

Report On
Industrial Engineering Practices in Babylon Group

By
Mahmuda Pervin
ID: 24281019

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:

Mahmuda Pervin

Student ID: 24281019

Industry Supervisor's Full Name & Signature:

Md. Muslim Uddin

Group General Manager

Babylon Group

Academic Supervisor's Full Name & Signature:

Marjan Hossain

Senior Research Associate, BGID

BRAC University

Letter of Transmittal

Marjan Hossain,

Senior Research Associate,

BIGD, Brac University

66 Mohakhali, Dhaka-1212

Subject: Submission of Internship Report

Dear Madam,

With due respect, I am pleased to submit my internship report titled “**Industrial Engineering Practices in Babylon Group**” as a student of the **BRAC Institute of Governance and Development, BRAC University**. It has been a great pleasure to work on such an important topic. I have made every effort to follow your guidelines throughout the planning and preparation of this report. I have collected and structured the most relevant information to ensure the report is clear, focused, and well-organized.

Preparing this report has been both a challenge and a valuable learning experience that has helped me broaden my knowledge. I am sincerely grateful for your continuous guidance and support during the preparation process. I hope my effort will meet your expectations.

Although I have tried my utmost to complete this study in a professional and comprehensive manner, I acknowledge that certain limitations may have affected the outcome. I would kindly request you to evaluate my report with those limitations in mind.

Sincerely yours,

Mahmuda Pervin

Student ID: 24281019

Executive Development Center, BIGD

Brac University

Date: November 10, 2025

Non-Disclosure Agreement

This agreement is made and entered into between **BIGD** and the undersigned student of BIGD, **Mahmuda Pervin**.

I acknowledge that during my internship, I may have access to confidential information related to the business and financial affairs of the organization where I completed my internship. I understand that such **Confidential Information** may exist in various forms, including written documents, correspondence, oral communication, computer programs, and digital applications.

Both parties agree that, as essential participants in this project, we will not use, copy, record, remove, disclose, or share any Confidential Information unless authorized by the respective organization.

Furthermore, I agree not to share or provide any authentication credentials—such as passwords, access codes, key cards, or identification badges—to anyone else, nor will I use or attempt to use another individual’s credentials.

I understand that any violation of this confidentiality agreement may lead to disciplinary measures, including termination from the internship program (resulting in a “Failure” status on my permanent record) and/or possible legal action.

By signing this agreement, I confirm that I have been informed about the confidentiality policy and the proper handling of confidential information. We both agree to maintain and protect the confidentiality and privileged nature of all such information.

Student’s Full Name & Signature:

Mahmuda Pervin

Student ID: 24281019

Industry Supervisor’s Full Name & Signature:

Md. Muslim Uddin

Group General Manager

Babylon Group

Acknowledgement

First and foremost, I would like to express my heartfelt gratitude to Ms. Marjan Hossain, Senior Research Associate, BIGD, BRAC University, for her invaluable guidance and continuous support throughout the preparation of this internship report. Her encouragement, constructive feedback, and willingness to introduce me to new dimensions of knowledge have made this experience truly meaningful.

I am equally thankful to my industry supervisor, Mr. Muslim Uddin, Group General Manager, Industrial Engineering, Babylon Group, for his warm support and valuable time. His insights and guidance have been instrumental in shaping my understanding of practical internship activities in the industry.

Finally, I would like to extend my sincere appreciation to all the officials from various departments for their cordial cooperation and assistance in providing the necessary information during my industrial attachment.

Sincerely yours,

Mahmuda Pervin

24281019

Executive Development Center, BIGD

Brac University

Date: 10-11-2025

Executive Summary

This report is based on a three-month internship at Babylon Group (Aboni Knitwear Ltd) one of Bangladesh's leading vertically integrated apparel manufacturers. Established in 2002, Aboni Knitwear Ltd has grown into a global organization known for its innovation, sustainability, and commitment to quality.

The purpose of this report is to present a practical understanding of Industrial engineering dept of Babylon Group and examine how this department collaborates with other units to execute customer Operational functions efficiently. It also reflects the application of skills gained from the Post Graduate Diploma in Knitwear Industry Management (PGD-KIM) at BRAC University.

During the internship, I was assigned to twelve departments including Marketing & Merchandising, Store, Planning, Industrial Engineering, Cutting, Sewing, Finishing, Human Resources, Maintenance, Sample, Quality Dept. This rotation gave me a broad view of factory operations, interdepartmental coordination, and order execution. My main focus was the Industrial Engineering Department, which acts as the central link between buyers and internal teams.

The experience revealed that Industrial Engineering serves as the driving force behind Babylon's operational excellence. The department plays a crucial role in optimizing production processes, improving line efficiency, reducing SMV, and ensuring effective resource utilization. While Babylon has demonstrated strong capability in process standardization, data-driven decision-making, and digital efficiency tracking, further improvement is required in operator skill development, real-time performance monitoring, and interdepartmental coordination.

Through this internship, I had the opportunity to apply theoretical concepts of work-study, production planning, and process optimization in practical factory settings. It strengthened my analytical and problem-solving abilities while enhancing my communication and teamwork skills.

Overall, this experience marked a significant milestone in my professional growth, motivating me to contribute to Bangladesh's RMG industry through continuous improvement, innovation, and sustainable industrial practices.

Table of Contents

Declaration.....	2
Letter of Transmittal	3
Non-Disclosure Agreement	4
Acknowledgement	5
Executive Summary	6
Chapter – 01: About Organization.....	9
1.1 Industry Summary of Babylon group	9
1.2 Staff Strength:	9
1.3 Vision and Mission of Babylon group:	10
1.4 Goals and Objectives:	10
1.5 Master Organogram:	11
1.6 Business Scale:.....	11
1.7 Products Produced by the Industry:	11
1.8 Major Purchasers:	12
Chapter 2: Description about Task accomplishment	12
Human Resource Department (Duration 26 Sep-10 Oct)	13
2.1.1 key Functions which I observed:	13
2.1.2 Core Function of HR Dept I Observed:	14
2.1.3 Process Flow Chart of Human Resource Management System:.....	14
2.1.4 Compliance and CSR of Babylon Group:.....	15
Marketing and Merchandising (Duration 21 Aug-5 Sep)	16
2.2.1 Observation of Marketing at Babylon Group	16
2.2.2. Observation of Merchandising at Babylon Group:	17
2.2.3. Flow chart of Merchandising:	17
My key takeaways: From marketing and merchandising dept I have learned how the buyer's orders are handled from initial stage to final stage. Process follow Up and sample approval are also most important part for marketing merchandising dept.....	18
Quality Dept (Duration 18 Oct-25 Oct).....	18
2.3.1. Quality Management:.....	18
2.3.2. Quality Planning:	18
2.3.3. Quality Assurance:	18
2.3.4. Quality Control:	19
2.3.5. Continuous Improvement:	19
2.3.6. Quality Inspection:	20
2.3.7. Use of Quality Tools:.....	20
2.3.8. Acceptable Quality Level, or AQL:	20
My key takeaways: During my intern period in quality Dept I learned about the different kinds of inspection stages and how the product quality is maintained. I also understood how the defects are identified and corrected according to buyer requirements and standards.	20
Sample Department (11 Oct -17 Oct).....	20
2.4.1. Sampling & CAD Section.....	20
2.4.2. Sample Section Organogram:	21
2.4.3. Applied Technology:	22
2.4.4. The Sample Section's Operations at Babylon Group	22
2.4.5. Pattern Making Flow chart:	22
2.4.6. Marker making Flow chart (For bulk)	23

Planning Dept (Duration 6 Sep -15 Sep)	23
2.5.1 Core activities based on my observation:	23
2.5.2 Process flow chart of planning dept:.....	24
Industrial Engineering Department (Duration 26 Oct-30 Oct)	24
2.6.1. Key Objectives of Industrial Engineering I Observed:	25
Function of IE Department in Babylon Group	25
Works Study	26
Production	26
Productivity	26
Classification of work study	26
Strategic Role of Work Study:.....	27
2.6.2. Benefits of Work Study	27
2.6.3. Costing Strategies	27
2.6.4. Management Information System (MIS)	28
2.6.5. Method Study.....	29
2.6.6. Cycle Time:.....	30
Observed Time:	30
SMV (Standard Minute Value).....	30
Rating:.....	30
Allowance	31
2.6.7. Motion Economy	31
Principle of Motion Economy	31
Chapter – 3 Critical Assessment of Internship Experience	33
3.1 Application of generic and Industry Specific Courses during	33
1. Human Resources (HR) Department:	33
2. Marketing and Merchandising Department	33
3. Quality Department.....	34
4. Industrial Engineering (IE) Department	34
5. Sample/Product Development Department.....	35
3.2. Suggestion for Industry Improvement	35
1. Enhancing Digital System and Automation.....	35
2. Enhancing Data Analytics and Decision-Making Capabilities	36
3. Reducing Manual Work and Boosting Process Automation	36
4. Building Proficiency Through Mid-Level Management Training.....	37
5. Refinement of Machinery and IT Infrastructure.....	37
3.3 Learning for Self-Improvement	38
Chapter 4: Conclusion	38
References.....	39

Chapter – 01: About Organization

1.1 Industry Summary of Babylon group

Babylon Group is a trailblazing conglomerate that leads the apparel industry through innovation, setting benchmarks for ethical and sustainable manufacturing. They have cultivated a strong reputation for trust and delivering complete satisfaction. Their passion for innovation drives Their goal to become a top leader in the apparel sector. By forming key alliances with global brands and like-vision sharing partners, they have Overhauled industry standards. They are committed to remaining at the forefront of redefining the apparel business and the other industries we operate in.

Name	Aboni Knit Wear Limited (Babylon Group)
Type	100% Export Oriented Knit Industry
Year of establishment	2002
Address	Plot # 169/171, Tetulzhora, Hemayetpur, Savar, Dhaka
Company Logo	
Investor	Mr. S.M. Imdadul Islam, Mr. Abdus Salam, Mr. Neesar Ahmed, Mr. Abidur Rahman, Mr. Moinul Ahsan
Certification and awards	   
Production Capacity	2600000 pieces/Month

1.2 Staff Strength:

Section	Number of Employees
CAD, Pattern & Sample	109
Cutting	238

Sewing	1929
Finishing	430
Quality	408
HRD	100
Maintenance	35
IE	20
Store	48
Training Center	32
Trial	27
Product Safety	14
Total Employees	3390

1.3 Vision and Mission of Babylon group:

Vision

To build capacity and resources to contribute at least half a billion dollars in national GDP, evolving with diversified business portfolios and delivering value to the customers, being one of the best responsible businesses entitles and preferred employers.

Mission

1. To have the best structure to pick and every possible change in the business world faster.
2. To build a sustainable business model having the right people and process.
3. To prioritize on continues improvement by leveraging latest industrial engineering methods and models in manufacturing.
4. To focus on continuous capacity be developing and engaging people, bringing in good business practices, leveraging technology and automation.

1.4 Goals and Objectives:

The objectives of Babylon Group, a multicultural Bangladeshi company, include achieving global leadership in the apparel industry by focusing on quality, innovation, and sustainability; serving their customers through high-quality clothing accessories and packaging; improving agricultural processes and helping farmers attain nutritional sufficiency; and enacting corporate social responsibility initiatives that benefit workers and communities

- Leggings
- Shorts
- Kids Wear
- Trouser
- Jogger
- Henley
- Polo Shirt
- Hoody
- Jacket

1.8 Major Purchasers:

- H & M
- Monoprix
- Tesco
- Pepco
- Armand Theiry
- Zara
- Elfindoll Classic
- LC Waikiki
- Tao
- Decimas

Chapter 2: Description about Task accomplishment

During my three-months internship at **Babylon Group**, I had the privilege of working across **12 different departments**, which provided me with an in-depth understanding of their operations, interrelationships, and specific roles. This experience greatly expanded my industry knowledge and strengthened my hands-on comprehension of apparel manufacturing and management practices.

Guided by my Industrial supervisor, I adhered to a **structured rotational plan** that enabled me to dedicate focused time to each department. The detailed schedule is presented below:

Department	Start Date	End Date	Duration
Store	1-Aug	3-Aug	3 Days
Cutting	4-Aug	8-Aug	5 Days
Sewing	9-Aug	15-Aug	7 Days
Finishing	16-Aug	20-Aug	5 Days
Marketing and Merchandising	21-Aug	5-Sep	15 days
Planning Dept	6-Sep	15-Sep	10 Days
Supply chain Management	16-Sep	20-Sep	5 Days
Maintenance Dept	21-Sep	25-Sep	5 Days
Human Resource Dept	26-Sep	10-Oct	15 Days
Sample Dept	11-Oct	17-Oct	7 Days
Quality Dept	18-Oct	25-Oct	8 Days
Industrial Engineering Dept	26-Oct	30-Oct	5 Days

I sincerely followed This schedule for 3 months internship at Babylon group. But among them I describe here six dept in details which I observed.

Human Resource Department (Duration 26 Sep-10 Oct)

My time in the HR department offered valuable insights into workforce management in a modern factory setting. The **Human Resource (HR) Department of Babylon Group** plays an important role in helping the company grow and run smoothly. As one of the top companies in Bangladesh's apparel industry, Babylon Group believes its employees are its biggest strength. That's why the HR department focuses on hiring the right people, helping them develop their skills, and keeping them motivated to stay with the company.

During my internship, I tried to observe the **main functions of the HR department** closely. I spent around 2 weeks in HR dept.

2.1.1 Key Functions which I observed:

- Managing recruitment, selection, and hiring processes within the organization.
- Administering employee benefits, including salary, bonuses, gratuity, and superannuation funds.
- Overseeing the monthly salary disbursement.
- Preparing and allocation both festival and performance bonuses.
- Processing employee final settlements.
- Submitting various salary-related MIS reports to management.
- Acting as system administrator within the HR department.

- Assisting in appraisal management.
- Managing employee tax computation and completing all related tasks.

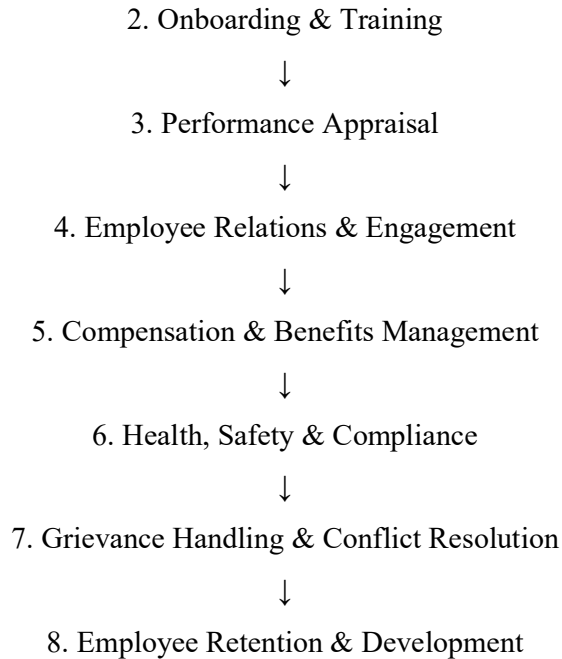
2.1.2 Core Function of HR Dept I Observed:

- **Staffing:** Involves selecting and assigning the most suitable individuals to appropriate roles within the organization.
- **Acquisition:** Covers the activities related to sourcing, attracting, and recruiting competent candidates to meet organizational needs.
- **Development:** Emphasizes enhancing employee capabilities through ongoing learning opportunities and performance improvement initiatives.
- **Motivation:** Entails implementing various methods and policies to inspire employees and boost their engagement and efficiency.
- **Maintenance:** Focuses on retaining valuable employees by creating a supportive and positive work environment.
- **Compensation and Benefits:** Deals with structuring pay scales, incentives, and welfare programs to ensure employee satisfaction and fairness.
- **Employee Care and Industrial Relations:** Aims to foster harmonious relationships between employees and management while addressing workplace concerns constructively.
- **Training and Development:** Involves conducting sessions and workshops to strengthen employees' professional skills, knowledge, and competencies.
- **Grievance Handling:** Ensures that employee complaints or issues are managed and resolved promptly, transparently, and equitably.

2.1.3 Process Flow Chart of Human Resource Management System:

1. Recruitment & Acquisition





2.1.4 Compliance and CSR of Babylon Group:

I observed during my internship Babylon Group Strongly maintains compliance standard to ensure safe and ethical working environment. Here is a list of compliance in which some points are maintained fully & some are partially. The following points are especially for the Apparel Industry.

1. Holiday Compensation Policy
2. Leave with wages Policy
3. Equal remuneration Policy
4. National festival holiday
5. Over time register
6. Labor welfare Policy
7. Child labor abolition policy
8. Zero abasement policy
9. Working hour policy
10. Environmental policy
11. Security policy

12. Buyer code of conduct
13. Health & safety committee
14. Canteen

My key takeaways: From HR dept I learned the importance of communication and coordination in people management efficiently. Also, how the employee records are done as well as attendance and leave management. Difference between management and leadership I have learnt from HR dept that will help me in future position.

Marketing and Merchandising (Duration 21 Aug-5 Sep)

In the period of Marketing and Merchandising dept I had the opportunity to observe very closely how the dept work communicating with buyer to final shipments. While marketing focuses on creating demand and building brand value, merchandising guarantees that the appropriate products reach the right customers at the right time.. It's a very Important Part in any organization. In Babylon Group during my period, I spent around 2 weeks in this Department.

2.2.1 Observation of Marketing at Babylon Group

Marketing involves identifying customer needs, promoting products, and positioning the brand in competitive markets. It includes:

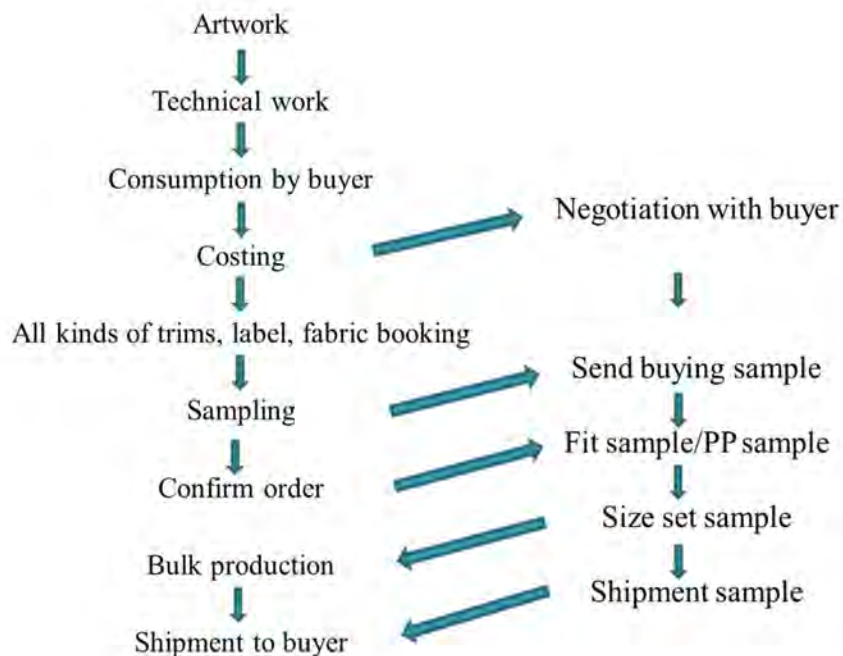
- **Market Research:** Understanding trends, consumer behavior, and competitor strategies.
- **Brand Promotion:** Focusing on enhancing brand awareness, social media, trade shows, and influencer partnerships to build visibility.
- **Sales Strategy:** Entails formulating effective pricing, distribution, and promotional plans to attract potential buyers and increase sales performance
- **Customer Relationship Management (CRM):** Aims to build and sustain long-term relationships with customers by ensuring continuous communication, quality service, and customer satisfaction.

2.2.2. Observation of Merchandising at Babylon Group:

Merchandising bridges the gap between marketing and production, ensuring that buyer requirements are met efficiently. Key functions include:

- Buyer Coordination: Establishing effective Communication with buyers to understand specifications and expectations.
- Product Development: Overseeing the entire process sampling, fabric sourcing, and design approvals.
- Costing & Negotiation: Preparing details cost sheets and engaging in negotiating prices based on market and production factors.
- Order Execution: Monitoring procurement, production, quality control, and shipment.
- Time & Action Planning: Developing comprehensive production timelines to ensure that all activities are completed within the buyer's deadline.
- Quality Assurance: Maintaining strict quality control measures to ensure that finished products comply with buyer standards and international compliance requirements

2.2.3. Flow chart of Merchandising:



My key takeaways: From marketing and merchandising dept I have learned how the buyer's orders are handled from initial stage to final stage. Process follow Up and sample approval are also most important part for marketing merchandising dept.

Quality Dept (Duration 18 Oct-25 Oct)

2.3.1. Quality Management:

During my Internship at Babylon group I spent 1 week in Quality dept and observed that quality dept. is most important dept which ensure product quality according to buyer requirements and ensure shipment. My observation and learning are given below:

2.3.2. Quality Planning:

Quality planning refers to the process of establishing quality objectives, understanding customer requirements, and designing appropriate strategies to achieve those objectives. It focuses on integrating quality into every stage of the production process, thereby minimizing defects and enhancing overall efficiency.

Key Components:

Defining Quality Standards: Establishing measurable benchmarks based on customer expectations and industry best practices.

Identifying Target Customers: Determining the intended customer base and analyzing their specific needs and preferences.

Developing Quality Strategies: Formulating detailed plans and allocating necessary resources to achieve the desired quality outcomes effectively and consistently.

2.3.3. Quality Assurance:

Quality Assurance (QA) refers to a structured set of activities aimed at ensuring that processes used in development or production are capable of delivering products that meet defined objectives.

Key Aspects of QA:

- **Process Validation** – Confirming that procedures are suitable and consistently followed.
- **Methodology Development** – Establishing systematic approaches for consistent quality.
- **Standards Implementation** – Applying industry or organizational standards to guide operations.
- **QA Reviews** – Evaluating process elements such as planning, documentation, and compliance.

2.3.4. Quality Control:

Quality Control (QC) refers to a series of systematic activities aimed at inspecting and evaluating products or deliverables to ensure they conform to predefined standards and are free from defects. QC plays a crucial role in maintaining consistency, meeting customer expectations, and ensuring overall product reliability.

Key Aspects of Quality Control based on my observations:

- **Defect Identification:** Detecting and documenting any flaws, errors, or deviations in the product or process.
- **Requirement Validation:** Verifying that all specified requirements are accurate, complete, and properly implemented.
- **Testing:** Conducting various test procedures to assess product functionality, performance, and durability.
- **Inspections and Reviews:** Performing detailed manual examinations of documents, processes, or finished goods to identify potential issues and ensure compliance with quality standards.

2.3.5. Continuous Improvement:

Continuously seeking ways to improve quality, processes, and overall performance through feedback and data analysis.

2.3.6. Quality Inspection:

Visual examination or review of raw materials, partially finished components of garments, and finished garments about some standards, specifications, or requirements, as well as measuring garments to check if they meet the inquired measurements."

2.3.7. Use of Quality Tools I observed:

- Check sheets
- Pareto analysis
- Cause and effect diagrams
- Stratification
- Histograms
- Scatter charts
- Process control charts

2.3.8. Acceptable Quality Level, or AQL:

The greatest quantity of defective goods that could be deemed acceptable throughout the random sampling and inspection process is known as the Acceptable Quality Level (AQL). Three categories are used to group the flaws discovered during inspection:

1. Crucial: Needs to be entirely precise
2. Major: Typically, 2.5 percent
3. Minimal: Typically, 4%

My key takeaways: During my intern period in quality Dept I learned about the different kinds of inspection stages and how the product quality is maintained. I also understood how the defects are identified and corrected according to buyer requirements and standards.

Sample Department (11 Oct -17 Oct)

2.4.1. Sampling & CAD Section

I spent 1 week in Sample and CAD section. The Sampling & CAD section plays a crucial role in Babylon group transforming buyer specifications into production-ready samples. It combines creative design, technical pattern development, and digital tools to ensure accuracy,

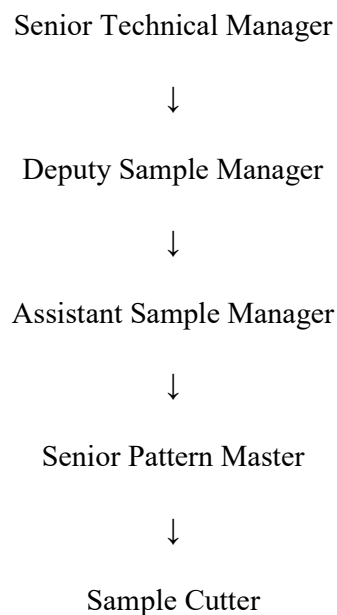
efficiency, and alignment with buyer expectations. This section bridges the gap between design intent and bulk production. During my intern period I observed these processes.

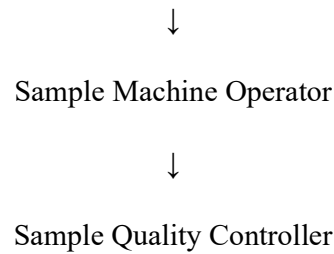
Key Functions

- Receiving buyer tech packs, style sheets, and sample requests
- Developing digital patterns using CAD software
- Creating markers for fabric optimization
- Grading patterns to generate multiple sizes
- Producing physical samples for buyer approval
- Analyzing fit, construction, and aesthetics of samples
- Providing feedback and adjustments based on buyer comments

2.4.2. Sample Section Organogram:

A typical arrangement for an organogram can be as follows:





2.4.3. Applied Technology:

- Lectra Modaris: For digital pattern making, grading, and marker creation
- Lectra Diamino: For marker planning and fabric utilization
- Automatic pattern cutter: Ensures precision and saves time
- CAD/CAM system: Integrates design and cutting processes
- Plotter machine: Prints full-scale patterns for manual cutting
- Digital size chart integration: For automated grading and fit analysis

2.4.4. The Sample Section's Operations at Babylon Group

- Receiving buyer specifications and technical packs to understand product requirements.
- Creating digital patterns using **Lectra Modaris** software.
- Grading patterns for different sizes using CAD tools to ensure proper fit across size ranges.
- Generating markers to maximize fabric utilization and minimize waste.
- Cutting sample fabrics using either automatic or manual cutting machines.
- Stitching samples in accordance with buyer instructions and design details.
- Conducting quality checks on samples to ensure adherence to standards.
- Submitting samples to buyers for approval and collecting feedback.
- Revising patterns and samples based on buyer comments to achieve the desired outcome.
- Maintaining records of sample approvals, rejections, and revisions for reference.
- Supporting production by providing accurate construction details from approved samples.

2.4.5. Pattern Making Flow chart based on my observations:

- Spec Sheet & Artwork
- Drawing pattern
- Print & cut the pattern
- Send to cutting section for bulk production

2.4.6. Marker making Flow chart (For bulk)

- Lay/ marker chart from cutting section
- Marker drawing
- Print marker
- Send the marker for bulk Production

My key takeaways: In sample dept I have understood how different kinds of sample are made according to the requirements of buyers. here I also understood the importance of accuracy, management and coordination with merchandising team.

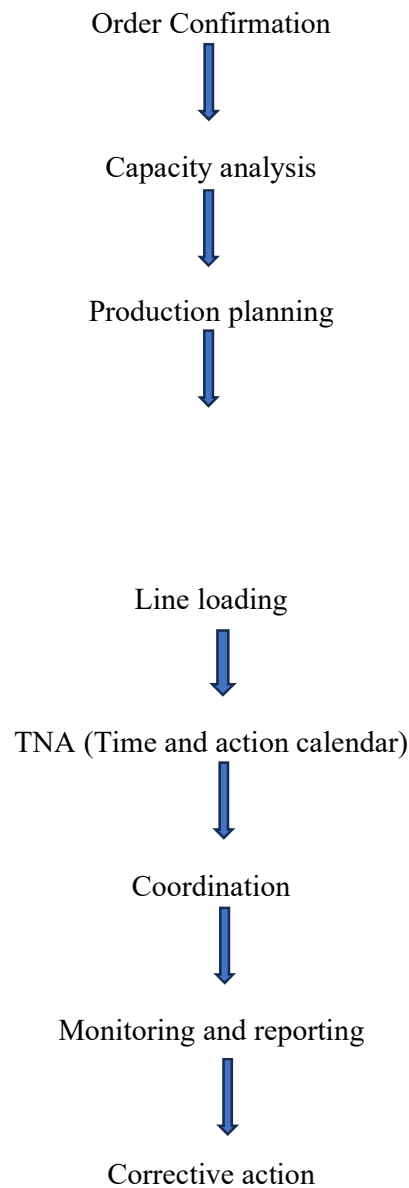
Planning Dept (Duration 6 Sep -15 Sep)

During my Intern period I noticed the planning dept of Babylon Group acts like a bridge between Production, Merchandising, IE and others Dept. During my internship at planning dept I observed their daily activities how they track production shipment and others activities smoothly and efficiently. I have spent 10 days at planning dept and my observations are given below:

2.5.1 Core activities based on my observation:

- Preparing Production plan based on buyer schedule.
- Making TNA for timely order completion.
- Analyzing SMV, capacity and efficiency before line loading.
- Monitoring daily production process
- Preparing grant chars and activities for better visualization
- Coordination with cutting, sewing and finishing dept.

2.5.2 Process flow chart of planning dept:



My key takeaways: I learnt how planners play a critical role ensuring smooth production and on time delivery based on buyers' demands. This experience helped me to better understand capacity planning, better utilization, meeting delivery deadlines and maintaining buyer satisfactions.

Industrial Engineering Department (Duration 26 Oct-30 Oct)

The industrial engineering dept of Babylon group is one of the most well-planned and organized and methodical dept. Industrial Engineering (IE) is innovating scientific approach

to the production process in order to get the optimum level of output. IE team is optimizing capacity in the basis of "Time", they are calculating "Standard Minutes Value (SMV)" of each product by using software named GSD (General Sewing Data). Marketing team is costing of every product based on SMV and minute cost of factories. My observation of IE dept is related to production and which I follow is given below.

2.6.1. Key Objectives of Industrial Engineering I Observed:

- Enhance overall productivity across all operations.
- Streamline processes by reducing unnecessary movements and eliminating non-value-added tasks.
- Minimize Work-In-Progress (WIP) and remove production bottlenecks.
- Improve operational efficiency and workflow effectiveness.
- Optimize the man-to-machine ratio for better resource utilization.
- Reduce costs, waste, defects, and rejections through continuous process improvement.
- Establish, monitor, and evaluate Key Performance Indicators (KPIs).
- Ensure a safe and compliant workplace environment.
- Plan, schedule, and oversee production activities to meet delivery targets.
- Evaluate operator and staff performance, manage disciplinary issues, identify training needs, and support professional growth.
- Set achievable targets and design efficient machine layouts, material flows, and workstations using modern industrial tools.
- Track factory performance in terms of quality, delivery, cost, and output; collaborate with relevant teams to implement corrective actions.
- Balance manpower distribution, define goals, and monitor progress toward achievement.

Function of IE Department in Babylon Group

- To follow up the production process
- Work process development
- SMV calculation & Line target.
- Efficiency control.
- Time study.
- Capacity study.

- Worker's training.
- Machine sequence lay out.
- Thread consumption.
- Performance evaluation.
- Analysis system design & install.
- Develop time standard and performance standard.
- Process & method selection.
- Selection and design of tools & equipment.
- System design for planning & control of production inventory, quality, plant.

Works Study

Work Study is a systematic approach used to analyze a task in order to determine the most efficient way to perform it and to set the standard time needed to complete the task using that optimal method.

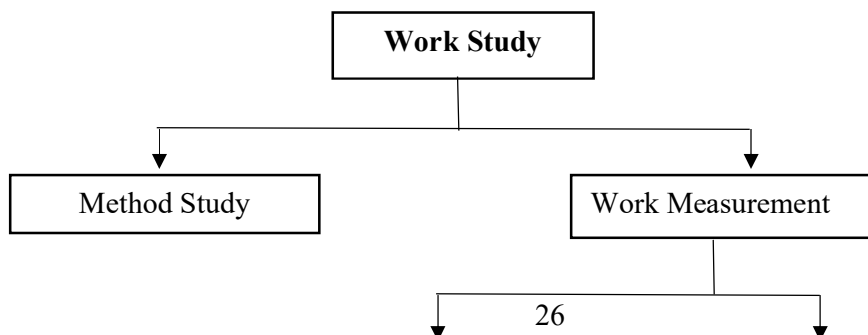
Production

Production can be defined as the process of acquiring inputs and transforming them into finished outputs.

Productivity

Productivity is the ratio of output produced to the input used in the production process.

Classification of work study



Time Study

Motion Study

Strategic Role of Work Study:

- Develop standardized procedures for task execution.
- Lower production costs per unit
- Set standard times for completing tasks
- Reduce unnecessary material and operator movement
- Eliminate unproductive human motions
- Maximize the effective utilization of manpower, machines and materials.
- Perform systematic analysis of all influencing factors

2.6.2. Benefits of Work Study

- Enhances overall productivity
- Improves working conditions, reducing operator fatigue
- Ensures fair and potentially higher wages
- Promotes consistent and balanced production flow
- Increases job satisfaction and security
- Lowers production costs per unit
- Improves product quality
- Supports timely delivery of goods
- Strengthens employer-employee relationships
- Provides better customer service

2.6.3. Costing Strategies

- **Advise the Correct CM (Cost of Making):** Determine the most appropriate cost per unit for the garment style, factoring in variables like order quantity, fabric complexity, and operational efficiency. Larger orders may benefit from lower CM due to economies of scale.

- **Derive Perfect Thread Consumption:** Accurately calculate thread requirements for each style based on stitch type, seam length, fabric thickness, and shrinkage allowances. Precise thread estimation ensures cost control and avoids wastage.

Pre-Productivity Activity

- Prepare size set samples and Standard Operating Procedures (SOPs), ensuring proper functionality.
- Participate in pre-production meetings.
- Develop operation bulletin & layout.
- Create machine & work process flow charts for smooth operation.
- Ensure quality at the source by maintaining standards during production.
- Implement quick changeover (SMED).
- Plan machine allocation and requirements effectively.
- Forecast manpower & skill requirements to meet production goals.

Production Focus

- Study workflows to cut unnecessary motion
- Solve bottlenecks to smooth output
- Optimize line balancing
- Conduct production efficiency analysis

2.6.4. Management Information System (MIS)

- **Production:** Explore total units manufactured to assess output levels.
- **Efficiency:** Measures how effectively resources are utilized to achieve goals.
- **Throughout Time:** Monitors the time taken for production from start to finish.
- **DHU (Defects per Hundred Units):** Evaluates product quality by counting defects per hundred pieces.
- **Reject%:** Indicates the proportion of items discarded due to non-compliance with standards.
- **CPM (Cost Per Minute):** Calculates the cost of operations per working minute.
- **Cut to Ship Ratio:** Compares pieces cut versus those shipped to identify losses.
- **Man-Machine Ratio:** Evaluate the balance between human workers and machines for productivity.
- **Overtime Control:** Tracks extra working hours and the cost implications.

- Wastage Control: Assesses effectiveness in minimizing scrap or unused materials
- Absenteeism: Records frequency of worker absences affecting production.
- Labor Turnover: Tracks employee exit and replacement rate over time.
- Non-Productive Time: Identifies downtime when employees or machines are idle.
- Timely Delivery Performance: Interpret delivery punctuality against committed schedules.

HR Function

- Establish and monitor department KPIs
- Connect KPIs to annual performance review
- Adjust salaries according to skill levels

Training Center

- Match operator skills with upcoming production styles.
- Develop a training pathway to train helpers into skilled operators.
- Implement upskilling and multiskilling initiatives.
- Train all staff on IE concepts to boost productivity.

2.6.5. Method Study

Method is the systematic recording and critical examination of ways of doing things to make improvements.

Objective of the Method Study:

- Optimize Processes & Procedures: Streamline tasks for better speed, accuracy, and consistency.
- Enhance Plant & Equipment Design: Upgrade design for greater efficiency and reliability.
- Improve Workplace Layout: Arrange space and flow to reduce movement and boost productivity.
- Maximize Resource Utilization: Use manpower, materials, and machines more effectively.
- Minimize Fatigue & Boost Efficiency: Reduce strain and make tasks less physically demanding.
- Elevate Safety Standards: Design safer work conditions to prevent accidents.
- Build a Healthier Work Environment: Promote a clean, comfortable, and motivating workspace.

Procedure of Method Study:

Method Study Steps

- **Select** the task or process to improve
- **Record** current method details
- **Examine** for inefficiencies
- **Develop** a better method
- **Install** the new method
- **Maintain** performance



Procedure of Method Study (Details):

- Choose the job for which the method study will be applied.
- Gather and document relevant information.
- Analyze the information thoroughly.
- Design the most practical, cost-effective, and efficient method while considering real-world constraints.
- Implement the new method as the standard procedure.
- Ensure the standard method is sustained through regular monitoring.

2.6.6. Cycle Time:

Refers to the actual time an operator spends completing one full cycle of a task.

Observed Time:

The average cycle time taken by an operator to do a job is called the observed time.

SMV (Standard Minute Value)

It is the estimated time required to complete a specific task in garments; it is calculated by considering the motion, skill, and speed of worker.

Rating:

A rating is the technique used to assess the speed and effectiveness of an operator or worker.

Rating scale:

- Low Efficiency: 60–80
- Moderate: 75–100
- High Performance: 100–135
- Universal Standard (ILO/British): 0–10

Allowance

- Personal allowance
- Fatigue allowance
- Delay/Machine allowance
- Contingency allowance

2.6.7. Motion Economy

Motion Economy is the study of how workers move while performing tasks, aiming to boost efficiency and reduce effort.

It focuses on three key areas:

1. Human Body Use – Promoting natural, low-fatigue movements.
2. Workplace Layout – Arranging tools and materials for easy access.
3. Tool & Equipment Design – Ensuring ergonomic and efficient handling.

Principle of Motion Economy**Human Body Management**

These guidelines aim to streamline physical movements for better efficiency and reduced fatigue:

- Both hands should start and finish tasks together.
- Avoid having both hands idle unless resting.
- Arm movements should mirror each other and occur simultaneously.
- Use the simplest motion that still gets the job done well.
- Use momentum to assist, but avoid extra muscular effort.
- Favor smooth, curved motions over abrupt, straight ones.
- Free-swinging (ballistic) movements are quicker and more precise.
- Natural rhythm improves flow in repetitive tasks.

- Design tasks to keep eye movement within a relaxed, focused zone.

Workplace Arrangement

A well-organized workspace enhances efficiency, reduces fatigue, and supports smooth task execution. Key principles include:

- Assign fixed locations for tools and materials to encourage consistent habits.
- Pre-position items to minimize time spent searching.
- Use gravity-fed bins or containers to bring materials close to the point of use.
- Keep tools, materials, and controls within easy reach of the operator.
- Arrange items to support a logical and efficient sequence of motions.
- Use drop deliveries or ejectors to eliminate manual disposal of finished work.
- Ensure proper lighting and seating to support good posture and allow alternating between sitting and standing.

Tools and Equipment Design

- Effective tool and equipment design plays a vital role in reducing strain and improving task efficiency. Key guidelines include:
- Use jigs, fixtures, or foot-operated devices to free the hands from holding tasks.
- Combine multiple tools into one unit where feasible to save time and motion.
- Distribute workload across fingers based on their natural strength and dexterity—especially in tasks like typing.
- Design handles (e.g., cranks, screwdrivers) to maximize hand contact, especially when force is required.

Body Movement Classification

Class	Pivot Point	Body Parts Involved
1	Knuckle	Finger
2	Wrist	Hand and fingers
3	Elbow	Forearm, hand, and fingers
4	Shoulder	Upper arm, forearm, hand, and fingers
5	Trunk	Torso, upper arm, forearm, hand, and fingers

My key takeaways: From industrial engineering dept I learned how to calculate SMV, efficiency line balancing. From Data driven IE how data are collected, analyzed and how to make efficiency reports. Identify bottleneck and improve productivity.

Chapter – 3 Critical Assessment of Internship Experience

During my internship at Babylon group I had the opportunity to work with different dept about their core activities. Where my primary and key responsibilities was to perceive and analyze different activities according to PGD KIM curriculum and practical knowledge. PGD curriculum combines general and industry-oriented subjects such as HR Skills and competences (KIM-101), Communication Skills (KIM-103), Business Operational Skills (KIM-104), Production management and merchandising (KIM-203), Quality management (KIM-204). These courses helped me a lot strengthen my thinking capability, analytical skill and technical knowledge. The following section provides a detailed reflection on how I applied my academic knowledge across the departments I worked with.

3.1 Application of generic and Industry Specific Courses during Internship:

1. Human Resources (HR) Department:

- I have directly worked with HR dept in a leadership training which I learned from PGD KIM-101.
- Participated in employee evaluation meeting (KIM-101)
- Applied my knowledge about manpower training, motivational work for workers and employees (KIM-101)
- Sharing knowledge about motivation employees through recognition and incentives. (KIM-101)

From this experience, I realized that HR plays a strategic role in getting employees for new digital tools in manufacturing.

2. Marketing and Merchandising Department

Marketing and merchandising acted as the bridge between buyers and the factory, overseeing everything from order initiation to shipment. My key activities include:

- I applied my knowledge from KIM (203) managed sample and product development, handled marketing for current clients, and found new customers.
- Worked on making eco-friendly products using sustainable yarns, fabrics, and chemicals, and promoted them to support the environment.
- Calculated product costs and prices to make sure the company earned good profits.
- Noticed and shared my knowledge the whole order process from product development to shipment to ensure on-time delivery, good quality, and happy customers.

Overall, this department Coordinated with factory and buyers. Now it is transforming into a data driven, smart dept using modern technology.

3. Quality Department

In the quality control department, I learned how factories ensure that products meet the required standards and satisfy buyer expectations:

- I directly worked with quality team in different kinds of defects and how to reduce it.
- Attended different kinds of meeting for learning and cooperating them according to my PGD knowledge of certifications.
- Worked with acceptable quality label (KIM-204)
- Used PGD KIM learnings of sampling techniques for garments for testing.
- Directly worked how QC reports and inspection reports are made.
- Participated in inspection techniques.

This department helped me understand that better quality is essential not only for buyer satisfaction but also for maintaining the factory's reputation and efficiency.

4. Industrial Engineering (IE) Department

The IE department focuses on minimizing production processes and increasing efficiency. During my internship, I gained knowledge from PGD KIM-202.

- I have done a project with IE team a project of automation where by using different automation tools getting real time data.
- Participated in manpower reduction process.
- Directly done efficiency report which helped making quick decision.
- Participated in SMV reduction process.

- Participated in Pre-Cost analysis.

This dept taught me that the IE dept plays an important role for cost-effective production, process development and technology driven garments factory.

5. Sample/Product Development Department

The sample room is where design ideas are transformed into tangible products. My observations included:

- Applied PGD -KIM knowledge to check sample accuracy according to specifications.
- I assisted in communication between marketing and sample dept to finalize sample.
- Applied my knowledge about product development.
- Verified measurements, trims, and fabric quality as per tach pack.

Through this sample dept I learned with the theoretical knowledge of PGD KIM-201 that the sample dept connects creative design that helps the factory respond faster for market needs.

3.2. Suggestion for Industry Improvement

Based on my internship experience and observations across various departments, I have identified several key areas where the organization can enhance its operational performance, efficiency, and adaptability to the Fourth Industrial Revolution (4IR).

The following suggestions highlight how technology, data-driven systems, and Workforce development can collectively transform the workplace into a smart, efficient, and future-ready enterprise.

1. Enhancing Digital System and Automation

The factory still relies on partial manual processes, particularly in documentation, approvals, and inter-departmental communication.

To align with 4IR, it is important to introduce complete digital integration through Enterprise Resource Planning (ERP) and cloud-based collaboration platforms.

- Automating routine administrative tasks such as order tracking, approvals, and report generation will minimize manual workload and human error.

- Departments should be connected under a centralized digital network to ensure real-time visibility of information—from order initiation to shipment.
- Machine-data integration on the production floor (via IoT devices) can automatically record efficiency, downtime, and maintenance data, eliminating manual data entry.
- Automation will not only reduce operational delays but also enhance transparency and accountability across departments.

2. Enhancing Data Analytics and Decision-Making Capabilities

At present, much of the decision-making depends on individual experience rather than structured data analysis.

To become a data-driven organization, the company should:

- Establish a dedicated Data Analytics Team responsible for consolidating data from merchandising, IE, production, and quality departments.
- Introduce Power BI or similar tools for data visualization, enabling managers to monitor performance trends and take informed decisions.
- Apply predictive analytics to anticipate demand, uncover efficiency gaps, and pinpoint potential risks before they occur.
- Leverage data insights to evaluate vendor performance, monitor cost variation, and plan production capacity more effectively.

By using advanced analytics, the factory can shift from reactive management to proactive strategy, achieving greater accuracy and speed in all operations.

3. Reducing Manual Work and Boosting Process Automation

Manual work creates delays, duplication, and higher chances of mistakes. To improve efficiency:

- Introduce barcode or RFID systems in the store and production areas for accurate inventory monitoring and material transfer.
- Digitize documentation, sample approvals, and communication channels between merchandising, quality, and production teams.

- Implement auto-generated reports for daily production, efficiency, and quality performance instead of manual Excel updates.
- Motivates employees to use digital task-management tools for Planning and follow-ups.

Moving toward paperless operations will boost productivity, data accuracy, and environmental conservation.

4. Building Proficiency Through Mid-Level Management Training

Mid-level executives play a critical role in connecting top management with factory operations. However, many of them have limited exposure to data analytics, automation tools, and digital leadership.

- Conduct special training programs on digital literacy, process automation, and data-based performance management.
- Introduce leadership development workshops that focus on analytical thinking, problem-solving, and adaptability to technical progress.
- Provide scopes for managers to attend industry seminars and 4IR awareness sessions to understand global trends.
- Build a cross-departmental learning platform where employees can share experiences, best practices, and innovative ideas.

Such initiatives will help develop a more informed, confident, and technology-friendly management team capable of making continuous improvement.

5. Refinement of Machinery and IT Infrastructure

- To remain competitive globally, the factory must modernize its machinery and strengthen its IT backbone.
- Replace old manual machines with semi-automated or fully automated models that support real-time data tracking.

3.3 Learning for Self-Improvement

Through this internship, I realized that adapting to digital tools, learning **data analysis**, and understanding **automation** are essential for future career growth. I plan to strengthen my analytical and technical skills to support 4IR transformation in the garments industry.

Continuous learning, practical application, and proactive problem-solving will remain my key focus areas for self-improvement.

Chapter 4: Conclusion

My three-month internship at Babylon group as part of the PGD-KIM program was a profound experience that brought classroom theories to life. I had the chance to work across twelve departments including Marketing, Merchandising, Planning, Industrial Engineering, Human resources, cutting, sewing, finishing, store, sample among others

This rotation gave me a complete view of how a knitwear company operates from receiving an order to shipping the final product. I saw firsthand how every department is connected, and how teamwork, clear communication, and quick decisions are key to running a successful business.

This inter-functional involvement helped me to see how each unit contributes to the bigger picture, and how coordination, communication, and timely execution are essential for delivering quality products on schedule. I observed how decisions in one area ripple across others, reinforcing the importance of collaboration and systems thinking. Throughout the internship, I applied many concepts I had studied, such as:

- Using **Industrial Engineering tools** to improve processes and measure efficiency
- Applying **production planning** methods for capacity booking and line balancing
- Managing **supply chains** through TNA (Time and Action) planning and material tracking
- Practicing **communication and negotiation** with buyers, suppliers, and team members
- Solving real-time problems using **analytical thinking and observation**

Working in a fast-paced factory environment also taught me the value of **teamwork, professionalism, leadership, and time management**. I realized that staying competitive in the global apparel market requires constant improvement and a strong sense of responsibility.

In short, this internship boosted my confidence, sharpened my practical skills, and deepened my understanding of the knitwear industry. It confirmed my passion for building a career in the **Ready-Made Garments (RMG)** sector driven by efficiency, sustainability, and innovation.

References

<https://babylongroup.com/>

Annual Reports on Babylon Group

Different Types of documents of Babylon Group