Report On
Tropical Knitex Ltd.

By

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An internship report submitted to the Executive Development Center, BRAC Institute of Governance and Development (BIGD), BRAC University in partial fulfillment of the requirements for the degree of
Post Graduate Diploma in Knitwear Industry Management (PGD-KIM)

Executive Development Center, BIGD
BRAC University
November 2025

Declaration

It is hereby declared that

1. The internship report submitted 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.

Student's Full Name & Signature:

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Academic Supervisor's Full Name & Signature:

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Anindita Bhattacharjee
Senior Research & Initiative Lead, UPGI-BIGD Research Partnership
BRAC Institute of Governance and Development (BIGD),
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Letter of Transmittal

Anindita Bhattacharjee
Senior Researcher & Initiative Lead, UPGI-BIGD Research Partnership
BIGD, Brac University
66 Mohakhali, Dhaka-1212

Subject: Submission of Industry attachment report on Tropical Knitex LTD.

Dear Madam,

It is my pleasure to submit this internship report on Tropical Knitex Ltd. as a requirement for the Post Graduate Diploma in Knitwear Industry Management (PGD-KIM).

I have attempted to present the report in the most comprehensive and concise manner possible, incorporating the essential data and recommended proposition.

I hope that you will find this report satisfactory and informative.

Sincerely yours,

_____

Nishat Syara
Student ID 24281035
Executive Development Center, BIGD
Brac University
Date: November 16, 2025

Non-Disclosure Agreement

This agreement is made and entered into by and between Tropical Knitex Ltd and the undersigned student at EDC, BIGD, Brac University. The parties shall use reasonable efforts to maintain the confidentiality of the information and materials, whether oral, written or in any form whatsoever, of the order that may be reasonably understood, the nature of such information itself and/or the circumstances of such information's disclosure, to be confidential and/or proprietary thereto or to third parties to which either of them owes a duty of non-disclosure (Confidential Information).

Student's Full Name & Signature:

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Md Abdullah Al Noman
Assistant Manager, Merchandising Department
Tropical Knitex Ltd.

Acknowledgement

I am thrilled to be a part of the internship program at Tropical Knitex Ltd. First and foremost, I would like to express my sincere gratitude to Almighty Allah for granting me the patience, strength, and opportunity to complete my internship and compile this report successfully. I wish to express my hearty gratitude to the Executive Development Center, BRAC Institute of Governance and Development (BIGD), Brac University, for organizing this internship program as an integral part of the academic curriculum. I am greatly indebted to my academic supervisor, Ms. Anindita Bhattacharjee, Senior Researcher & Initiative Lead, UPGI-BIGD Research Partnership, BIGD, Brac University, for her unfailing supervision, valuable remarks, and supportive guidance during my internship and preparation of this report. Her encouragement and insightful suggestions were very helpful to me. I would also like to extend my sincere thanks to my industrial supervisor, Mr. Md. Abdullah Al Noman, for his continuous support, mentorship, and professional guidance throughout my internship at Tropical Knitex Ltd. His assistance enabled me to develop a deeper understanding of the industrial workspace and gain a more practical knowledge of how a factory operates.

Furthermore, I would like to extend my heartfelt thanks to all officers and staff of Tropical Knitex Ltd., especially those in the Knitting, Dyeing, Sewing, Merchandising, and Industrial Engineering departments, for their collaboration and assistance during my internship period. Their willingness to share their knowledge and experiences positively contributed to my practical knowledge. Finally, I would like to thank my family and friends for their constant encouragement, patience, and emotional support throughout this journey. The successful completion of this internship and report would never have been possible without the guidance, cooperation, and motivation of all these individuals and organizations.

Executive Summary

This report discusses my experience and learning during my 66-day internship at Tropical Knitex Ltd., a 100% export-oriented knit composite factory in Bangladesh. The internship was designed to complement theoretical knowledge with practical industrial experience, and I eventually had the opportunity to observe and work personally in various operational areas of the organization. During this time, I worked extensively within five departments- Knitting, Dyeing, Sewing, Industrial Engineering (IE), and Merchandising, all of which contributed to gaining a thorough understanding of production processes, quality control, and coordination in the apparel industry. The experience developed my technical and analytical skills, as well as my professional integrity and interpersonal communication skills. It also taught me more about what teamwork, efficiency, and sustainability entail in the manufacturing environment. Overall, the internship provided a practical basis for my future career in Knitwear work and helped boost my confidence in translating what I had learned in the classroom to real-world industry applications.

Keywords: Ready-Made Garments (RMG), Knitwear Composite Factory, Knitting, Dyeing, Sewing, Industrial Engineering, Merchandising, Internship Experience, Tropical Knitex LTD.

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List of Acronyms

CSR	Corporate Social Responsibility
CVC	Chief Value Cotton (Cotton-Polyester blend)
EGB	Exhaust Gas Boiler
ERP	Enterprise Resource Planning
GRS	Global Recycled Standard
GSM	Grams per Square Meter
IE	Industrial Engineering
PO	Purchase Order
PP	Pre-Production
QA	Quality Assurance
QC	Quality Control
SMV	Standard Minute Value
T&A	Time and Action Plan
TKL	Tropical Knitex Ltd.
WIP	Work in Progress

Chapter 1
About Organization

1.1 Overview of the Industry

The ready-made garment industry is the biggest export-oriented industry of Bangladesh and a driving force of the national economy. It plays vital role in employment creation, foreign exchange earnings and development of industries. Among segments, knitwear holds a prominent position within the RMG sector due to its high demand among worldwide consumers, as well as its shorter lead time and comparative cost of production. Bangladesh has established itself as one of the largest exporters of knitwear, supplying clothes to major global brands.

Tropical Knitex Ltd. (TKL) is a 100% export-oriented knit composite factory working in the booming knit composite business. Since its foundation in 2013, TKL has been growing very fast in terms of capacity and facilities, and at present has earned the reputation as one of the most reputed knitwear manufacturers in Bangladesh.

1.2 Vision & Mission

Vision:

To be known as a worldwide reputable and sustainable apparel producer, providing quality products through innovation, social responsibility, and customer satisfaction.

Mission:

- To offer end-to-end application of apparel manufacturing services from design to finished product delivery.
- To apply state-of-the-art technology and environmentally sustainable practices in all processes of production.
- To form long-term relationships with foreign buyers by guaranteeing quality, reliability, and competitiveness.
- To provide empowerment to employees and ensure the social and economic development of the community.

1.3 Goals & Objectives

- To constantly provide larger production capacity and efficiency through the development of technology.
- To keep the world standards of quality and achieve higher levels of customers' satisfaction.
- Inadequate clean and green manufacturing practices leading to carbon footprint.
- To expand product lines and select new markets.
- To foster employee and corporate social responsibility (CSR) campaigns.

1.4 Organizational structure, Organogram, Branches and Departments

Tropical Knitex Ltd is run according to a line of authority and this creates a smooth flow of coordination between its departments. It is led by an experienced management team which supervises the operations from the head office located in Dhaka and the manufacturing base located in Gazipur.

Organizational Structure (Hierarchy)

1. Board of Directors / Managing Director (MD): Responsible for strategic guidance, major investments, and ensuring sustainable practices.
2. Chief Executive Officer (CEO) / Executive Director: Responsible for overall daily activities and managing performance in production activities and relationships with international buyers.
3. Departmental Heads (General Managers / Managers): Our company is headed by experienced individuals who lead each major department (Production, Marketing, HR, QA, etc.)
4. Mid-level Managers & Supervisors: Execution of operations, managing workers, compliance & reporting.
5. Operational Workforce: Over 7,400 people, of which qualified staff, machine operators, designers, and quality controllers.

Branches

- Head Office: Le Meridien Hotel, Nikunja-02, Khilkhet, Dhaka.

- Factory Complex**:** Chandra (Pollibiddut), Kaliakoir, Gazipur – housing knitting, dyeing, washing, embroidery, printing, sewing, and finishing units.

Departments

To achieve this, the TKL has several specialized departments that function in tandem, as illustrated below.

- **Knitting Department –** Manufactures grey fabrics.
- **Dyeing & Finishing Department –**Dyes fabrics on state-of-the-art dyeing machinery.
- **Printing Department –** Involves printing of screen printing, digital printing, foil, glitter, puff printing, and other special effects.
- **Embroidery Department –** Produces some detailed embroidery, applique, sequins, and chenille work.
- **Washing Department –** Provides garment dye, dip-dye, tie-dye, ozone dye, acid wash, and regular garment wash.
- **Sewing & Production Department –** 83 high-production-capacity sewing lines.
- **Product Design & Development –** A design studio in France and local designers in Bangladesh working with highly developed 3D design tools (e.g., Brookfield Browzwear).
- **Quality Assurance & Quality Control (QA/QC) –** Ensures conformity with the international standards, self-inspection certified by buyers such as KIABI.
- **Merchandising & Marketing –** Communicates with international clients, samples, and follow-up orders.
- **Human Resources & Compliance –** Overseeing 7,400 employees, employee welfare, compliance audit, CSR programs, and Training.
- **Finance & Accounts –** In charge of cost management, budgeting, and fiscal reporting.
- **Logistics & Supply Chain –** Ensuring timely raw material procurement, order tracking, and export cargo.

1.5 Products/services produced by the Industry

Tropical Knitex Ltd. specializes in producing knit apparel for international buyers. The company offers comprehensive end-to-end solutions, including knitting, dyeing, washing, embroidery, printing, design development, and logistics support. Key Product Categories of Tropical Knitex Ltd. are- men's wear (T - shirts, polos, sweatshirts, sweat pants, ladies' wear

(tops, night wear, fashion wear), kids' wear (T - shirts, bottoms, casual wear), and baby wear (rompers, tops, and basic essentials).

Production Capacities (Per Day)

- **Sewing Capacity – 168,000 pcs/day**: Tropical Knitex Ltd. Sews with 83 modern sewing lines deployed with advanced machinery. The high sewing capacity ensures the bulk production of garments within a short lead time while maintaining an international level of quality. This efficiency gives the company an edge in meeting the buyer's urgent needs.
- **Knitting Capacity – 65 tons/day**: The slate fabric produced by the knitting department is manufactured with the indirect knitting machines. By having this in-house capability, the company can maintain superior fabric quality, reduce its dependency on external suppliers, and maintain fast product cycles. The periodontal knitting unit is centralized in CCL Extension, which ensures smooth coordination and large-scale output.
- **Dyeing Capacity – 42 tons/day**: The Dyeing and finishing department makes use of eco-friendly and energy-efficient machines to process fabrics. Using indirect knitting machines, the knitting department also produces slate fabric. This in-house capability enables the company to maintain a high quality of its fabric, handle the market independently of suppliers, and ensure shorter product cycles.
- **Printing Capacity – 150,000 pcs/day**: The printing unit has traditional and digital screen-printing functions, which can make various designs such as glitter, foil, puff, high-density, discharge, flock printing, and photo transfer. This enables the company to offer fashion-forward products that align with the design trends of its buyers.
- **Embroidery Capacity – 85,000–100,000 pcs/day**: The Embroidery department has an offer of intricate embellishments such as applique, sequins, chenille cording, taping, and pearl attachments. With semi-automated machines, the unit can handle large order volumes while maintaining attention to detail and precision in design.
- **Washing Capacity – 25,000 pcs/day**: 25,000 pcs/day: The washing unit offers an extensive range of garment washing such as acid wash, dip dye, tie dye, garment dye, and enzyme wash. These processes enable textiles to offer unique textures, a colored mystical effect, and a finish to garments that enhances their fashion appeal. With this facility, TKL provide value-added products to buyers in line with global fashion trends.

Alongside manufacturing, TKL also provides design support through its design studio in France and a local design team in Bangladesh, ensuring that it meets the latest global fashion trends.

Chapter 2
Description about Task Accomplishment

As an intern at TKL, I had the opportunity to visit and observe various operational units within the factory. In this section, I will briefly describe the functions of the five major Departments I was directly involved with: Knitting, Dyeing, Sewing, Merchandising, and Industrial Engineering. All departments are crucial in ensuring the smooth execution of orders, on-time delivery, and high-quality production.

2.1 Knitting Department

The knitting department acts as the foundation of the entire garment manufacturing process at Tropical Knitex Ltd. It is a department where the transformation of yarn into fabric begins, setting the quality standard for all subsequent production stages. This department operates with a daily knitting capacity of 65 tons and produces a wide variety of knitted fabrics, such as single jersey, pique, rib, interlock, fleece, and terry. The department is organized by advanced computerized circular knitting machines. Both single and double jersey, imported from reputable global brands such as Mayer & Cie, Fukuhara, and Terrot, are manufactured here. These machines can produce high-quality fabrics in different gauges according to buyer specifications. Modern technologies ensure consistency in loop formation, fabric width, GSM, and construction.

Key Activities and Observations

The knitting process begins with the procurement of the yarn from the store. The uniformity of yarn is checked for count, colour, and shade in each batch before it is designated for a specific machine according to buyer requirements. After allocating yarn, the production planning team creates a knitting schedule that specifies the type of fabric, GSM, and quantity to be manufactured.

The next stage involves preparing the circular knitting machines. According to the fabrication being designed, machine operators need to set up the right needles, sinkers, and cams. The machines are calibrated before production, and appropriate lubrication is applied. Regular maintenance inspections are also conducted. The operator continually monitors the creation of the loop and the tension of the fabric so that the performance proceeds seamlessly.

Throughout production, quality inspectors check for defects in the fabric rolls, such as dropped stitches, holes, oil marks, needle lines, or barre effects. Any discrepancies are immediately reported to the technician for such adjustments. Continued monitoring also plays a crucial role in maintaining the uniformity and consistency of the cloth, as well as reducing material wastage. The knit fabric immediately enters a relaxation period, during which the knitted fabric relaxes, reducing any shrinkage. Loosening occurs when the fabric is left in a controlled environment for a specified period before rolling. This stage is important because it creates the possibility of an inhomogeneous structure in the fabric during dyeing and finishing, particularly if the fabric is too tightly tensed. The relaxed rolls are then wrapped, tagged, and sent on to the dyeing department for further processing.

Learning and Practical Insights

- Research about the actual yarn type, count, and machine settings that directly influence fabric GSM, Texture, and quality.
- Observed the importance of continuous machine calibration and quality check, and teamwork performed with the planning and QC teams.
- Recognizes that PM will reduce downtime and ensure a smooth production flow.
- Minor errors found at this point will affect all later processes, including dyeing and finishing.

2.2 Dyeing Department

The Dyeing Department of Tropical Knitex Ltd. is involved with one of the most critical stages in the textile manufacturing process. This department serves to convert the associated grey fabric into final knitted yarn with the desired colours and quality for buyers. Production: The department has a daily output of 42 tons, comprising two garment dyeing plants and fabric manufacturing plants that utilize modern machinery and eco-friendly technology.

The dyeing department comprises several functional sections: the grey fabric inspection section, batching section, dyeing section, washing section, hydro-extraction section, drying section, and finishing section. Each section plays its role in helping the end product achieve the correct shades, an even appearance, and the required fastness properties.

Dyeing Methods and Processes

Depending on the demand of the buyers for designs and fabrics, dyeing is done following these procedures:

- Reactive dyeing for 100% cotton fabrics with excellent wash and abrasion resistance.
- Dispersing dyeing for polyester or mixed fabrics: giving highly faithful colors with global effects.
- Pigments dyeing for special effects and fashion clothing.
- Enzyme-treatments, Bio-polish for Softness & Smoothness.

Quality Control and Testing

Quality is a complicated factor of the dyeing process. Shade matching and quality checks are conducted continuously in the dyeing process in the lab. A wide range of tests are performed to guarantee the standard of fabric performance, including:

- Color fastness to washing, rubbing, perspiration, and light
- Shade variation and levelness inspection
- Shrinkage and GSM verification
- pH balance and residual chemical testing

Even the slightest variation in shade can be the reason for buyers rejecting the product. Therefore, accuracy in each step of the process, from preparing the recipe to maintaining the right temperature, is crucial. The department has a Data color spectrophotometer for shade matching and analysis.

Environmental and Energy Efficiency

Tropical Knitex Ltd. puts importance on environmentally safe dyeing processes. The dyeing space is equipped with environmentally harmless chemical formulations and dyes, which meet the standards of OEKO-TEX(R) and ZDHC. Recovery of Exhaust Gas Energy: Exhaust Gas Boilers (EGB) and Economizers are installed which help reuse heat energy and reduce overall gas consumption. Additionally, an Effluent Treatment Plant (ETP) aims to treat every drop of wastewater before releasing it into the environment, ensuring that it does not pollute the environment.

Learning and Observation

- Learned the use of lab testing and spectrophotometers in ensuring color fastness / GSM stability and fabric performance.
- Professional involvement in the discovery and development of eco-friendly dyes, ETP systems, and heat recovery technologies for sustainability.

- Finally learned about the importance of temperature, pH, and liquor ratio control for quality and the consistency of color.
- Gained practical knowledge on dyeing processes for fabrics, colour matching, and chemical controls for precise accuracy in matching shades.

2.3 Sewing Department

The Sewing section is one of the most critical sections of Tropical Knitex Ltd. In this industry, pre-dyed or pre-cut pieces of fabric are carefully stitched together to create completed garments from a series of highly structured processes. The department's mainstay is its production system, which has a daily output of approximately 168,000 units, organized by 83 stitching lines guided by the principles of precision, team spirit, and time management.

The key to the success of the sewing department is proper line balancing, the operator's skills, and effective cooperation between various support departments, including Industrial Engineering (IE), Quality Control, and Production Planning. Every production line is arranged to accommodate the styles it can handle, which helps maintain high productivity while ensuring the quality of garments.

The Sewing Department plays a vital role in Tropical Knitex Ltd. In this area, pieces of fabric are already dyed and cut, and then carefully assembled into complete garments through a specific procedure. The department boasts a phenomenal production capacity of approximately 168,000 pieces per day, divided across 83 sewing lines, which operate in accordance with the fundamental principles of precision, teamwork, and effective time management.

The success of the sewing department largely relies on appropriate line balancing, operators' skills, and the effective functioning of various support teams, including Industrial Engineering (IE), Quality Control, and Production Planning. Each production line is systematically organized to handle specific styles, which helps maintain high productivity and garment quality.

Work Process and Operations

The process begins after receiving cut panels from the cutting area. The IE team and line supervisors set up the machines before starting the sewing process, according to the style requirements provided by the buyer. Generally, each line of sewers comprises operators, assistants, quality inspectors, and line leaders who work together under the supervision of a floor supervisor. Each operator is assigned relevant duties based on their skills and experience.

In an ordinary production process of T-shirts, shoulders are inserted, sleeves are installed, neck ribs are tied, side seams are sewn, hems are finished, and labeling is done. All these tasks are performed with the best tools, ensuring accuracy and efficiency.

Common Machines Used in the Sewing Department

The sewing department has a wide range of modern machines that are suitable for various types of fabrics and garment construction. Some of the important machines include:

- **Single Needle Lock Stitch Machine:** Used for general stitching and attaching the garment parts.
- **Overlock Machine:** For sewing connectors of fabric panels and avoiding any unraveling.
- **Flat Lock Machine:** This is used in the knitwear to cover-stitch and finish the seams.
- **Feed of the Arm Machine:** For the use of attaching sleeves and circular elements.
- **Buttonhole and Button Attach Machines:** These machines are used for making the buttonhole or attaching buttons in a woven garment or knitted garment.
- **Bar Tack and Snap Button Machines:** To reinforce the points of stress and attach trims.

Quality Control and Monitoring

The sewing department places great importance on achieving a quality standard in production that is compensated. However, this can also mean that quality checks are performed during the production process, allowing for timely communication to identify and correct problems, rather than waiting for a complete product. Inspectors are on the lookout for things like missed aches, incorrect attachments, puckering, or airfield allowance not taken up. The department needs to maintain Work in Progress (WIP) reports to keep track of garments as they progress through the various stages of production. The production line director and quality inspector ensure that the operation is meeting customer-approved standards. Everyone is informed about any disputes regarding size or quality, and these issues are resolved immediately.

Line Balancing and Efficiency

One of the key developments in the success of the sewing department is line balancing, which is carried out in coordination with the IE department. The purpose of line balancing is to distribute the workload differently among drivers during the production process, ensuring that

no single operation becomes backed up. The IE experts calculate the Standard Minute Value (SMV) for each operation to define the product goals and efficiency scenarios.

The effectiveness of a line is evaluated daily by comparing the actual results with the theoretical target. Regular time assessments, agitation assessments, and adjustments to equipment arrangement enhance flow efficiency and output among operators.

Teamwork and Coordination

The capabilities of the sewing department are largely dependent upon interdepartmental cooperation. The retail team determines the product strategy, while the IE team determines performance standards. The Quality department ensures that the buyer's requirements are met. Supervisors maintain order, track attendance, and promptly address any problems related to equipment or driver issues.

Learning and Observations

- Noticed that modern machines were used (Overlock, flatlock, bar tack) and made a difference in garment quality and how quickly garments were made.
- Understood how to use line efficiency and operator skill/motivation to maintain high productivity.
- Recognized how leadership, coordination, and appropriate QC checks help eliminate defects, thereby ensuring consumer satisfaction.
- Learned how fabric pieces are put together to create garments by participating in line balancing and collaboration.

2.4 Industrial Engineering (IE) Department

With a strategic role in overall productivity, cost-cutting, and ensuring a smooth flow of operations on the production floor, the IE department is considered crucial. Tropical Knitex Ltd. has a dedicated IE function broken down into Pre-Production and Operation functions.

Pre-Production Team Activities I observed:

- **Style Analysis & Operation Breakdown:** Learning about new types of garments and breaking down the new pattern into separate sewing operations.
- **Standard Minute Value (SMV):** Computing SMV for each operation to forecast the labor and production goals.

- **Method Study:** Study of the alternative methods of doing operations and adopting the best among them.
- **Capacity Planning:** Visualization of planned order effectiveness to help plan capacity and merchandising teams that would provide realistic efficiency estimates for new orders.
- **Risk Assessment:** Determining important operations that can create bottlenecks in production.

Operation Team Activities I observed:

- **Line Layout Planning:** Machine layout design requires style requirements and the assignment of operators.
- **Line Balancing:** All operators must have an equal amount of work to do make the line run as efficiently as possible.
- **Time & Motion Study:** Measuring the performance of operators, identifying bottlenecks, and making recommendations.
- **Training & Skill Development:** Organizing operator training procedures to enhance new machine/technique handling.
- **Daily Production Monitoring:** Daily production monitoring reports, including line utilization, production variance reports, WIP, and NPT.
- **Kaizen and Lean Activities:** Making small incremental improvements (Kaizen), minimizing waste, and effectively aligning workflow.
- **Workplace Ergonomics:** Working postures, seating practices, and workstation setup, to ensure operator comfort and fatigue reduction.

My observation and learning:

- Understood how IE utilizes time study, single minute exchange (SMV), and line balancing for better production.
- Method studies and motions observed, kaizen to eliminate bottlenecks and waste.
- Learned about the direct correlation between accurate production planning-operator training, and efficiency.
- The actual IE models bridge the gap between the data analysis and the human performance to improve the process continually.

2.5 Merchandising Department

The merchandising board is often referred to as the heart of the garment industry because merchandisers are directly accountable for all orders received from buyers and for ensuring that these orders are processed from initial enquiry to final dispatch. While working as an intern at Tropical Knitex Ltd., how merchandisers work under time pressure to meet deadlines, manage multiple orders simultaneously, and coordinate with all internal functional departments.

Desired deep responsibilities that I witnessed include:

- **Buyer Communication:** Merchandisers have constant communication with the international buyers to collect tech packs, communicate about specifications, negotiate pricing, and chase order status.
- **Sample Development:** Devising proto, fit samples, size sets, and pre-production (PP) pricing samples for buyer approval before commencement of bulk production.
- **Order Confirmation:** Concluding the order by examining the purchase orders (POs) and verifying all the contract details.
- **Consumption & Costing:** Calculation of the consumption of fabrics and accessories, preparing cost sheets, and negotiating with suppliers.
- **Sourcing:** Working with vendors to obtain fabrics, trims, labels, poly bags, and all other items needed within the specified lead time.
- **Time and Action (T&A) Plan:** Creation of the T&A calendar that tracks all the milestones - sample submittal, fabric in-house date, manufacture initiation, inspection, and dispatch.
- **Follow-up & Coordination:** Follow up regularly with the knitting, dyeing, IE, sewing, and finishing teams to keep the production areas running.
- **Quality & Inspection:** Scheduling in-line and final inspection by both the internal QA team and other auditors (if required by the buyer).
- **Problem-Solving:** Dealing with problems such as fabric shrinkage, shade of a fabric, and stitch defects by scheduling meetings with production and QA departments.

My observation and learning:

- Understood merchandiser's activities for the preparation of cost sheets, T&A plans, and follow-up in all departments.

- Obtained hands-on experience in buyer communication, order tracing, and coordination of production.
- Observed how delays in the approval of samples or miscommunication cause the cancellation of shipments.
- Gained knowledge of multitasking, negotiation skills, and technical knowledge needed to handle buyer expectations effectively.

Chapter 3
Critical Assessment of Internship Work

A critical evaluation of internship experience involves a rational analysis of the application of academic skills in practical professional settings. The internship at Tropical Knitex Ltd. gave a real opportunity to connect theoretical concepts with practical implementation in a fully integrated knitting composite factory. Tropical Knitex Ltd, a leading knitwear manufacturer in Bangladesh, operates through five supplementary departments: Knitting, Dyeing, Sewing, Industrial Engineering (IE), and Merchandising. These departments are crucial for maintaining product quality, ensuring production efficiency, and customer satisfaction.

This chapter provides a comprehensive analysis of the internship experience, with a specific emphasis on three key areas: the application of academic and technical skills, recommendations for organizational change, and the results of personal development. This reflection views the externship as not just an academic requirement, but also as an important phase in professional development, in which academic concepts learned in the classroom are transformed into productive insights in a stimulating applied learning environment.

3.1 Application of Generic and Industry-Specific Courses During Internship

The internship allowed for the application of generic management courses and specific courses in textile and industrial engineering. Theoretical foundations provided the successful structure for my observations, communication, analytical thinking, and technical involvement during my internship with Tropical Knitex Ltd.

Application of Generic Courses: The management courses I completed instilled essential professional skills, including communication, critical thinking, teamwork, and operational discipline—all of which were highly relevant while working at Tropical Knitex Ltd.

Human Resources and Communication skills were essential in daily contact between departments. Strong oral and written communication skills, which lead to the ability to maintain professionalism in relationships with supervisors, operators, and co-workers. Whether it was to bring IE engineers and production supervisors together on a project or to document findings for reports, effective and polite communication was crucial. An understanding of organizational structure and reporting procedures was considered essential, as it applied the principles learned from management and communications courses, which assisted me in adjusting to a large industrial setting.

Analytical and Problem Solving - The academic skills acquired in data analysis and decision-making techniques, relevant to my academic background, were directly applied to IE and Merchandising. In the IE department, I was involved in efficiency analysis, line balancing analysis, and SMV calculations, which required analytical thinking and numerical analysis. Likewise, within the Merchandising division I applied my analytical skills to understand buyer pricing, track order progress, and support production activities.

My operations management and supply chain courses have provided me with a comprehensive understanding of Business and Operational Management, allowing me to gain a better perspective on the production cycle, from the extraction of raw materials to the production of finished products. My observations in the Sewing and Dyeing departments demonstrated how the theory of process flow, bottlenecks, and resource allocation was implemented in reality. The coursework provided essential insights into the need to maintain operational productivity, manage production schedules, and uphold product quality standards within competitive timeframes.

Application of Industry-Specific Courses: The concentrated curriculum in Knitwear Industry Management provided a strong technical and industrial approach, aligning closely with the operational methods at Tropical Knitex.

Classes with a focus on Textile and Fabric Production allowed me to connect theoretical concepts related to the properties of fibers, details of yarn, and fabric design to tangible experiences in the Knitting Department. Through the study of computerized circular knitting machines, I established basic correlations between machine settings, such as stitch length, RPM, and yarn tension, and the regulation of GSM and fabric quality. This practical experience provided me with a deeper understanding of how scientific principles relating to fabrics can have a direct impact on the quality and efficiency of production.

The information learned on Dyeing and Finishing courses, specifically about the coloring of textiles and chemical treatment, proved to be of great value during my internship in the Dyeing Department. The actual page application for ideas related to colour longevity and pH value chemical use was made visible to me when I observed shade matching in both laboratory and production dyeing procedures. My background chemical processing also helped me better understand the essential aspects of controlling temperature and timing precisely to achieve the final proper shade.

Moreover, the sustainability principles I learned during my studies, such as energy conservation and wastewater management, were applied in the company through the use of technologies like Exhaust Gas Boilers (EGB) and economizers, resulting in improved resource efficiency.

I realized that there are many factors of practical efficiency, specifically operator skill, workplace ergonomics, and motivation, that are often reduced to simple aspects when talking about them in the virtual realm. This experience highlighted the need for management to integrate the various human and technical aspects to maintain productivity.

The concepts of Production Management and Quality Control were integral to my learning in the Sewing Department, where one key aspect of managing the daily workflow is balancing the lines and maintaining quality on a daily basis. Monitoring 83 operational sewing lines and conducting in-line quality assessments provided a practical setting for theory identified with the concepts of work study and defect prevention.

The Industrial Engineering Department offered the best connection between theory and practice. Principles drawn from Industrial Engineering classes (for example, method analysis, movement evaluation, and lean production) were applied in real-time to enhance the productivity of the lines and reduce non-productive time (NPT). The IE team's focus on Kaizen, SMV calculation, and capacity analysis demonstrated the effective use of continuous improvement models. As I observed the data collection and operator input's capacity to drive real-world changes in the manufacturing environment, I gained a deeper understanding of the production optimization process.

Ultimately, my experience in the Merchandising Department instilled in me the importance of combining technical and business expertise. Coursework centered on merchandising and buyer relations was closely related, as I saw how merchandisers handle T&A plans, order updates, and work with production teams. The ability to market production schedules that meet the expectations of buyers demonstrates a theoretical understanding of order fulfillment and sourcing management. Skills in communication, negotiation, and documentation, which are the main components of the course, were essential for making good deals with buyers and ensuring the smooth completion of an order.

In conclusion, I learned through the internship that theoretical knowledge is the foundation of practical skills. However, working in an industrial environment requires flexibility, analysis,

and an understanding of how to apply theoretical concepts to practical situations—all of which I was highly able to do during my internship.

3.2 Suggestions for Industry Improvement

The internship provided me with the opportunity to evaluate the operational, managerial, and technological systems used by Tropical Knitex Ltd. Although the company demonstrated a high degree of professionalism, adherence to rules, and technical expertise, it is worth noting that there are areas for improvement from a strategic perspective.

Digital Integration and Real-Time Data Management: One of the most notable observations during my internship journey was the significant reliance on manual data entry, particularly in the knitting, dyeing, and sewing industries. Centralizing the ERP (Enterprise Resource Planning) software would be a great way to enhance departmental collaboration, as all parties involved would have immediate visibility into production metrics, efficiencies, and quality indicators. The use of technology would reduce errors in documentation and enable management to make more informed decisions based on accurate data.

Automation and Technological Advancement: While Tropical Knitex Ltd. utilizes advanced machinery, certain tasks still require human supervision, such as fabric quality inspection and production oversight. Automated knit defect detection systems and digital performance measurement systems for sewing may allow improved sewing accuracy and transparency. In addition, the use of automated dosing equipment is also considered in dyeing processes, where it achieves greater consistency and control of chemical application, and therefore, may lead to improved shade accuracy and reduced rework.

Enhanced Communication Between Departments: In my experience, there have been times when communication between departments was not as smooth as it could have been, particularly between IE, Production, and Merchandising. Having regular interdepartmental review meetings and a standard electronic messaging system for sharing information can shorten decision-making time and facilitate other forms of communication regarding order priorities. More effective feedback loops would enable minor problems, such as GSM drift or color drift, to be identified and addressed before they lead to major production delays.

Skill Advancement and Workforce Enablement: With the apparel sector in flux, it is crucial to advance skills continually. Training activities at Tropical Knitex Ltd. can be continued through specific training programs focusing on lean manufacturing, digital production

processes, and enhanced quality inspection. Engaging the operator in Kaizen and other improvements would encourage a sense of ownership and motivation amongst the employees. Additionally, establishing specific career paths and performance recognition schemes can contribute to increased employee retention and satisfaction.

Sustainability and Environmental Optimization: Tropical Knitex Ltd. has demonstrated its commitment to sustainability through the implementation of efficient resource recovery systems and wastewater management processes. However, the focus should be on energy monitoring systems, chemical recycling, and methods to enable sustainable production. The introduction of sustainability metrics into the regular performance evaluations would ensure that environmental responsibility is not considered a matter of compliance, but an integrated part of the company's operating philosophy.

Strategic Insight: The combination of the programs to achieve digital transformation, employee empowerment, and multi-pronged sustainability will help optimize operations and position Tropical Knitex Ltd. as a competitive and future-proof organization in the global textiles industry.

3.3 Learning for Self-Improvement

The internship at Tropical Knitex Ltd greatly enhanced my life by connecting theoretical knowledge with real-world application in the field. It not only improved my technical and analytical skills but also developed my interpersonal abilities, work ethics, and professional perspective. This experience has deepened my understanding of the operations within the textile and apparel industry. It has led me to realize how companies in modern manufacturing can become competitive through the effective use of efficiency, collaboration, and innovation.

Professional Skills and Work Discipline

The final message from the internship was that discipline and ethical behavior play a crucial role in high-pressure industrial life. Being a part of a formal production system required time management, punctuality, and individual responsibility. From minute to minute and process to process, it appeared that everything was directly affecting delivery schedules and production targets. These requirements gave me further insight into the consequences of minute mistakes in this context, highlighting how they can lead to widespread production failures.

This educational experience involved elements of teamwork and collaboration. I recognized the importance of effective communication between different departments (Knitting, Dyeing,

Sewing, IE, Merchandising) to ensure production continued smoothly. The mutual respect and collaboration among operators, supervisors, and managers demonstrate that achieving professional success depends not only on technical skills but also on mutual respect, patience, and a shared goal. These people skills enhanced my flexibility and ability to function well in different work environments**.**

Analytical and Technical Growth

Hands-on industrial experience provided the opportunity to take the theoretical knowledge provided in the classroom to the real world. This proved especially helpful in my work through the Industrial Engineering (IE) Department. Time study, Standard Minute Value (SMV), and efficiency calculation helped me to realize the quantitative aspects of production control.

I learned how to analyze data to identify production inefficiencies and how systematic observations can lead to significant process improvements. For instance, in line balancing exercises, I observed that even the smallest delays in one operation could have a significant impact on the entire flow. The academic experiences refined my critical thinking and decision-making skills helping me understand challenges from both technical and managerial perspectives. Such knowledge is essential for anyone planning to develop a career in industrial engineering, production management, or lean manufacturing.

Adaptability and Problem-Solving

The clothing industry is a dynamic one, and my experiences at Tropical Knitex served only to confirm this. Things like equipment breaking down, or fabric quality becoming an issue, or orders being changed at the last minute were challenges that I had not foreseen. I observed how supervisors and engineers can solve problems by utilizing a fast-thinking brain, logical prioritization, and effective internal communication.

This environment has taught me the value of being adaptable - the ability to remain calm and solution-oriented even in challenging situations. "I realized every challenge is a stepping-stone to be able to think creatively and build resilience." It was also evident through this experience that solving workplace problems requires solutions not just technically, but also maintaining morale, and effective communication and coordination among team members

Communication and Interpersonal Development

One of the most rewarding experiences of my internship was the opportunity to communicate with professionals from diverse backgrounds and with varied experiences. Machine operators, senior production managers, and everyone gave a completely different perspective based on their experience. These experiences have had a significant impact on my communication skills and empathy, as well as on boosting my confidence.

I learned to communicate effectively, listen attentively, and receive feedback professionally. Participating in team meetings and communicating on a daily basis has significantly improved my communication skills in a business setting. In addition to that, the knowledge of the workplace culture gave me an understanding of emotional intelligence - how to enter the space, how to respond to senior staff, and how to interact with coworkers in a dignified manner. These implicit philosophies were embodied in the concept of professionalism.

Professional Direction and Future Perspective

The most significant impression from the internship was the knowledge gained about career choices. A visit to the integrated activities of Tropical Knitex Ltd has further intensified my interest in issues of production efficiency, industrial architecture, and environmentally friendly manufacturing practices. I did notice that modern factories are rapidly changing, becoming increasingly automated, making decisions based on data, and are conscious of the environment.

It was an experience that inspired me to study lean manufacturing, supply chain management, and sustainability in the clothing industry. I recognize that technological competencies must be combined with innovation and ethics to ensure individual and organizational long-term success.

In conclusion, the internship at Tropical Knitex Ltd was not just a training period; it was a life-changing experience. PCV made me more aware of industrial processes and improved my technical and analytical skills which enable me to confidently and truthfully approach real-life problems. My future efforts in the textile/apparel industry will be driven by my ability to work with teams, creativity, problem-solving, work ethic, and adaptability.

This experience has enabled me to develop as a learner and a future professional prepared to make my contribution to the development of the dynamic knitwear industry in Bangladesh with professionalism, creativity, and commitment.

Chapter 4
Conclusion

My work experience at Tropical Knitex Ltd. was valuable, as it allowed me to bridge the gap between academic learning and the reality of working in a factory. During this project, I observed and experienced most aspects of the production process, from yarn to packaged final garments, over a period of 66 days. I was able to collaborate with five core departments: Knitting, Dyeing, Sewing, Industrial Engineering (IE), and Merchandising, all of which made different contributions towards the understanding of the knitwear industry.

In the Knitting Department, I was taught in detail how a small modification, such as adjusting a yarn's tension or a machine's settings, can significantly impact the quality of a fabric. The dyeing section emphasized the importance of precision measurement, chemical control, and patience in achieving the correct colour shade. I was also impressed with how the company operates its business by utilizing energy-saving systems, such as the Exhaust Gas Boiler (EGB), to reduce waste and protect the environment.

This was called the Sewing Floor, and it was there that I saw the human element of production. I observed the effect that teamwork, time management, and discipline had on efficiency. The IE Department helped me better understand the analytical side of the process, including the methods used to increase productivity and reduce losses, such as SMV calculation, time studies, and kaizen. On the other hand, I learned from the Merchandising Department that effective communication and coordination are crucial when dealing with buyers and following up on orders.

The experiences I had gave me an appreciation for the practical application of academic theory, such as process optimization and quality control, from the center of the noisy production floor. I also learned that each department relies on the others, and communication will be vital to ensure operations run smoothly. Although Tropical Knitex Ltd currently has a well-functioning system, I believe that coordination could be enhanced by the use of more digital tools, such as ERP software and real-time data tracking.

Personally, it enabled me to become a better person in many ways through this internship. It helped me develop a professional attitude and learn to solve problems, while also building confidence in handling real-life situations. Working for a manufacturing company can

sometimes be stressful, and circumstances on the factory floor require you to think rationally and remain calm-minded to collaborate with others and find a solution.

Overall, this internship was more than just a prerequisite; it was a life-opening adventure. It allowed me to see how knowledge, skills, and teamwork relate to each other to produce a successful manufacturing process. Altogether, the experience and lessons learned from Tropical Knitex Ltd. helped me feel confident in pursuing my future career in the knitwear industry of Bangladesh.

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