UGC & Govt. Approved
Sonargaon University (SU)
সোনারগাঁও ইউনিভার্সিটি (এসইউ)

# Thesis Report

# On

# Supply Chain Management Practices of Ready Made Garments Sector in Bangladesh: A Case Study on Zaheen Knitwear's Limited

**Submitted To**

Department of Business Administration

Faculty of Business

Sonargaon University (SU)

Dhaka-1215

**Submitted By**

Mohammad Mehedi Hasan

ID: MBA 2202026013

Program: MBA (Major in Supply Chain Management)

Semester: Spring 2023

Department of Business Administration

Faculty of Business

Sonargaon University (SU)

**Date of Submission: 11 May, 2023**

UGC & Govt. Approved
Sonargaon University (SU)
সোনারগাঁও ইউনিভার্সিটি (এসইউ)

# Thesis Report

# On

# Supply Chain Management Practices of Ready Made Garments Sector in Bangladesh: A Case Study on Zaheen Knitwear's Limited


**Submitted To**

Ashik Das

Lecturer

Department of Business Administration

Faculty of Business

Sonargaon University (SU)

**Submitted By**

Mohammad Mehedi Hasan

ID: MBA 2202026013

Program: MBA (Major in Supply Chain Management)

Semester: Spring 2023

Department of Business Administration

Faculty of Business

Sonargaon University (SU)



**Date of Submission: 11 May, 2023**

# Letter of Transmittal

Date: 11 May, 2023

Ashik Das
Lecturer
Department of Business Administration
Sonargaon University.

**Subject: Submission of Thesis Report on Supply Chain Management Practices of Ready Made Garments Sector in Bangladesh: A Case Study on Zaheen Knitwear's Limited.**

Dear Sir,

With due respect, I would like to inform you that it is a great pleasure and privilege to present the report titled **Supply Chain Management Practices of Ready Made Garments Sector in Bangladesh: A Case Study on Zaheen Knitwear's Limited, Keodala, Madanpur, Bandar, Narayangonj, Bangladesh**. This was assigned to me as a partial requirement for the completion of MBA program. Throughout the study I have tried the best of my capacity to accommodate as much as information and relevant issues as possible and tried followed the instructions that you have suggested. I put my best effort to make this report such as much detailed as possible. I sincerely believe that report would satisfy and meet the requirement and will serve the purpose of my Thesis program.

I am grateful to you for your kind guidance and cooperation at every step of my endeavor during preparing this report. It would be a great help for me if you kindly take some time to go through the report and evaluate this. It will be a big reward for my effort if it adds value to the research literature.

Sincerely Yours,
…….
Name: Mohammad Mehedi Hasan
ID: MBA 2202026013
Batch: 26.
Program: MBA, Department of Business Administration,
Sonargaon University.

## Student Declaration

I am **Mohammad Mehedi Hasan**, student of MBA 26 Batch, Department of Business Administration, **Sonargaon University**, hereby declare that the work presented in this report on Supply Chain Management Practices of Readymade Garments Industry in Bangladesh: A Case Study on Zaheen Knitwears Ltd, Keodala, Madanpur, Bandar, Narayangonj, Bangladesh, has been carried out by me and has not been previously submitted to any other organization for an academic purpose.

The work I have presented does not breach any existing copyright and interpretations drawn there in are based on materials collected by myself.

……

Name: Mohammad Mehedi Hasan
ID: MBA 2202026013
Batch: 26.
Program: MBA
Department of Business Administration,
Sonargaon University

# Letter of Acceptance

This is to certify that Mohammad Mehedi Hasan, ID No: MBA 2202026013, Department of Business Administration, has completed his Thesis report titled on "**Supply Chain Management Practices of Readymade Garments Sector in Bangladesh: A Case Study on Zaheen Knitwear's Limited,**" under my supervision as a part of partial requirement for obtaining Masters of Business Administration (MBA) degree in Supply Chain Management Major. This report can be accepted for evaluation.

……
Ashik Das
Lecturer
Department of Business Administration
Sonargaon University.

# Acknowledgement

First of all, I would like to thank Almighty Allah who blessed me and made it possible for me to complete this Thesis Report. I wish to express profound gratitude to my honorable Thesis supervisor **Ashik Das,** Lecturer, Department of Business Administration, Sonargaon University for her persistent guidance, keen interest and continuous encouragement. I am very much grateful to **S. Pobitro Kumar Saha**, General Manager-Knitting & Dyeing, Zaheen Knitwears Ltd, Keodala, Madanpur, Bandar, Narayangonj, Bangladesh. Without their direction and suggestion, it would be difficult for me to prepare this report. I would also like to thank all other officers who gave me their valuable time in between their busy working hour and helped me to make my report resourceful providing necessary information.

# Abstract

The term “supply chain management” has become a popular buzzword, probably first used by consultants in the late 1980s & then analyzed by the academic community in the 1990s. The ready-made garment (RMG) industry has recently occupied the largest part of exports and foreign currency in Bangladesh and has been for more than a decade the second largest contributor to gross domestic product (GDP). Millions of poor women and men are employed in this industry. However, a supporting import quota system in the USA was stopped in 2005 which has left the RMG sector struggling against new challenges that need to be properly addressed. As the end consumers of the apparel fashion market are becoming increasingly time-sensitive, a decrease in lead time, besides quality and cost criteria, is needed to win more orders from buyers. We have examined the opportunity that lies in an integrated supply chain to provide a competitive advantage to the Bangladesh RMG sector. A system dynamics approach has been used to identify the dominant variables of supply chain performance (such as enablers, performance or results, and inhibitors) in the RMG sector. Open and open end questionnaire will be conducted with senior management personnel, supply chain professionals, and merchandisers of the RMG industry. Based on the findings, a causal loop diagram is proposed to help understand the dynamic behavior among the said variables so that the top management may take effective decisions in order to enhance the supply chain performance in the long run.

# Table of Contents

**Particulars**


| | |
|---|---|
| **Letter of Transmittal** | **I** |
| **Student Declaration** | **II** |
| **Letter of Acceptance** | **III** |
| **Acknowledgement** | **IV** |
| **Abstract** | **V** |

| Serial No | Contents | Page No |
|---|---|---|
| | **Chapter- One Introduction** | |
| 1.1 | Introductions | 2 |
| 1.2 | Origin of the Study | 2 |
| 1.3 | Objectives of the Study | 2 |
| 1.4 | Scope of the study | 3 |
| 1.5 | Sources of Data | 3 |
| 1.6 | Limitations of the Study | 3 |
| | **Chapter- Two Industry Overview** | |
| 2.1 | Meaning of Ready-made Garments (RMG) | 5 |
| 2.2 | History of Ready-made Garments (RMG) Sector in Bangladesh | 5 |
| 2.3 | Present Situation of RMG Sector in Bangladesh | 6 |
| 2.4 | Contribution of RMG Sector to the National Economy | 6 |
| 2.5 | The Opportunity of RMG Sector in Bangladesh | 7 |
| 2.6 | Challenges for RMG Sector of Bangladesh | 8 |
| 2.7 | Hoping for RMG Sector of Bangladesh | 9 |
| 2.8 | List of some RMG Company of Bangladesh | 9 |

| | | |
|---|---|---|
| **Chapter- Three<br>Organizational Overview** | | |
| 3.1 | About Zaheen Knitwear's Ltd | 11 |
| 3.2 | Vision of Zaheen Knitwear's Ltd | 12 |
| 3.3 | Mission of Zaheen Knitwear's Ltd | 12 |
| 3.4 | Customer Distribution Portfolio | 12 |
| 3.5 | Role Achievement Strength | 13 |
| **Chapter- Four<br>Theoretical Framework of Supply Chain Management** | | |
| 4.1 | The origin of Supply Chain Management | 15 |
| 4.2 | Definitional Analysis of Supply Chain Management | 16 |
| 4.3 | Importance of SCM | 17 |
| 4.4 | Common Factors of SCM | 17 |
| 4.5 | SCM (Supply Chain Management) Processes | 17 |
| 4.6 | Seven Principles of Supply Chain Management | 18 |
| 4.7 | Common Challenges of SCM | 19 |
| 4.8 | Supply Chain Management Software | 19 |
| **Chapter- Five<br>Supply Chain Management Practices of Zaheen Knitwear's Ltd** | | |
| 5.1 | Knitting Section | 22 |
| 5.2 | Dyeing Section | 26 |
| 5.3 | Pattern & sample section | 32 |
| 5.4 | Cutting section | 32 |
| 5.5 | Printing section | 33 |
| 5.6 | Sewing section | 34 |
| 5.7 | Quality check in sewing section | 35 |
| 5.8 | Finishing section | 36 |
| **Chapter- Six<br>Findings, Recommendations and Conclusion** | | |
| 6.1 | Findings | 41 |
| 6.2 | Recommendations | 42 |
| 6.3 | Conclusion | 43 |

# *Chapter- One*

# *Introduction*

## 1.1 Introductions

In today's world of globalization many apparel retailers are building strong supply chains to gain advantage over their competitors by offering the best value to their customers. The supply-chain management (SCM) has become very critical to manage risk, dynamism, and complexities of global sourcing. A totally integrated supply chain is required for the company to get gain the maximum benefits. The objectives of the supply chain and the performance measurements need to be understood in order to build the most effective supply chain. Performance measurements provide an approach to identify the success and potential of supply management strategies. One major aspect of the SCM is to select the right sources of supply in the global business environment that can support corporate strategy. Contrary to the conventional adversarial relationships, effective SCM in the new competition suggests seeking close relationships in the long term with less number of partners. Considering the rapidly changing market conditions and customer seeking the best value, long-term relationships with the vendors became very critical in the apparel industry.

Therefore, the apparel retailers are looking for the vendors who can provide the best cost in the fastest way. Such a relationship is regarded as partnership since it includes activities such as information sharing, joint product design, or sharing storage spaces. The purpose of this report is to emphasize the importance the vendor-selection problem and its relation to the supply-chain strategy.

## 1.2 Origin of the Study

This report on Supply chain Management practices of Readymade Garments in Bangladesh: A case study on Zaheen Knitwears Ltd, Keodala, Madanpur, Bandar, Narayanganj, Bangladesh is initiated as a part of the Thesis Program which is required as a student of Masters of Business Administration to conduct a practical orientation in any organization. For fulfilling the requirements, I have done the Thesis Program at the Zaheen Knitwears Ltd, Keodala, Madanpur, Bandar, Narayanganj, Bangladesh. The report is generated under the supervision of Ashik Das, Lecturer, Department of Business Administration, Sonargaon University.

## 1.3 Objectives of the Study

The objectives of the study will be divided into two parts, which are as follows:

General Objective

The main objective of the report is to examine, evaluate and analyze supply chain management process as well as identify key challenges and how they can be addressed.

Specific Objective

- Evaluating the importance of Supply Chain Management from organization's point of view
- Analyzing the performance of production department and its sub related department.
- Comparing the supply chain management activities of ZKL with other renowned.
- Getting the practical knowledge about textile sectors and its environment.

- Evaluating the performance of SCM and the procedure to deals with their consumers.
- Identifying some recommendations to overcome the related problems about SCM.

### 1.4 Scope of the study

This study analyses the meaning of Supply chain management based on some theories available in literature. Supply Chain Management is evolving in its meaning and practice. The study discusses the role of supply chain management in Industrial development. Supply chain management is presently one of the most discussed topics.

The purpose of the study is to provide deep understanding about the benefit of supply chain, accountability and show steps taken by the organization to sustain in global and competitive business world. The study has been taken to observe different supply chain management areas of other textile industry in Bangladesh and its contribution. This study found supply chain management of Readymade garments industry of Zaheen Knitwers Limited as well as others in Bangladesh. The study reveals that Readymade garments industries of Bangladesh are trying to swell their Contribution to accordance with their performance.

### 1.5 Sources of Data

- Primary Data
    - Personal Observation.
    - Discussion with the employee.
    - Work in different department.
- Secondary Data
    - Office Documents.
    - Annual Report.
    - Published Document.
    - Official Website.

### 1.6 Limitations of the Study

Many limitations and constraints restricted the study work several times which, if absent, could make the effort fully successful. The limitations are as follows

- Due to lack of time
- Difficult to verify the accuracy of the collected data
- It was so difficult to collect the adequate and real data from the assigned organization
- Improper combination among various department
- Adequate books, publication and journals were not available
- The officials were very busy. They could me very little information to cover such broad functional area of a company

I carried out such a study for the first time, so inexperience is one of main constraints of the report.

# *Chapter- Two*
# *Industry Overview*

## 2.1 Meaning of Ready-made Garments (RMG)

Bangladesh, the southern Asian country has a population of approximately 164 million people. The economy of Bangladesh is significantly dependent on agriculture. But its great news for the country that, garments sector (RMG) sector of Bangladesh has risen as the biggest earner of foreign currency. This sector creates about 4.2 million employment opportunities and contributes significantly to the GDP. Readymade garments (RMG) of Bangladesh are powered by young, urbanizing, workers, where most of them are women.

## 2.2 History of Ready-made Garments (RMG) Sector in Bangladesh

The foundation of the textile sector was first established in the 60th decade of the 19th century. For the first time, the industry exported shirts (Mercury shirts) to the European market in 1965-66, which was produced from Karachi. In the latter, 9 exporting industries were available in 1977-78. The three largest industries at that time were Riaz Garments, Jewel Garments, and Paris Garments. Among those, Riaz Garments was the most famous and oldest industry at that time. In the earlier stage, Riaz Garments of Mohammad Reaz Uddin started its business with some tailoring shop in the name of Riaz store. Later, the name turned into Riaz Garments from Riaz store in 1973, and from 1978 the company started exporting products in the abroad by exporting 1 million pieces of shirts in the South Korean Company named "Olanda". "Desh Garments" is another pioneer of the Bangladesh RMG sector.

In 1979, Desh Garments started a joint project with the South Korean company "Daiyuu". At the same time, several garments were introduced such as-Stylecraft limited by Shamsur Rahman, Aristocraft Limited by AM Subid Ali, Azim Group by Engineer Mohammad Fazlul Azim, and Sunman Group by Major (Retd) Abdul Mannan. By following the beginners of the RMG sector, some other discreet and hard-working entrepreneurs started their RMG business in the country. From there, the RMG sector of Bangladesh was developing day by day and not needed to look back. Though this sector had passed various critical stages through the path. In that time, we learned about child labor in 1994, and in 1995 we made our garments industry free from child labor very successfully.

Before the independence in 1971, Bangladesh was one of poorest countries in the world. No major industries were developed in Bangladesh, when it was known as East Pakistan, due to discriminatory attitude and policies of the government of the then West Pakistan. So, rebuilding the war-ravaged country with limited resources appeared to be the biggest challenge for us. When our lone export earner – the jute industry – started losing its golden days, it is the RMG sector that replaced it, and then, to overtake it.

After the independence in 1971, Bangladesh was one of poorest countries in the world. The industry that has been making crucial contribution to rebuilding the country and its economy is none other than the readymade garment (RMG) industry which is now the single biggest export earner for Bangladesh. The sector accounts for 81% of total export earnings of the country. The apparel industry of Bangladesh started its journey in the 1980s and has come to the position it is in today.

The late Nurool Quader Khan was the pioneer of the readymade garment industry in Bangladesh. He had a vision of how to transform the country. In 1978, he sent 130 trainees to South Korea where they learned how to produce readymade garments. With those trainees, he set up the first factory – Desh Garments – to produce garments for export.

At the same time, the late Akhter Mohammad Musa of Bond Garments, the late Mohammad Reazuddin of Reaz Garments, Md Humayun of Paris Garments, Engineer Mohammad Fazlul Azim of Azim Group, Major (Retd) Abdul Mannan of Sunman Group, M Shamsur Rahman of Stylecraft Limited, the first President of BGMEA, AM Subid Ali of Aristocrat Limited also came forward and established some of the first garment factories in Bangladesh. Following their footsteps, other prudent and hard-working entrepreneurs started RMG factories in the country. Since then, Bangladeshi garment industry did not need to look behind. Despite many difficulties faced by the sector over the past few years, it has carved a niche in world market and kept continuing to show robust performance.

## 2.3 Present Situation of RMG Sector in Bangladesh

The quota system was a great blessing for establishing our garments industry. We were strongly benefited from using that. As a result, we can see a matured garments industry today. But while the quota system was approaching an end in 2004, there are so many who got upset about the RMG sector of Bangladesh.

Though in the latter it can't be affected here as the experts seemed. We conquered the post-quota challenges and made that a successful story. In the RMG sector of Bangladesh, there are more than 5000 garment factories (private statistics) at the current time, employing more than 12 lack laborers, where 85% of the labor force is women. But, according to BGMEA the number of garment factories in Bangladesh around 4000. Now, the RMG industry is the country's largest export earner with a value of over $24.49bn of exports in the last financial year. It's great news for us that Bangladesh is clearly ahead of other South Asian suppliers in terms of the capacity of the ready-made garments industry. Though, there are various types of garments are manufactured in Bangladesh, but all the readymade garments are classified into two broad categories, where one is woven products and another one is knitted products.

Woven products include Shirts, Pants, and Trousers. On the other hand, the knitted product includes T-Shirts, Polo Shirts, Undergarments, Socks, Stockings, and Sweaters. Woven garments still dominate the export earnings of the country. From the BGMEA website, it's seen that Day by day knitted items production is increasing at a considerable rate and now about 40% export earnings have been achieved from knitted products.

## 2.4 Contribution of RMG Sector to the National Economy

The role RMG sector in Bangladesh's economy is remarkable. It's seen that, from the last decade, the RMG sector contributes to the national economy at a considerable rate. About 76% of the total export earnings come from the RMG sector. From statistics, it's known that in FY 2003-04 RMG sector of Bangladesh earned US$ 5,686.06 million, in FY 2004-05 the value was US$ 6,417.67.67 million, in FY 2005-06 the value was US$ 7900.80 million, in FY 2006- 07 the

value was US$ 9,211.23 million, in FY 2007-08 the value was US$ 10,699.80 million, in FY 2008-09 the value was US$ 12.35 billion and finally in FY 2013-14 the value stands at $24.49billion.

## 2.5 The Opportunity of RMG Sector in Bangladesh

RMG sector of Bangladesh has some key factors which inspired the steady growth of this sector. Though it's a matter of great surprise for so many that how the RMG sector of Bangladesh continues to show its robust performance in the world

The main key factors which have a great influence on the RMG sector of Bangladesh are the following:

1. Vast labor force

2. Skilled human resources

3. Technological upgrades

4. Government supports for textile and clothing

5. Special economic/export processing zone

6. Creation of textile and clothing villages

7. The incentive for use of local inputs

8. Duty reduction for the import of inputs/machines

9. Income tax reduction

10. And international supports like GSP, GSP+, duty-free access, etc.

By using the above key points we can easily take place the world"s readymade garments market very strongly. But there"s some another key factor. If we apply those key factors in our readymade garments sector, then we will achieve the priority to the world's famous buyers' notebook.

**Those key factors are**

**1. Cost-Effective Strategy:**

Cost-Effective Strategy includes the following two key points:

a. Cost reduction strategy:

Cost reduction strategy should begin with assigning the highest priority for establishing backward linkages. The establishment of backward linkages will reduce our dependence on foreign sources which will reduce the total and average production cost of garments. This Strategy will make our products more competitive in the world's ready-made garments market.

b. Labor productivity improvement:

Bangladeshi workers are not as efficient as Hong Kong, South Korea, and Sri Lankan workers. Wages are low in Bangladesh, but it does not necessarily mean that relatively low wages workers automatically lead to higher productivity. So, to keep the place in the world's largest competitive market, labor productivity must be improved.

**2. New product development strategy:**

It's a matter of great sorrow for us that, we are regularly produced the same products. Our product categories are very less in quantities. Our product items that are exported into the foreign market are Shirts-60%, Jackets-11%, Knit items-10%, Trousers-7%, and Others11.50%. To survive in the world's most competitive RMG market, we have to develop new product items with a lot of variations.

**3. Product diversification strategy:**

Product Diversification Strategy is an important factor to keep the place in the world's readymade garments market. Different types of products should be produced by applying fashion. Thailand, China, India, Pakistan, Hong Kong, Singapore, Malaysia, Indonesia, and others are the main competitors of Bangladesh. They are already ahead of Bangladesh in product diversification strategy areas.

**4. Market diversification strategy:**

Bangladesh has exported its products to the world's limited market. Most are in the USA, Canada, and Europe. About 46% of its total garment exports go to the USA, 14% to Canada, and the rest of those into the European market. The competitors of Bangladesh have regularly expanded their markets and keep changing their products by using fashion.

The following key factors must be undertaken during a market diversification strategy:

a. Market research on product design
b. Market research on product development
c. Market promotion through trade fairs, exhibitions, etc.
d. Human resources development by providing training.

## 2.6 Challenges for RMG Sector of Bangladesh

Though the RMG sector of Bangladesh has achieved the second spot for the highest number of garments exporter, it has a lot of problems. The major problems faced by the RMG sector currently are the lack of safety in working place and working conditions for the millions of garment workers. It's become a great challenge for the upcoming fiscal year of Bangladesh. Another important one is political stability.

Two major incidents in the RMG sector of Bangladesh are the Tazreen fire and the Rana Plaza collapse, which have brought the issue of workplace safety to the fore and led all stakeholders to

act accordingly. But it's good news for the RMG sector that, following the unfortunate incidents, various platforms such as the Bangladesh Accord on Fire and Building Safety, the Alliance for Bangladesh Worker Safety, and the National Plan of Action have been formed to improve building and fire safety of Bangladesh's garment industry. Also, BGMEA and BKMEA are working together here to solve such kinds of problems. They have also taken necessary actions and invested a huge amount of money. It's a huge responsibility for the government of Bangladesh to ensure working place safety in all the garments manufacturing factories.

If we can't do it, foreign buyers will refuse to place orders here, which will be a massive blow for the RMG sector of Bangladesh. We hope, the government of Bangladesh, BGMEA, and BKMEA, with the support of global brands and international development partners, will be able to ensure the safety of the RMG industry and maintain the momentum of socio-economic development in the country. Political stability creates a negative impact on the RMG sector of Bangladesh. If it continues, it will be a massive blow to destroy our most valuable sector. So, political leaders should come out immediately to solve such kinds of problems

## 2.7 Hoping for RMG Sector of Bangladesh

According to the McKinsey survey, it's seen that 86 percent of the chief purchasing officers in leading apparel companies in Europe and the United States planned to decrease levels of sourcing in China over the next five years because of declining profit margins and capacity constraints. Also, they said in that survey, "Western buyers are evaluating a considerable number of sourcing options in the Far East and Southeast Asia, many chief purchasing officers said in the survey that they view Bangladesh as the next hot spot". Many chief purchasing officers mentioned Bangladesh as the hot spot in the readymade garments market. McKinsey survey also reported that, with about $15 billion in exports in 2010, ready-made garments are the country's most important industrial sector; which represents 13% and more than 75% of GDP and total exports, respectively. McKinsey forecasts, export-value growth of 7 to 9% annually within the next ten years, so the market will double by 2015 and nearly triple by 2023.

## 2.8 List of some RMG Company of Bangladesh

The 10 Best Garments Company in Bangladesh

- Ha-Meem Group.
- Beximco (Textiles & Apparels Division)
- Square Fashions Limited.
- DBL Group.
- Opex Sinha Group.
- Fakir Group.
- Epyllion Group.
- Standard Group.
- Asian Apparels Limited.
- Viyellantex Limited.

# *Chapter- Three*
# *Organizational Overview*

## 3.1. About Zaheen Knitwear's Ltd

**Zaheen Knitwear Ltd.** (Jamal Uddin Group)
Keodala, Madanpur, Bandar, Narayanganj.

**Factory Profile**

| | |
|---|---|
| FACTORY | Keodala, Madanpur, Bandar, Narayanganj.<br>Tel: +880-2-7647748-9, Fax: +880-2-7647749<br>E-mail: zaheenknit@gmail.com |
| CORPORATE OFFICE | 28, Dilkhusha C/A (11th & 19th Floor),<br>Motijheel, Dhaka-1000, Bangladesh<br>Tel: +880-2-9551127, 9557334, 9571641, 9551636,<br>Fax: +880-2-9564075<br>E-mail: mjamal@msnbd.net zkl@msnbd.net<br>Website: www.jamaluddingroup.com |
| NATURE OF THE COMPANY | 100% Export Oriented Knit garments and Woven Fabric Manufacturer. |
| STYLE OF THE COMPANY | Private Limited Company |
| BUSINESS AREAS | Zaheen Knitwear's & Jamaluddin Textile (Pvt.) Limited<br>Coating of Industrial cylinders<br>Yarn Sizing, Weaving<br>Knitting, Dyeing & Garments, Printing. |
| BANK RELATION | Islami Bank Bangladesh Limited<br>Foreign Exchange Corporate Branch<br>41, Dilkusha C/A, Dhaka-1000, Bangladesh. |
| LAND AND BUILDING | 10 Acres of Land, 200, 000 Sqft Floor space. |
| YEAR OF ESTABLISHMENT | Zaheen Knitwear's Ltd. (2007) |
| NUMBER OF EMPLOYEES | 1150 |
| PRODUCTION CATEGORY (ITEM) | Single Jersey, Heavy Jersey, Pique, Interlock, Rib, pleated design rib, French terry, Fleece, Collar & cuff made of Cotton, viscose, Modal, cotton viscose, cotton modal, Polyester viscose, viloft, Polyester, cotton polyester, Synthetic fiber & micro fiber, x-static and also made of Polyamide, etc. by DuPont. T-shirt, Polo shirt, Sweat-shirt, Golf-shirt, Tank tops, Children wear, Jogging suits, Runners pant, Functional wear, Fashion dresses, Under garments, Sportswear etc . |
| MRKET | USA, European Countries, Canada, Australia. |
| BUYER | TB International, Norwest, Sabor, Spring Field, Mango, Oodji, TakkoCactus, Market Fit, Matalan. |

## 3.2 Vision of Zaheen Knitwear's Ltd

The main objective of the implementation of this methodology is to continue the highest efforts to achieve this through intensive monitoring of short and long term plans to provide workers and security as per the BSCI Code of Conduct.

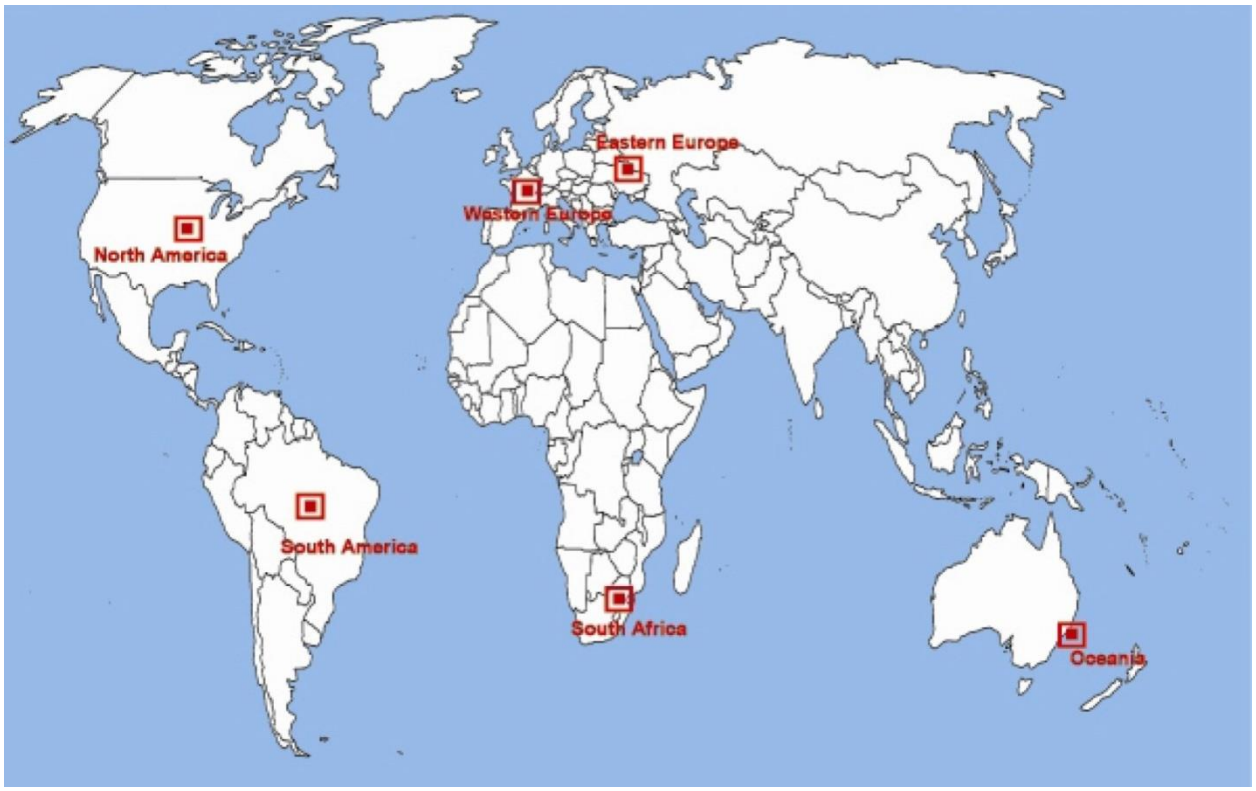
## 3.3 Mission of Zaheen Knitwear's Ltd

1. To adopt a gradual approach to sustainable improvement in accordance with BSCI Code of Conduct.
2. To make progressive missions, vision and planning by ensuring the participation of workers and labor representatives.
3. Implementation of the plan through regular inspection.
4. Implementation of BSCI Code of Conduct.

## 3.4 Customer Distribution Portfolio

Zaheen Knitwear's Ltd.

Set its goal to be distinguished enterprise in Woven and Knit Garments Industry, Home and Abroad, and as to promote itself to become a well-known name in the world.




**Picture: Zaheen Target Market**

## 3.5 Role Achievement Strength

- **Role of the Section:** Perform Export, Import & Customer Service activities.
- **Challenges:** Pass the coming Audit & collection of this year.
- **Strength:** Commercial department hold a good team.
- **Difficulties:**
    - Being a multinational company we have synchronize with the difficult rules & regulations of Govt. agencies like BEPZA/Custom/DEDO etc.
    - Cut piece fabric delivery and old machine disposal.
- **Progress & Prospects:** Need your full support to go ahead.

# *Chapter- Four*

# *Theoretical Framework of Supply Chain Management*

## 4.1 The origin of Supply Chain Management

The earliest appearance of the term supply chain management as we know it today published in recognized media and literatures can be traced back to the early 1980s. More precisely, it first appeared in a financial times article written by Oliver and Webber in1982 describing the range of activities performed by the organization in processing and managing suppliers. However the earlier publications of supply chain management in the 1980s were focused on purchasing activities. The major development and significant increases of publication in the areas of supply chain integration and supplier buyer relationship came in 1990s when the concept as we know it today was gradually established.

The integral parts of supply chain management were defined and categorized in earlier studies (Cappello & Schmitz, 2000). Comparison of different business functions with the supply chain management is studied and required for further arrangement in different industries (Park, 2005). Research on Pepsico UK found that the value of supply chain management impacted their business with the local agricultural firms (Louise, 2014).

Trends, opportunities, and practical information of supply chain management of the food supply chains in Bangladesh were found informative (karim & Hossain, 2014). The study focused on the high value of raw materials suppliers for the food processing industry of Bangladesh. An overview of the supply chain management in the fish processing industry of Bangladesh was critically analyzed and found that the lack of modern technology is hindering the development (Sheikh, Sen, & Hasan, 2012). The study also suggested ways to improve through the practice and implication of the theories of supply chain management.

A study focused on kallol group of industries found that most of the companies of the country were not recognized by most of the company (Islam, 2016). A study conducted by the academics of ICMAB tried to relate the current status of supply chain management in Bangladesh context with the traditional theories (Akhter, Uddin, &Jahan, 2018) . A study conducted on PRAN-RFL group of Bangladesh visualizes the cost-cutting and profit migration through supply chain management (Azim, 2007).

A close study related to the objectives of the study found 12 components that affected the supply chain management of the garment industry of Bangladesh as location , transportation and logistics , inventory and forecasting , marketing and channel restructuring , sourcing and supplier management, information and electronic mediated environments , product design and new

product introduction , service and after-sales support, reverse logistics and green issues, outsourcing and strategic alliances, metrics and incentives , global issues (Basak, Seddiqe, Islam, & Akanda, 2014).

## 4.2 Definitional Analysis of Supply Chain Management

Supply chain management (SCM) is the broad range of activities required to plan, control and execute a product's flow from acquiring raw materials and production through distribution to the final customer, in the most streamlined and cost-effective way possible. SCM encompasses the integrated planning and execution of processes required to optimize the flow of materials, information and financial capital in the areas that broadly include demand planning, sourcing, production, inventory management and storage, transportation or logistics and return for excess or defective products. Both business strategy and specialized software are used in these endeavors to create a competitive advantage. Chopra and Meindl (2007, p.3) believes that "a supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. Within each organization, such as a manufacturer, the supply chain includes all functions involved in receiving and filling a customer request. These functions include but are not limited to new product development, marketing, operations, distribution, finance, and customer service. Chen and Paul raj (2004) stated that- a typical supply chain is a network of materials, information, and services processing links with the characteristics of supply, transformation and demand. There are three traditional stages in the supply chain: procurement, production and distribution. Each one of these stages may be composed of several facilities in different locations around the world (Thomas and Griffin, 1996). For example, in automotive industry assembly plants are located in others countries than suppliers of different components and distribution is worldwide. Metzger et al. (2001, p. 4) describes a supply chain as "a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer". Shapiro (2001) writes that the traditional objective of SCM is to minimize the total Supply Chain Cost to meet fixed and given demand. This total cost may include the following

- Raw material and other acquisition costs.
- Inbound transportation cost.
- Facility investment costs.

- Direct and indirect manufacturing cost.
- Direct and indirect distribution cost.
- Inventory holding cost.
- Interfaculty transportation cost.
- Outbound transportation cost.

## 4.3 Importance of SCM

Supply chain management creates efficiencies, raises profits, lower costs, boost collaboration and more. SCM enables companies to better manage demand, carry the right amount of inventory, deal with disruptions, keep costs to a minimum and meet customer demand in the most effective way possible. These SCM benefits are achieved through the appropriate strategies and software to help manage the growing complexity of today's supply chains.

## 4.4 Common Factors of SCM

There are a lot of factors to consider when deciding how to set up a Supply chain. Mattson (2002) mention:

- Number of suppliers.
- Number of sub suppliers. Module suppliers or many sub suppliers.
- Distance to supplier.
- Size of supplier.
- Co-operation with the supplier.
- Direct shipments.
- Storage location local, regional or central.
- 3PL (third-party logistics) distributors (provides logistics services to other companies).
- Number of distribution alternatives.

## 4.5 SCM (Supply Chain Management) Processes

Supply chain activities aren't the responsibility of one person or one company. Multiple people need to be actively involved in a number of different processes to make it work.

- **Planning –** the plan process seeks to create effective long- and short-range supply chain strategies. From the design of the supply chain network to the prediction of customer demand, supply chain leaders need to develop integrated supply chain strategies.

- **Procurement –** the buy process focuses on the purchase of required raw materials, components, and goods.
- **Production –** the make process involves the manufacture, conversion, or assembly of materials into finished goods or parts for other products. Supply chain managers provide production support and ensure that key materials are available when needed.
- **Distribution –** the move process manages the logistical flow of goods across the supply chain. Transportation companies, third party logistics firms, and others ensure that goods are flowing quickly and safely toward the point of demand.
- **Customer Interface –** the demand process revolves around all the issues that are related to planning customer interactions, satisfying their needs, and fulfilling orders perfectly.

## 4.6 Seven Principles of Supply Chain Management

- **Principle1:** Segment customers based on the service needs of distinct groups and adapt the supply chain to serve these segments profitably.
- **Principle2:** Customize the logistics network to the service requirements and profitability of customer segments.
- **Principle3:** Listen to market signals and align demand planning accordingly across the supply chain, ensuring consistent forecasts and optimal resource allocation.
- **Principle4:** Differentiate product closer to the customer and speed conversation across the supply chain.  Principle5: Manage sources of supply strategically to reduce the total cost of owning materials and services.
- **Principle6:** Develop a supply chain-wide technology strategy that supports multiple levels of decision making and gives clear view of the flow of products, services, and information.
- **Principle7:** Adopt channel-spanning performance measures to gauge collective success in reaching the end-user effectively and efficiently.

## 4.7 Common Challenges of SCM

The Supply Chain Council is assisting companies to take a close look at their supply chains in rooting out some major inefficiency. Their mission is advancement of supply chain knowledge and how to apply it in solving problems. Some of the following are challenges faced in a supply chain and how the supply chain council proposes to assist in solving them:

- Customer service is very important in the supply chain in delivering the right product, in the right condition, right quantity, right price, right location, right time, and right documentation. It does sound simple and straightforward but indeed, it is not. The council offers a supply chain operations reference model, which create a foundation for improvement. It will assist in evaluating cost performance; develop strategies for meeting customer expectations and respond to global as well domestic.
- Cost control which are constantly under pressure in any supply chain and the council offers their SCOR mark-benchmarking portal in order to provide organizations with metrics as the basis in measuring.
- Supplier and Partner relationship management is the other challenge addressed by the council with their SCOR program. Organizations as well as department inside an organization have their own methods in communicating and measuring performance results and expectations. They offer a common language across all boards from the classification and analysis of a supply chain. The use of a common language and framework make communications easier between teams enhances evaluation of best practices and speed up benchmarking efforts.

## 4.8 Supply Chain Management Software

Years ago, before the Internet took over all basic technology and doing things such as managing inventory manually, supply chain managers used to battle to make their supply chains run effectively and smoothly. Software devotees made it possible for companies and organizations to connect their own supply chains with those of customers and suppliers and with this vast network they can optimize opportunities and costs for everyone. With the installation of supply chain management software, companies can choose to share data with suppliers as this eliminates too much stock or too little stock. Suppliers as well as manufacturers know exactly how much to supply and demand from another and manufacturers knows exactly how much to manufacture whilst the supplier knows how much to stock. A retailer eliminates empty shelves if they share

information with manufacturers and the accuracy of supply chain management software enables the manufacturing and shipping of only as many of a specific product as there is a market for. This enables companies to reduce inventory amounts they keep and significantly reduce costs, but companies have to find the package which is right for them. Some companies track supply, demand, logistics, manufacturing status and distribution for example and they may need to share data with suppliers. Supply chain managers must accurately enter information into supply chain management software otherwise their supply chain will never work or balance as the software is only as good as the person adding the data to it. By installing supply chain management software a producer manage all calculation insist of manual method.. Proper management of a supply chain will be cost effective and productive and no more excess goods will be stores or paid to be produced where there is no demand.

# *Chapter- Five*

# *Supply Chain Management Practices of Zaheen Knitwear's Ltd*

## 5.1 Knitting Section

Here the knitting unit is being operated in a floor space of 9100 Sqft and total manpower engaged for running the unit is 45.Total machine= 22( Single Jersey = 11, Rib/Interlock = 5, Flatbed/ collar m/c =6).The specification of the machines are given bellow:

**Knitting Machine Details**

| | | |
|---|---|---|
| Machine no-01<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c<br>Origin: Taiwan<br>Model: PL- X5 3B/A/CE<br>M/c dia: 18”<br>Feeder: 54<br>Needle: 1356 | Machine no-02<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>M/c dia: 20”<br>Model: PL- X5 3B/A/CE<br>Feeder: 60<br>Needle: 1500 | Machine no-03<br>M/C name: Rib, 2/1<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- XR 2B/A/CE<br>M/c dia: 32”<br>Feeder: 64<br>Needle: 2400 |
| Machine no-04<br>M/C name: Rib<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- XR 2B/A/CE<br>M/c dia: 36”<br>Feeder: 72<br>Needle: 2712 | Machine no-05<br>M/C name: Rib<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- XR 2B/A/CE<br>M/c dia: 38”<br>Feeder: 76<br>Needle: 2856 | Machine no-06<br>M/C name: Rib<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- XR 2B/A/CE<br>M/c dia: 40”<br>Feeder: 80<br>Needle: 3000 |
| Machine no-07<br>M/C name: Rib<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- XB 2B/CE<br>M/c dia: 42”<br>Feeder: 84<br>Needle: 3168 | Machine no-08<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- XS 3B/A/CF<br>M/c dia: 38”<br>Feeder: 11<br>Needle: 2856 | Machine no-09<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- X5 3B/A/CE<br>M/c dia: 36”<br>Feeder: 108<br>Needle: 2712 |
| Machine no-10<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- X5 3B/A/CE<br>M/c dia: 34”<br>Feeder: 102<br>Needle: 2544 | Machine no-11<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- XS 3B/A/CE<br>M/c dia: 32”<br>Feeder: 96<br>Needle: 2400 | Machine no-12<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- XS 3B/A/CE<br>M/c dia: 30”<br>Feeder: 90<br>Needle: 2256 |

| | | |
|---|---|---|
| Machine no-13<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- X5 3B/A/CE<br>M/c dia: 28”<br>Feeder: 84<br>Needle: 2112 | Machine no-14<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- X5 3B/A/CE<br>M/c dia: 26”<br>Feeder: 78<br>Needle: 1912 | Machine no-15<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- X5 3B/A/CE<br>M/c dia: 24”<br>Feeder: 72<br>Needle: 1800 |
| Machine no-16<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- X5 3B/A/CE<br>M/c dia: 22”<br>Feeder: 66<br>Needle: 1656 | Machine no-17<br>M/C name: Single jersey<br>Brand: Pai lung knitting m/c knitting m/c<br>Origin: Taiwan<br>Model: PL- X5 3B/A/CE<br>M/c dia: 40”<br>Feeder: 120<br>Needle: 3000 | Number of flatbed/collar m/c = 6<br>Brand: KAUO HENG<br>Origin: Taiwan<br>M/C bed: 54”<br>Power: 220v, 50 Hz |

**Key Accessories for knitting:**

Key Accessories used for circular knitting fabric process which are:

- Cylinder
- CAM
- Needle
- Sinker
- MPF positive feed system
- Motor
- Inventor
- Belt
- VDQ quality pulley
- Pattern wheel

**Some faults found in knitting section are given bellow:**

**1. Drop Stitches (Holes):** Drop Stitches are randomly appearing small or big holes of the same or different size which appear as defects in the Knitted fabrics.

**Causes:**

High yarn tension, high fabric take down, incorrect gap between the Dial & Cylinder.

**Remedies**:

Ensure uniform yarn tension with a Tension Meter, yarn feed should be controlled; the gap between the Cylinder & the Dial should be correctly adjusted.

**2. Oil Stains:** Oil stains appear as spots or grease oil or dyes of different color, in a neat & clean finished fabric surface.

**Causes:**

Grease & Oil stains from the moving machine parts like; Gears Shafts Driving Pulleys &wheels etc. Machine not cleaned thoroughly, Fabric touching the floors during transportation.

**Remedies:**

All the lubricated moving machine parts should be protected with safety guards, Wash & clean the machine thoroughly, Handle the fabric carefully with clean hands.

**3. Pin Hole:** A small pin hole show in fabric

**Causes:**

Due to break down or bend of latch, pin hole may come in the fabric.

**Remedies:**

Change the needle.

**4. Broken Needles/ Laddering:** The broken needles show vertical lines parallel to the Wales. There are no loops formed in the Wale which has a broken needle.

**Causes:**

High yarn tension, bad setting of the yarn feeders, old & worn out needle set, breakage of hook or butt in needle.

**Remedies:**

Ensure uniform & the right yarn tension; keep the recommended gap between the yarn feeders & the needles. Replace defective needle.

**5. Contaminations:** Contaminations appear in the form of foreign matter such as; dyed fibers, husk, dead fibers etc. in the staple spun yarn.

**Causes:**

Presence of dead fibers & other foreign materials.

**Remedies**:

Prevent the fibers flying from the neighboring machines with plastic curtains or mosquito nets.

**The Process flow chart of knitting**

Knitting is the operation of producing knitted fabric according to the design by the knitting machine. In the knitting process, multiple loops of yarn are created, called stitches and formed in a line or tube.

The knitting operation creates multiple active stitches at one time in the knitting machine. These stitches were done by the needle of the machine. The fabric consisting many consecutive rows of intermeshing of loops. As the progress of one loop, the same time another is creating.

In the knitting, Different types of yarns, needles, and loops or stitch types may be used to get the proper color, texture, looks, elasticity, and water resistant fabric. Knit fabric consider in weight unit KG.

**The process sequence of knitting:**

Yarn package collect from the spinning mill
↓
Yarn package place in the creel
↓
Feed the yarn in the knitting machine
↓
The knitting machine set up according to the fabric design
↓
Start knitting machine
↓
Withdraw the fabric role after knitting operation
↓
Role marking
↓
Fabric inspection
↓
Numbering role
↓
Dispatching

After knitting the fabric, send to the dyeing unit to color the fabric and rest of other processes.

## 5.2 Dyeing Section

**Batch Preparation:**

Batch preparation can be defined as a process where the visually Inspected greige fabric are divided into different batches. It is a part of dying process & it is done to feed the dyeing machines for fabric dyeing. It is very important to make a batch with maintaining a correct length of each nozzle.

**Objective of Batching:**
1. To receive the grey fabric roll from knitting section or other source.
2. Turn the grey fabric if require.
3. To prepare the batch of fabric for dyeing according to the following criteria –
4. Order sheet (Received from buyer).
5. Dyeing shade (color or white, light or dark).
6. Machine capacity.
7. Machine available.
8. Type of fabrics (100% cotton, PE, PC, CVC).
9. Emergency.
10. To send the grey fabric to the dyeing floor with batch card.
11. To keep records for every previous dyeing.

**Proper Batching Criteria:**
1. To use maximum capacity of existing dyeing machine.
2. To minimize the washing time or preparation time & machine stoppage time.
3. To keep the number of batch as less as possible for same shade.
4. To use a particular machine for dyeing same shade.

**List of the Machine in Batch Preparation:**
Name of the Machine
**Manufacturer Model Specification**
Quantity
Grey fabric
Reversing m/c
CANLAR
Turkey
HMS-FB Capacity=10tons/24hours 01

**Machine Set-up:**
Machine set-up is not applicable for batch preparation process. To start/stop operation, the machine is switched on or off.
**Checklist before Operation:**
a) Check order no. & customers name of the batch/job card
b) Check types, quality, quantity,& other specification on the batch/job card
c) Check fabric & yarn quality & quantity while receiving goods from inspection
d) Availability of required manpower

e) Availability of key accessories & other required materials
f) Availability of power
g) Check machine wise production plan to set priority

**Operation Procedure:**

- Check production plan to set the priority
- Consult with previous shift stuff to get the required information about the batches
- Check batch card & job card specification(e.g.-Yarn type,quality,weight etc) for Fabric & collars/cuffs respectively
- Calculate number of batches, nozzles & rolls to be prepared for each order & specify on the batch & job card. One should be very careful while calculating & entering such data on these cards.
- Feed the fabric into the turning m/c
- Start batching operation & check the following information-
- Machine no.
- Number of nozzle to be prepared.
- Order no.
- Customer number.
- GSM.
- Width.
- Lot no.
- Turning required or not.
- Special instruction (if any).
- Prepare the body fabric of specified weight. This weight must be accurate & each nozzle of same batch must weight equal to ensure even dyeing.
- Calculate the number of collar/cuffs & attach the collars& cuffs with the body fabric.
- Write down the weight of each roll on the back of batch card.
- Check hole mark in each roll for identification.
- Turn the roll(if required).
- Calculate the total weight very carefully & write it down in the specific area of the batch card.
- After complication of one batch, write "OK" as comments at the notes section of batch card & send the batch along with the card to the dyeing section.

Special instruction (if any) is followed.

**Pre-treatment:**

Composition of Cotton:
Particles Percentage
Cellulose 85.5%
Moisture 8.5%
Fax/Waxes 0.45%-1.0%
Mineral Substance 0.7%-1%
Pectins 0.7%-1.2%
Proteins 1.1%-1.9%
Various Organic Compound 0.5%-1.0%

**Scouring:**
Greige fabrics contain fax, waxes, and other impurities. The absorbance of the fabric is adversely affected due to the presence of these impurities. This leads to improper dyeing, printing and finishing in the subsequent process. These impurities are removed from the fabric by a chemical treatment. This chemical treatment is called scouring process.

**Bleaching:**
Bleaching is a process for removing natural nitrogenous coloring matters e.g.-dirt,dust,husk,broken seed, leaf etc from the fabric and make it white by oxidizing or chemical treatment.

**Purpose of Bleaching:**
- To remove all the natural coloring materials.
- To impart adequate whiteness to the fabric.
- It changes the textile materials which are hydrophobic in nature.
- It increases the dye absorbtion ability of the textile materials.
- It helps to produce an even shade during dyeing operation.

**Washing:**
Washing is a process to remove waxes, fats or to increase absorbency of the fabric by chemical treatment. Washing process is specially used only for T/C and TTC dark color shades.

**Key Accessories:**
Key accessories used in pre-treatment process are:
- Mixing Tank
- Machine Tank
- PH Meter
- Eye protecting glass
- Hand gloves
- Sewing Machine
- Gum boot
- Hand lifter for carrying the batch

**Materials/Chemicals used:**
- Water
- Steam
- Compressed Air
- Caustic Soda
- Hydrogen per Oxide
- Stabilizer(e.g.-Stabilol P, Stabilizer Sifa)
- Wetting Agent(e.g.-Foryl SF,Feloson No F)
- Detergent(e.g.-Sandoclean PC)
- Sequestering Agent(Secron 540)
- Acid(Acetic Acid)

- Antri-Creasing Agent(Cibafluid C,Primasol Jet)
- Hydrogen per Oxide killer(Bactasol AP)
- Enzyme for neps dead cotton

**Dyeing Machine Details**

**There are 13 machine are used for dyeing.**

| | |
|---|---|
| 1, 2, 3, Machine name: Sample dyeing machine<br>Model: FC-L8-AD<br>Nozzle: 1<br>Capacity: 250 kg | 4. Machine name: dyeing machine.<br>Brand name: fong's<br>Model: FC-28-AD<br>Origin:China<br>Nozzle: 2<br>Capacity: 400 kg |
| 5. Machine name: dyeing machine.<br>Brand name: fong's<br>Model: EOO-38-T<br>Origin:China<br>Nozzle: 1<br>Capacity: 200kg | 6.Machine specification: dyeing machine.<br>Brand name: fong's<br>Model: EOO-38-2T<br>Origin: China<br>Nozzle: 2Capacity: 400kg |
| 7. Machine specification: dyeing machine.<br>Brand name: fong's<br>Model: EOO-38-3T<br>Origin:China<br>Nozzle: 3<br>Capacity: 600kg | 8.Machine specification: dyeing machine.<br>Brand name: fong's<br>Model: EOO-38-4T<br>Origin:China<br>Nozzle: 4<br>Capacity: 1000kg |
| 9. Machine specification: dyeing machine.<br>Brand name: fong's<br>Model: EOO-38-3T<br>Origin: China<br>Nozzle: 3<br>Capacity: 750kg | 10. Machine specification: dyeing machine.<br>Brand name: fong's<br>Model: EOO-38-2<br>Origin:China<br>Nozzle: 2<br>Capacity: 300kg |

**Dyeing Defects:**
During dyeing a number of defects occur. These defects are classified into two main categories:
1. Major Defects
2. Minor Defects

**Major Defect:**
A defect that, if conspicuous on the finished product, would cause the item to be a second. (A "second" is a garment with a conspicuous defect that affects the salability or serviceability of the item.

**Minor Defect:**
A defect is defined as minor defect that is not likely to reduce the usability of the product, but nevertheless may negatively influence the sales.

The minor defects can be untrimmed thread-ends, slight dirt in a non-noticeable zone which can be removed, etc.

**Causes of Dyeing Defects:**

**Due to Material:**

1. Material having dead fibers or other defective fibers.
2. Left over of Chemicals after bleaching etc.
3. Material not properly desized.
4. Material not properly mercerized.
5. Absorbency of the fabric not proper.
6. Sticking of insoluble material on the fibers.
7. Impurities are not removed properly.
8. Uneven heat treatment.

**Due to Water Quality:**

1. More Hardness of water
2. Water has metal ions such as iron.
3. pH of water not proper
4. Water having more chlorine

**Due to Improper Dye Solution:**

1. Improper weight ratio of colors, material and chemicals.
2. Improper material to water ratio
3. Improper filtering of concentrated colors.

**Name of Dyeing Defects:**

1. Barre
2. Bleeding
3. Crocking
4. Shade Bar
5. Shading
6. Stained
7. Color Variation in Yarn
8. Hole in Sulfur Dyed Fabric
9. Creasing
10. Streaked

**Barre**

- Its horizontal shaded band across the width of the fabric.
- It may be caused by variation in the size of the filling yarn and by the differences in tension of either the filling or warp yarns.

**Bleeding**

- It's a loss of color when the dyed fabric is wetted or emerged in water.
- The water here becomes colored and may cause discoloration of other fabrics.

- This is usually due to either improper dye selection or poor dye fastness.

**Crocking**
- It is the rubbing off of the color.
- It may rub onto another fabric.
- This may be due to inadequate scoring subsequent to dyeing.

**Shade Bar**
- It is a horizontal band of a different hue running across the fabric.
- It may be caused by a change of filling bobbin in the loom or a loom stop and start up

**Shading**
- It is a variation in color tone either horizontally or vertically.
- It is generally due to uneven tension on the fabric.

**Stained**
- It indicates a discoloration caused by a foreign substance, dirt, grease, oil or sizing residue on the fabric being dyed.

**Color Variation in Yarn**
- Caused due to lack of agitation in the dye bath.
- This is a major defect. The yarn was supposed to be uniformly blue in color.

**Hole in Sulfur Dyed Fabric**
- Caused due to tendering which takes place because sulphur is converted into sulphuric acid after oxidation this is harmful for the cellulosic fibers.
- This is a major defect. The defect occurred after washing the garment.

**Creasing**
- Causes unleveled penetration of dyes which in turn results into unleveled dyeing, which causes color variation.
- Differs from crease streak in that streak will probably appear for entire roll.
- On napped fabric, final pressing may not be able to restore fabric or original condition. Often discoloration is a problem.
- It refers to color that doesn't exactly match the standard or the prepared sample.
- This may be due to faulty dye foundation or application or may be due to variation in dye lot.

**Streaked**
- This type of defect on the fabric indicates either a stain or uneven dyeing caused by folds in the fabric during the dyed process.

## 5.3 Pattern & sample section

**Pattern:** At first pattern make with the help of buyer given order sheet. In this factory no CAD (Computer Aided Design) software used, two types of allowance are used such sewing (chest 1.5cm, bottom 1 cm) and shrinkage (2cm/2.5cm depend on fabric).

**Sample:** Different types of samples are: Fit/style sample, PP sample (Pre-production sample), Shipping sample, photo sample, Final sample, Side set sample, etc.

**M/c used in pattern & sample section:**

**Total m/c= 12**

| | | |
|---|---|---|
| 1. Brother Plain m/c<br>Model: CISM 22098<br>Origin: Chaina<br>Number of m/c = 4 | 2. Pegasus Flat lock m/c<br>Model: 0367742<br>Origin: Chaina<br>Number of m/c = 3 | 3. Pegasus Flat lock Rib/Piping m/c<br>Model: 1500 N<br>Origin: Chaina<br>Number of m/c = 1 |
| 4. Pegasus Over lock m/c<br>Model: M 800<br>Origin: Chaina<br>Number of m/c = 3 | 5. Zusun ilet m/c<br>Model: CM 818<br>Origin: Chaina<br>Number of m/c = 1 | |

## 5.4 Cutting section

In this factory no marker paper use, they used pattern direct on the fabric for marking then cut the fabric. After cutting, the cut pieces are numbered by numbering m/c.

**Process sequence of cutting room:**

Fabric Spreading
↓
Fabric Cutting
↓
Numbering
↓
100% checking & Parts Replacing if needed.
↓
Shorting & Bundling
↓
Sewing/Assembling

**Fabric spreading:** Before fabric laying a thin paper as like as marker that is marker size and thin paper size is same, then thin paper attach with spreading table by gum tape then spread the fabric according to marker size.

**Fabric cutting:** Fabric lay is cutting by straight knife cutting machine then separated cutting part.

**Numbering:** In this stage sticker is attached with all part of cutting part for shade matching. The sticker number maintains cutting number, size number, serial number.

**M/c used in cutting section:**

Number of m/c = 2 (One 8" & another 10")

| **1. Fabric cutting m/c** | **2. Numbering m/c:** |
|---|---|
| **Brand:** Mack | Brand: BLITZ |
| **Model:** KS-AU V | Model: 2253 |
| **Origin:** Japan | Origin: Italy patented |
| **Volts:** 220v, 50/60 Hz | Number of m/c = 4 |

Cutting requires skilled employees because failure to properly cut the fabric could result in quality problems with fit and assembly. Some faults are found in cutting section, such as:

**Wrong cutting:** When miss the quantity of cutting pieces this types of fault are found. Such as need 80 pieces of ply but cut 70 pieces.

**Causes:** Wrong spreading or ply, Cutting fabric quickly.

**Remedies:** Fabric spreading properly should be alert during cutting.

**Miss cut:** If any angle is missed or wrong angle cutting during fabric cutting then miss cut is occurred.

**Causes:** problem in machine blade, lack of concentration of operator.

**Remedies:** Change the defective blade, should be careful during cutting.

**Numbering mistake:** Number of cut pieces are not attached or mistake the number are known as numbering mistake.

**Causes:** Defective machine, lack of skilled operator.

**Remedies:** Remove the number sticker from cut pieces and again attached correctly.

## 5.5 Printing section

Printing is a important area in garments section, different types of print are discharge color, screen print, rubber print, pigment print, plastic print, foil print, regret print, radium print, puff print etc.

**Chemical used in printing:** Here they have used above 90 types of color & pasting material some of them are: Binder 38, Nylon clear, M. S.-30, Foil paste TR 220, Npp 300c clear, Npp

300w white, N.T foil, softener, ammonia, Rubber gel, Flock powder red, Oxol R conc, Modi gum, New puff.

**M/c used in printing:** In this section 10 machine are used (Auto run dryer= 6, Quring heat m/c= 1, Heat press m/c: =3).
Printing line: 6(Glass table)

| | | |
|---|---|---|
| **1 Auto run Dryer m/c:**<br>**Brand:** DELIXI<br>**Model:** DZ 47-63<br>**Origin:** Chaina<br>**Volts:** 400v, 50 Hz<br>The m/c contains electric heater and 8 hot fans.<br>Fig: Auto run dryer<br>Number of m/c = 6 | **2. Quring heat m/c:**<br>**Brand:** Suzhoun Yihui<br>**Type:** Electric<br>**Used:** Finishing dry.<br>Number of m/c | **3. Heat press m/c:**<br>**Brand:** CNYH<br>**Model:** DZ 47-63<br>**Origin:** Chaina<br>Number of m/c = 3 |

**Fault in printing section:** Some common fault found in this section are: color problem, shade problem, Incorrect printing measurement, Discolor after wash, style mixing, If the printed pieces fail in azo test then the printed product considered as reject.

## 5.6 Sewing section

Sewing section is more important section from other section. It is a main section in Garments production. Here Garments unit is being operated in a floor space of 60000 Sqft and total manpower engaged for running the unit is 450. Currently they have 13 sewing lines with oil-free dry head machine with the capacity of 350000 – 400000 pcs in a month. They have latest models of Sewing machines (Brother and Pegasus) from world class manufacturers having added features.

**Process sequence of sewing section (T-shirt):**

Matching back & front part
Sewing the shoulder
Neck stitch
Neck piping
Tuck
Back top seam with main label attached
Neck top seam
Sleeve hem
Sleeve join
Side seam with care label
QC table

**M/c used in sewing section:**

| | | |
|---|---|---|
| **1. Plain m/c:**<br>**Brand:** Brother<br>**Model:** SL-7340-3<br>**Origin:** Chaina<br>**No. of m/c:** 64 | **2. Auto plain m/c**<br>**Brand:** Brother<br>**Model:** S. 6200 A 403<br>**Origin:** Chaina<br>**No. of m/c:** 54 | **3. Four thread over lock m/c:**<br>**Brand:** Pegasus<br>**Model:** M. 752<br>**Origin:** Chaina<br>**No. of m/c:** 28 |
| **4. Four thread over lock m/c:**<br>**Brand:** Pegasus<br>**Model:** M. 852-13<br>**Origin:** Chaina<br>**No. of m/c:** 59 | **5. Cylinder bed flat locks m/c:**<br>**Brand:** Pegasus<br>**Model:** W- 1662- IG<br>**Origin:** Chaina<br>**No. of m/c:** 32 | **6. F. set flat lock m/c:**<br>**Brand:** Pegasus<br>**Model:** W.1562N-02G<br>**Origin:** Chaina<br>**No. of m/c:** 34 |
| **7. Button hole m/c:**<br>**Brand:** Brother<br>**Model:** HE- 800A<br>**Origin:** Chaina<br>**No. of m/c:** 2 | **8. Button Stitch m/c:**<br>**Brand:** Brother<br>**Model:** BE- 430D-01<br>**Origin:** Chaina<br>**No. of m/c:** 2 | **9. Barteck m/c:**<br>**Brand:** Brother<br>**Model:** KE-430D-01<br>**Origin:** Chaina<br>**No. of m/c:** 3 |
| **10. Feed of the Arm m/c:**<br>**Brand:** Brother<br>**Model:** DA- 9270-01<br>**Origin:** Chaina<br>**No. of m/c:** 6 | **11. Smoking m/c:**<br>**Brand:** Kansai<br>**Model:** BX 1425PSSM-ET<br>**Origin:** Japan<br>**No. of m/c:** 1 | |

## 5.7 Quality check in sewing section

After sewing the garments send to QC table, where they are inspected quality. They check Main, care and size label, oil mark, broken stitch, skip stitch, raw edge problem, alter problem, they also cut the extra thread from garments.

Some common problem faced in sewing section and their remedies are giving bellow:

**1. Skipped Stitch:** If the gap of stitch or miss stitches formation then the fault called skipped stitch.

**Causes:** Failure of needle to enter loop at correct time, Needle deflection or bent needle, Incorrect sewing tension in the needle thread.

**Remedies:** Check needles are inserted, replace the defective needle, re adjust the thread tension re adjust presser foot pressure

**2. Oil mark:** When the spot of oil and wax are found on the garments surface then its called oil mark.

**Causes:** During sewing process if oil and wax are deposit from the machine to the fabric surface then oil mark is occurred.

**Remedies:** Oil mark is removed from the fabric by a special type of spray named 'Spot lifter'. First its spray on the spot and then air blown on the spot by a machine named 'spot cleaning machine'.

**3. Broken Stitch:** If any stitch is broken after sewing then it known as broken stitch.

**Cause:** This type of fault is occurred because of low quality thread, high thread tension.

**Remedies:** To avoid this fault use good quality of thread, seam area are opened and again sewing correctly.

**4. Seam Pucker**: After sewing when the fabric is puckered in the seam area then it called seam pucker.

**Causes:** Incorrect tension setting, fabric feed Extension in sewing thread.

**Remedies:** Check tension level in the thread, Sew with minimum tension possible.

**5. Main label displaced from center:** Mistake position of label is known as label displace.

**Causes:** For the lack of experience or concentration of worker

**Remedies:** Label is removed and placed again in correct position and attach again.

**6. Raw edge problem:** If unexpected parts are shown in the garments from sewing area then this problem is occurred.

**Causes:** For the lack of experience or concentration of worker.

**Remedies:** The unexpected part is cut out precisely.

After checking the quality the garments send to the finishing section.

## 5.8 Finishing section

The finishing section is the final processing section of the garments industry where the finished garments are process to prepare for its final delivery. The finishing section work to inspect the product, remove all possible type of fault, add some additional material with the product as per buyer requirement and prepare the product for safe shipping.

**Process sequence of finishing section:**

**Receive garments**
↓
**Ironing**
↓
**Measurement Table**
↓
**Final Checking Table**
↓
**Attaching Tag, Hang Tag**
↓
**Body Folding**
↓
**Packing with Board, Hanger and Polybag**
↓
**Shade matching section**
↓
**Cartooning**
↓
**Store**
↓
**Shipment**

**Machine Specification:**

| | | |
|---|---|---|
| **M/C name: Iron Machine**<br>Brand: Nisho<br>Model: NH-1290<br>Origin: China.<br>M/C Number: 22 | **M/C name: Thread Sucker**<br>Brand: Nisho<br>Model: NH-TS5600A<br>Origin: China<br>M/C Number: 2 | **M/C Name: Needle Detector Machine.**<br>Brand: Hasima.<br>Model:<br>Origin: Japan<br>M/C number: 1 |
| **M/C Name: Tag Attaching Machine**<br>Brand: Kobe<br>Origin: Japan<br>M/C number: 30<br>M/C Name: Spot Cleaning Machine<br>Brand: Red Arrow<br>Model: YH-120<br>Origin: Taiwan<br>M/C Number: 4 | **M/C Name: Spot Lifting Machine.**<br>Brand:<br>Model: NH-602AH<br>Origin: China.<br>M/C number: 2 | |

**Fault occurs in finishing section and its remedies:**

Ironing problem: Some ironing problem occurred are giving bellow

**1.** Shoulder up down: During ironing if the shoulder side is not placed correctly

Causes: It is also the mistake of the worker.

Remedies: Shoulder placed correctly and ironing again.

**2.** Bottom up down: If top and bottom are not placed correctly

Causes: For the lack of experience or concentration of worker.

Remedies: Bottom and top placed correctly and ironing again.

**3.** Puckering: Crease if brought in the fabric and ironing.

Causes: For the lack of concentration of worker if he ironing the garment on the crease area.

Remedies: Remove the crease from the fabric and ironing again.

**4**. Side up down: Front side and back side if does not in correct position in the side seam.

Causes: It's a mistake of worker

Remedies: Placed the front and back in correct position on side seam and ironing.

**5.** Poor folding resulting poor appearance: Due to poor folding the garments

Appearance looks odd or not appreciating.

Solution: The garments should fold properly according to buyers instruction.

**6.** Incorrect packing: The packing should do by following instruction from the buyer.

Solution: The product has to pack properly

**7.** Size mistake:

Different size sign are used in garment and lock pin label

Causes: It's a mistake or lack of concentration of worker.

Solution: Place the lock pin which size are shown in the product

**8.** Barcode problem:

If the main label and hang tag barcode are not similar.

Causes: It's a mistake of worker.

Solution: Same barcode of main label and hang tag are placed.

**Quality Maintain in finishing section:** This is the last stage before delivery the garments product so it has a lot of significance for the garments to make the product satisfactory to the

buyer. Quality inspection is an important role for finishing section. This section work to give the clearance the garments for delivery or reject the product which is impossible to solve the fault.

Zaheen Knitwears & Jamaluddin Textile (Pvt.) Ltd has a big project and so of course having a vast project of utility service. Here the total accounts of utility facilities are available. The utilities area:

a) Water

b) Gas

c) Electricity

d) Steam (Boiler)

e) Compress air

**Machine Specification:**

| | |
|---|---|
| **Generator:**<br>**Brand name:** CAT<br>**Model:** 2S-3230<br>**Origin:** USA<br>**:** 770 KW<br>: 1600 Am<br>**No. of m/c:** 1 | **Boiler:**<br>**Brand Name:** Hurst<br>**Model:** 0700044<br>**Max w.p. p.s.i :** 150<br>**Origin: USA**<br>**No. of m/c:** 1 |
| **6.3. Compressor:**<br>**Brand name:** KAESER<br>**Model:** TE-121<br>**Origin:** Germany<br>**No. of m/c:** 4 | |

**Effluent treatment plant (ETP):**

**Zaheen Knitwears & Jamaluddin Textile (Pvt.) Ltd** has a large ETP, They used it properly and they do not create bad effect on Environment.

Chemical for ETP:

1. Lime
2. Farus
3. Polymer

# *Chapter- Six*

# *Findings, Recommendations and Conclusion*

## 6.1 Findings

The finding shows that in RMG business there is a very strong correlation between business value addition and supply chain. The supply chain is mostly controlled by the buyers who control the business. Only minimum wage can't ensure the business. Without proper management in the supply chain, it is not possible to comply with the lead time given by the buyer.

- The recruitment and selection process is standard
- In some cases rules and regulations are not performed
- Compensation package covers minimum standard at mid and lower level but at top level it is standard
- The employees training facilities but they should provide more time
- The organization's attention is usually focused on the work to increase productivity. This is helpful to achieve the organizational goal
- They always try to measure quantity with quality
- Less caring about their further career development
- The pay and promotion decision are made based on the seniority although it should be related with performance and sometimes it is not provided properly. And sometimes nepotism works behind it
- Many of the employees feel job stress that does not always ensure productivity
- Generally the organization does not provide advertisement in the media source such as the daily newspapers & the internet. And discourages under age workers
- Most of the employees do not feel job securities.

## 6.2 Recommendations

- They should bring an innovative product in the market.
- Zaheen Knitwears Ltd should promote automatic machinery.
- Production capacity should be increased to respond in increased demandable markets.
- Zaheen Knitwear's Ltd should develop well defined corporate vision and mission.
- They should increase promotional activities to concern their customer.
- They should arrange training Supply Chain Management program to their workers.
- Electronic Data Interchange (EDI) can be implemented to increase productivity, reduction of lead time, inventory reduction, increase accuracy and facilitation of JIT.

## 6.3 Conclusion

A chain is as strong as all its rings are. A chain is as weak as one of its ring is weak i.e. one single ring is more than enough to make the whole chain system dysfunctional. With the development of the service sector and enhancement of industrial wage, cutting and stitching operation was shifted to more profitable destinations. In the value chain of the textiles business, production lies at the bottom, whereas this is the most critical and complex part of the business. Services like research and development, design, purchasing all these pre-production intangible functions and marketing, distribution, sales, etc. postproduction intangible activities in textiles business carry a higher value than production - only tangible activity in the business chain. In the global value chain as a manufacturer, Bangladesh performs the lowest value retention functions. Textile industry in our country so far has been enjoying very clear price competitiveness. The rate of minimum wage in our country is still lowest among our competitors. But we have huge pressure on lead time. Without proper management, in supply chain, only wage competitiveness can't ensure a sustainable business. So in present day's situation, undisrupted supply chain and Proper planning can enhance our market share undoubtedly. ZKL always tries to cope up with the completive market. ZKL produce their products as demand of present market of our country. It collects their raw materials from various places and produce cotton yarn by following strong monitoring .Each debarment connects each with other and meets their goals. ZKL believes that Chief labor does not help if they are not efficient. Only minimum wage competitiveness will not guarantee future business. Supply chain bottleneck develop needed. Earlier less than 40% efficiency, the price was more flexible, now above 50% efficiency factory run.

## References


www.jamaluddingroup.com/index.php/companies/zaheen-knitwears-ltd

www.assignmentpoint.com

www.slideshare.net/Supply_Chain_Management

www.academia.edu/Supply_Chain_Management

Ayers, J. B. (2001). Handbook of Supply chain management, St. Lucie Press, USA, Florida.

Ballou, R. H. (2004). Business logistics/Supply chain management: planning, organizing, and controlling the Supply chain (5 Ed) Pearson Prentice Hall, Upper Saddle River, N.J.

Bowersox, D. J. & Closs, D. J. (1996). Logistical Management – The Integrated Supply Chain Process, McGraw-Hill Companies Inc., New York.

Chibba, A. (2007). Measuring supply chain performance measures – prioritizing performance measures.

Habib, Md. Mamun, "Supply Chain Management (SCM): Theory and Evolution

Tielman Nieuwoudt, Vietnam's textile industry: opportunities and challenges, the supply Chain lab, April 10, 2010

Dr. Dawei Lu, Fundamentals of Supply Chain Management,(2011) Ventus Publishing ApS.

Colin Scott, Henriette Lundgren & Paul Thompson, "Guide to Supply Chain Management" Supply Chain Management, Edited by Pengzhong Li, Published by InTech, Janeza Trdine 9, 51000 Rijeka,Croatia.