director of the industry, Nafis Sikder, is consecutively 5 times CIP (Highest taxpayer) and awarded by NBR (National Board of Revenue) in individual, under 40 category.

Chapter 3

Primary and Secondary data Analysis

3.1 Using Primary Data

We will be using different research methodologies for the descriptive analysis. First of all, part of primary data collection, we have interviewed the Director and the General Manager (Production) of Palmal embroidery who will also be the core personnel of Palmal Carton factories. The operating system of carton factory will be similar to Palmal embroidery. It was a face to face interview and we had been able to rectify following findings.

Q 1: Will there be any after sales service available for strategic items of Palmal carton factory?

- Yes, industry will be making Service Level Agreement **(SLA)** for getting spare parts and after sales service with lowest market price.

Q 2: Will there be any agreement obtained for after sales services?

- Yes, as per machine supplier & contractual agreement warranty period will serve the purpose of after sales service for both machines and their maintenance. However, once the warranty periods are over, SLA will be the key for spare parts, maintenance, and physical service.

Q 3: Will there be any contingency plan for serving emergency purpose or in case of supplier fails?

- Yes, there will be "Plan B" for serving emergency. Even though SLA will be there but in case of supplier fails, production cannot be stopped, procurement team of Palmal will be

making priority based Direct Procurement **(DPM)** contract with few efficient suppliers from Supplier Base saying materials will be delivered on emergency & top urgent basis soon as supplier receives demand.

Q 4: Does the existing factory follow any strategy for the procurement of routine items?

- Yes, it does. Routine items like raw materials (Corrugated board, plastic re-useable rope, paper cone, and metal tip), stationery, cleaning goods, ETP chemicals, and daily useable solutions, all are daily required items for the factory. Our procurement team has been able to source optimal supplier and we are maintaining "**Framework Agreement**" with them for getting all items with optimal prices. Items are delivered as per stock level & requirement.

Q 5: How do you ensure Value for Money (VFM) purchase?

- First of all, for ensuring VFM, 3 segments needs to be fulfilled. The product has to be economical, effectiveness for the purpose, and efficient enough to serve the purpose. We have got strong supplier base where mostly reputed suppliers from all over the country are enlisted. Our technical, procurement, internal audit, and finance team work as cross functional team and using our expertise we ensure the value for money purchase. We do not just stop there, we aim to achieve Best Value for Money **(BVFM)** involving our R&D department.

Q 6: Will there be any strategy for ensuring smooth supply of raw materials?

- We are aiming to implement Just in Time **(JIT)** methodology for gaining efficient & most cost effective raw materials. In addition to that, our supplier base is contractually agreed to deliver products at our door step as per our requirement, hence, our own Palmal logistic is

dedicatedly ready to solve any issue regarding supply of product. However, in case of any unforeseen situation, we have contingency plan of supplying from another supplier in supplier base.

Q 7: How operation process itself will create value to the organization?

- Palmal carton factories operating process and operation will be unique as it will be utilizing fully automated machine where combined the length of the machine will be 130 feet long and operation will be fully automated and will be able to make 3ply, 5ply, and 7ply board. Minimal human involvement will be required. Only few companies are actually utilizing these type of automated machine for making corrugated board in Bangladesh and Palmal carton factory will be one of those what will value adding to company.

Q 8: In terms of sub-contracting, how will the sustainability be ensured?

- We aim to work as sub-contractor at the lean season when we will be getting less orders from buyers and only that lean time we are planning to act as sub-contractor to keep machines running. However, we have strong compliance team who ensures every footstep is been taken as per regulation and with a sustainable manner. Compliance team will ensure all backward linkages are sustainable before receiving any orders. If the backward linkages are found not committed enough to sustainability then no orders will be taken from them and they will be marked as red for future reference.

Q 9: How service can add value to Palmal carton factory when it will be serving mostly to its own factories?

- Every factory, their functions, their operations are independent but accountable to head office and higher management.

  All factories have Quality Assurance (QA) manager who along with his/her team ensures the best quality of product & supply chain manager does the same and keep the smooth supply of required products and ensure the delivery in a timely manner. Besides that head office based concern department will be using Enterprise Resource Planning (ERP) software for transparent, smooth, economical, and efficient operation. That is how, best possible services to each other will be ensured.

Q 10: How new technologies of new machines will be adapted to the operation system?

- As per procurement agreement, we will be following Early Supplier Involvement (ESI) method and supplier will be sending one technical expert along with machines. Expert will stay within the factory starting from machine set up to employee adaptation with new machines function. Primarily, duration will be 3 months. Expert will provide guidelines for set up, train relevant employee, and solve any troubleshooting arise. On the other hand, our in-house technical employee will closely work with the external expert and provide relevant training to any new employee joins.

Q 11: How will infrastructural sustainability be ensured?

- Infrastructure will play a big part in Palmal carton factory where, strategically, large scaled procurement will be required and that is why it will be so important to ensure sustainability within it. Our engineering team will make sure the forward linkages and the backward linkages are sustainable. Even though it would be a challenge to maintain in a place like

Dhaka but our compliance team will function as cross functional team with procurement, finance, and engineering team.

Q 12: Won't the Palmal carton factory be "locked in" with supplier by using Early Supplier Involvement (ESI) method?

- As the automated technology of the machine is new to these sector that is why technical specification is blurred to our technician. Considering the sustainability and the feasibility of the factory, higher management had decided to involve supplier in beforehand for getting transparent idea regarding technical specification, feasibility of the project, and sustainability of all machines. However, as per contact, they will work closely with our technical & compliance team as pre-review of the factory only. We are not bound to buy from them so there is shouldn't be any question arise regarding locked in.

Q 13: Why would you labelled the Palmal carton factory as "Sustainable"?

- As you are aware that for being labelled as sustainable one has to fulfil 3 (Three) criteria. First of all, it has to be environmental what the organization strive to achieve. Corrugated carton is made from 100% recycle materials. Materials like, papers, carton binding pin, binding rope, will be recycled and re-used. In addition to those, Effluent Treatment Plant (ETP) will add value in terms of sustainability. Secondly, Raw material will be bought from local market what will help the local community to grow economically. Besides that, the factory itself will help to increase the value of property and assets of that local area from development perspective. So the factory could be labelled as economical. Last of all, Palmal has the strong compliance of NOT utilizing any child labor but equal opportunity of women and their payment, easy access to safe water and sanitary of workers. Considering all those aspects, Palmal carton factory can be labelled as "Sustainable".

Q 14: How the labor law will be implemented?

- The Bangladesh Labor Act 2006 defines the "child" and the "adolescent" on the basis of age. As per section 2(8) of the Act, a person who has attained the age of 14 but below the age of 18 is considered to be an "adolescent" and as per section 2(63), a person not attaining the age of 14 is defined as a "child" and any labor carried out with those children are considered as "Child Labor". In respect of law, our HR department strictly maintain recruitment policy of hiring any adolescent along with their supporting documents. However, they are not engaged with any hazardous work.

Q15: Will the ETP plan be efficient in terms of sustainability?

- ETP is known for waste water treatment plant method and it is particularly designed for purifying industrial waste water. It separates and removes all harmful particles from waste water what is caused by effluent and release safe water to the environment. RMG industry effluent contains toxic materials like, cyanide, H2SO4, other dying chemicals what are so hazardous to environment, however, ETP separates all those particles and process and release safe water with a view to reusing water.

  We need 250,000lts of water for dying only and we do not suck this from land rather we use ETP for reusing water.

Q 16: How will the local area be financially benefitted from this project?

- Well, society gets different types of benefit from any surrounding development project. In support to that, infrastructural development occurred by constructing new roads, new habitats, and growing of local markets with the development of factory. Not only the

infrastructural development but also the economic development occurs as all raw materials will be bought from local market.

Q 17: Will the factory be accredited by GOB and certified by DOE?

- As per regulation of Bangladesh, all manufacturing companies have to have the accreditation from GoB and DOE. As on 2020, Palmal owns around 58 units of garments, embroidery, trims & accessories, printing, and composite factories. Some new factories' constructions are ongoing. First of all, Palmal group is accredited and approved by Accord & Alliance. Secondly, Factory wise the industry is accredited by GOB and DOE. Besides that, each factory has all kinds of license required by local government and we have separate sub-department under Legal department for maintaining all documentations.

Q 18: Won't the ETP sludge and water discharge system be a threatening for surrounding agricultural area and the environment?

- On February 2015, DoE had introduced standards and guidelines about sludge management for all industries and its factories in Bangladesh. DoE's new standard shows different ways of managing sludge in an environmental friendly way. Sludge is not considered as waste rather an asset and there are different ways for potentially use of sludge like dry matter, anaerobic digestion (biogas recovery), aerobic digestion (composting), agricultural use, controlled landfill, thermal (co-) incineration, land application, and recycling. Ultimately, we are using sludge in a potential way rather than throwing within the agricultural, or surrounding area, so, there is no way sludge or discharged water would be a threat by us for indigenous agricultural and environmental area.

Q 19: Will there be a noise mitigation measurement for the surrounding society?

- Yes, there will be. As per the regulation of Accord & Alliance and other Health & Safety measuring bodies, all workers have to wear the ear plug where there is loud sound. Beside that the location of the factory has to be away from indigenous habitats. All our factories are complying the regulation, however, some residents are growing next to all factories based on workers. To protect them from sound pollution, our loud machine rooms are insulated to make them noise pollution free.

3.2 Using Secondary Data

Part of secondary data, we had to do some field visits to get the real picture of the upcoming project. As we mentioned before this project going to be similar to Palmal embroidery therefore this projects management, its function, will be the same. In support to the establishment of the factory, few suppliers' factory and sales offices were visited and arranged a group interview with concern person asking questions from different perspective. Below some core interview questions are mentioned.

Q 1: How will new employee be adapted with the new technologically sounded automated machines?

- Automated machines from Hebei Liheng packing machineries and Hsien HSU machineries company, biggest automated carton making machine suppliers in Bangladesh, are capable of producing more than 100,000 average sized box/per day. Their single plant capacity is very high and they are able to produce complex design with high speed die cutting machine. Automated printing, stapling, binding, and gluing machines operates following cutting machine. Those machines use IMS (ISO-9001:2000, ISO-14001:2004, OHSAS-

18001:1999) certified system and using & adapting with those complex configuration could be a challenge. However, as per contract, machine supplier will provide an expert engineer who will be teaching all operating & technical mechanisms to our selected employees and will be staying within our factory for a minimum period of 3 months in case of any troubleshooting.

Following the training from allocated engineer, we will arrange more training sessions for existing and upcoming recruited staff. Future machine operators will be recruited with previously similar kind of machine operating experiences and they will be provided session wise training and there will be minimum of 3 (Three) supervisor at the time of machine operation.

Picture 1: Dashboard of automated carton making machine.

Picture 2: Automated Carton making machine.

Q 2: How will the environment be affected by the project and how will it legally sustain?

- Palmal industry is accredited by GoB and DOE and certified by Accord and Alliance. We have our own composite factory, printing factory, embroidery factory, knitting factory, trims and accessories factory, and numerous garments factories. We have some designated factories marked as "Green Factory" by accredited body. As the industry is vast so water consumption is very high as well as other environmental hazardous factors. However, all factors are brought down within the safe environment level. Following factors reflects that this project will not be hazardous to the environment.

Water source	**:**	From deep tube well by 40HP motor and usage level will be monitored by WASA. (Deep tube well is permitted by WASA), **Not hazardous.**

Power Source	:	Power will be provided from existing Sub-Station of 600KVA. (Permitted by DESCO), **Not hazardous**
Air Pollution	:	There will be no air pollution from the project, **Not hazardous.**
Sound Pollution	:	As per Noise Pollution (Control) Rules 2006, BD, acceptable industrial sound level has to be 70dB at day time and 75dB at night time. Complying with that our sound level at day will be max of 65dB at daytime and our factory will remain close at night, **Not hazardous.**

Table 2: Legal Environmental effect

Q 3: Will the project be feasible financially? Explain it using financial analysis.

- The founding chairman of the industry left with 4 factories and current Managing Director of the industry has increased that to 58 and maximum projects was self-financed by the industry with a small GoB mandatory loan from local banks. However, some basic financial analysis are demonstrated below for verifying the financial feasibility of the project. We have compared real data of 1984 and 2019 for getting a clear view of current financial status.

1. Total asset: Current asset + Non-current asset

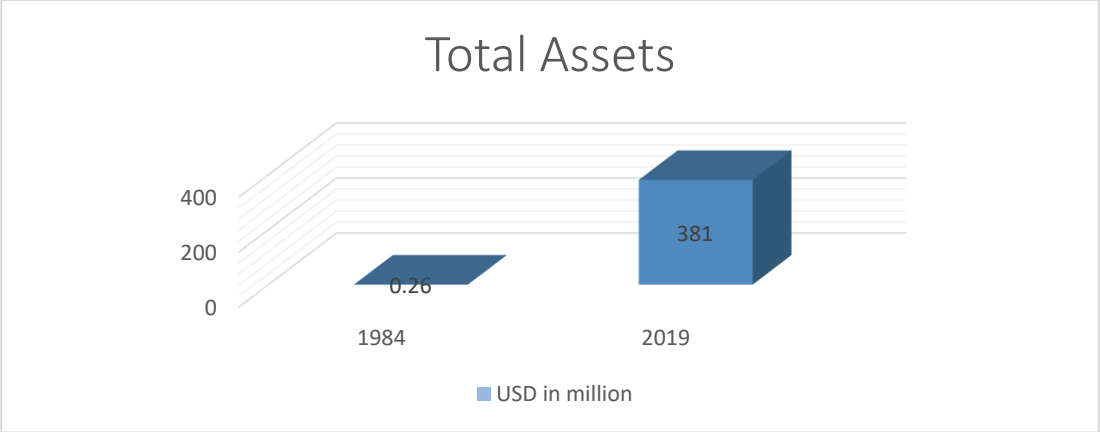

Chart 1: Total asset of the industry.

Total asset refers all current and non-current asset of the industry. According to chart 1, in 1984, total asset of Palmal was worth of 0.26 million US dollar with only 4 factories. However, it has been jumped up to 381 million US dollar with 58 factories within 35 years, which reflects its financial potentiality.

2. Current ratio: $\frac{\text{Current asset}}{\text{Current liability}}$

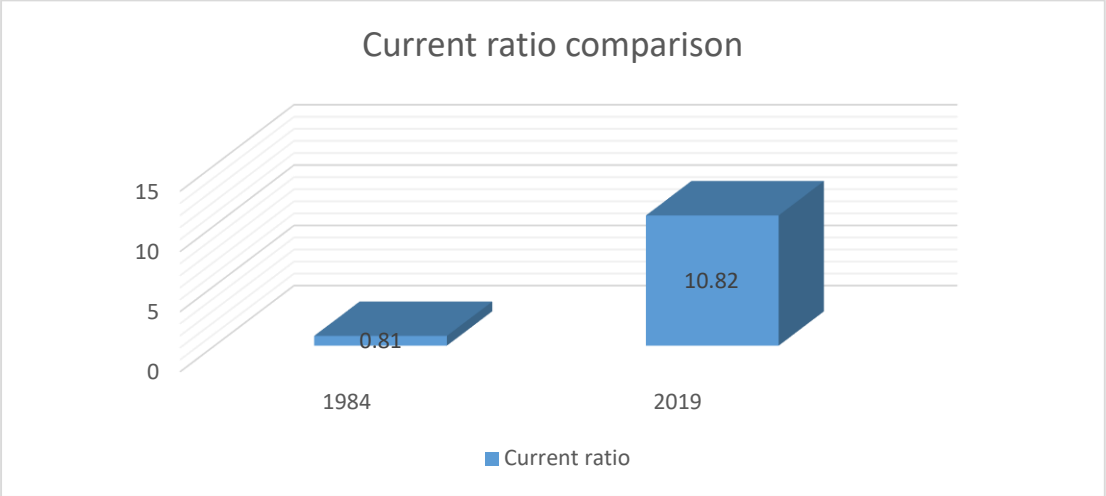

Chart 2: Current asset & liability ratio of the industry.

Current ratio shows the company's present capability of spending and financial condition. In 1984, company's current ratio was only 0.81 and by 2019 it had gone up to 10.82, what was a great achievement of the industry meaning present financial condition has become as strong as ever before. Therefore, capability of spending is so obvious that industry has taken initiative of another 4 projects along with Palmal carton factory.

3. Debt ratio: $\frac{\text{Total Liability}}{}$

Total Asset

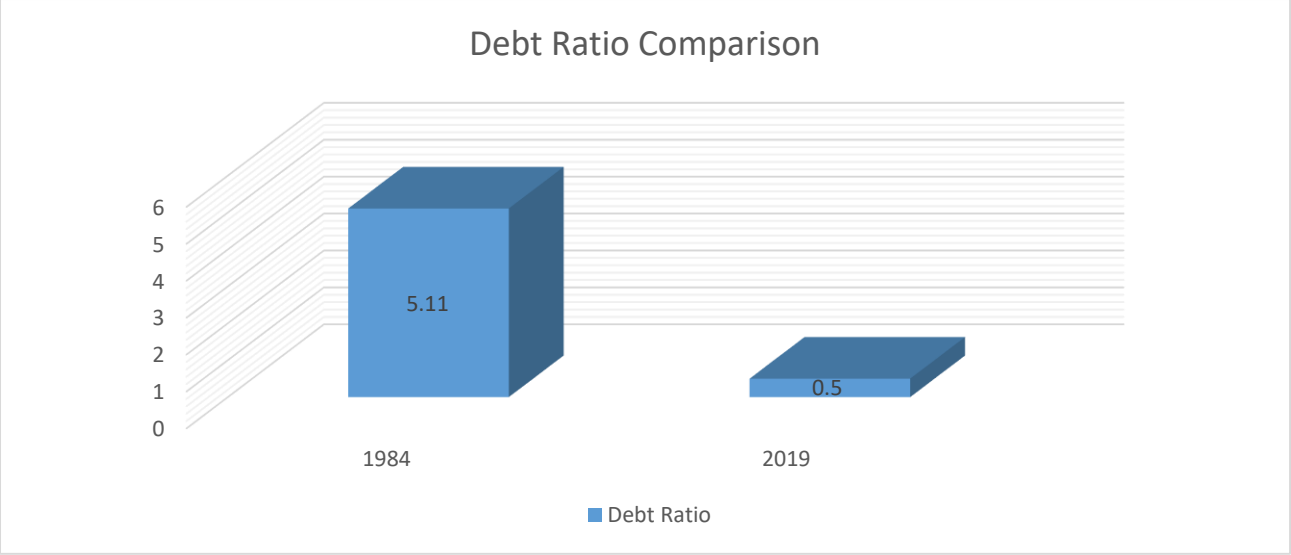

Chart 3: Total debt ratio of the industry.

Debt ratio shows the industry's actual liability compared to its assets. At the beginning of the industry it was struggling to spread its business because of liquid assets. Industry had to depend on secondary source like bank loan for spreading its business. Therefore, in 1984, debt ratio was at its peak level with 5.11 and it has achieved a great success to bring that down to below 1 by 2019 that means its total liability is very low compare to its assets.

4. Gross margin ratio: $\frac{\text{Gross Profit}}{\text{Net sales}}$

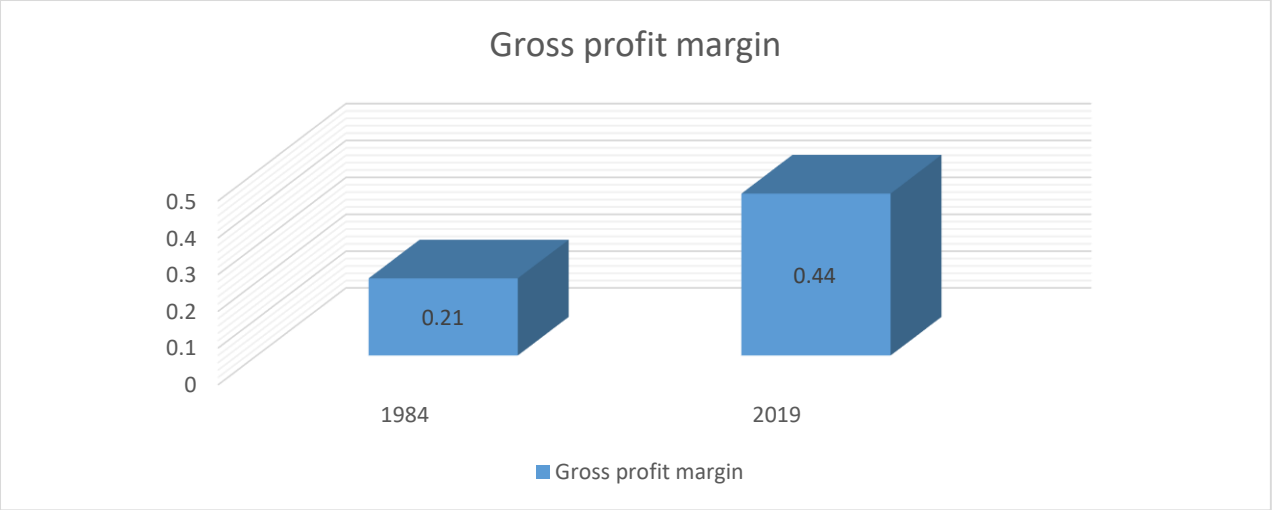

Chart 4: Gross profit margin of the industry.

Even though industry's yearly turnover is very high but its expenses has gone way high because of its gigantic size. Profit margin was as regular with 0.21 in 1984 but as time passes industry's expansion and sales volume has gone very high. Therefore its profit margin had increased to 0.44 by 2019.

Therefore, from those basic financial analysis of the industry it is clear that industry has its own ability to finance its own project. So it can be said that the project is financially feasible.

Q 4: How value for money procurement will be achieved and help to gain advantages over its competitors?

- According to the ADB and the World Bank, value for money is one of the key successful terminology that any organization and procurement department wants to achieve. Above we have discussed product categorization through Peter Kraljic matrix. If Palmal group can ensure the value for money to its procurement cycle for buying any categorized product then industry can ensure BVFM and gain advantages over its competitors.

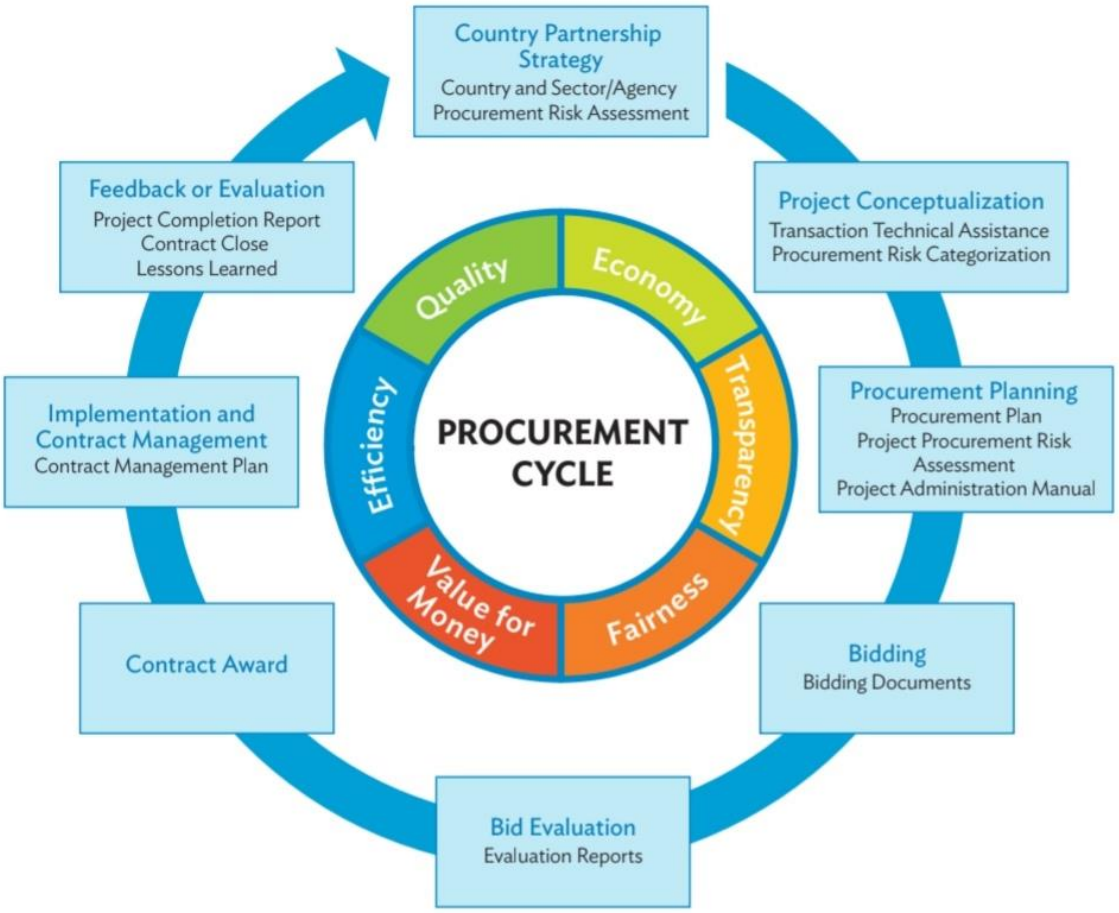

Figure 4: Procurement cycle of ADB.

Procurement department has to ensure fairness, transparency, economical aspects at the non-critical, leverage categorized product. Along with them they also need to ensure efficiency and good quality at the bottleneck and strategic item. If all those perspectives are implemented unambiguously from the procurement plan to contract management of the procurement cycle then BVFM can be achieved, surely.

Palmal automated carton factory will be fulfilling most of his own factories. However, at the off season, this factory will be doing subcontracting to keep the machine running. This type of automated carton factory is very rare in Bangladesh. Because of its uniqueness and Industries own reputation, Palmal carton factory will gain advantages over its competitors.

Chapter 4

Conclusion

There are 3 factors works behind any expansion of project. Firstly, its necessity, secondly willingness to expand, and thirdly, financial capability of the organization. From the beginning of the report we were mapping how those 3 factors will fit for this project and finally it has become clear to us that required factory can be established as a new unit of automated carton factory.

4.1 Recommendation

We have discussed different factors of establishments from procurement perspective. Firstly, its feasibility shows that industry is capable enough of financing the project, their ETP, noise pollution measurements, and other factors will help them to be most feasible environmentally. Palmal is committed to fulfill Corporate Social Responsibility (CSR) as they are doing now for other factories. Industry is legally & technologically feasible. Secondly, industry has different strategy for managing different categories of products, as per Kraljic model. Thirdly, industry is operating one of the green factory out of very few in the world. Therefore they have the capability and qualification of functioning a factory in a sustainable manner. So, industry is feasible in sustainable perspective. Fourthly, we have demonstrated how it will add value with his each sub headings to the industry.

Based on the above discussion, it can be recommended that industry should proceed for the project of automated carton factory.

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