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**Exploring the Impact of Cost Drivers and Quality Control on Profit Margin Optimization: A Qualitative Analysis of Knit RADIX in Bangladesh's Apparel Industry**

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**Internship Report on**



**February 20, 2025**



**Daffodil**  
*International*  
**University**

## **Internship Report on**

**Exploring the Impact of Cost Drivers and Quality Control on Profit Margin Optimization: A Qualitative Analysis of Knit RADIX in Bangladesh's Apparel Industry**



### **SUBMITTED TO:**

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**SUBMISSION DATE: 20 FEBRUARY 2025**

# Letter of Transmittal

Date: February 05, 2025

**Dr. Tanvir Abir**

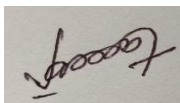
ASSOCIATE PROFESSOR AND HEAD  
DEPARTMENT OF MARKETING  
FACULTY OF BUSINESS AND ENTREPRENEURSHIP  
DAFFODIL INTERNATIONAL UNIVERSITY

**Subject:** Submission of Internship Report on " Exploring the Impact of Cost Drivers and Quality Control on Profit Margin Optimization: A Qualitative Analysis of Knit RADIX in Bangladesh's Apparel Industry".

Dear Sir,

I am submitting my internship report titled " Exploring the Impact of Cost Drivers and Quality Control on Profit Margin Optimization: A Qualitative Analysis of Knit RADIX in Bangladesh's Apparel Industry." I have diligently gathered relevant material and followed your instructions throughout the research process. This report has provided valuable insights into the exploring the Impact of Cost Drivers and Quality Control on Profit Margin Optimization: A Qualitative Analysis of Knit RADIX in Bangladesh's Apparel Industry. Your supervision, care, and guidance have been instrumental in this accomplishment. I have tried to ensure the report is concise and informative, meeting the requirements of my internship program. I trust that it meets your needs and contributes to the objectives of the internship.

Sincerely,



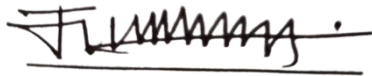
MUHAMMAD JASIM UDDIN

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# Certificate of approval

I am pleased to announce that MUHAMMAD JASIM UDDIN Internship Report titled " Exploring the Impact of Cost Drivers and Quality Control on Profit Margin Optimization: A Qualitative Analysis of Knit RADIX in Bangladesh's Apparel Industry." for the MASTER OF BUSINESS ADMINISTRATION (Marketing Major) under the Department of Business Administration has been approved for presentation and defense. I wish her the best of luck in life.

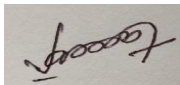


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Dr. Tanvir Fittin Abir  
Associate professor and head  
Department of marketing  
Faculty of business and entrepreneurship  
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# Student Declaration

I hereby declare that the work included in this internship report has never been submitted for credit toward any academic degree to any other university, institution, or organization. No portion of this report is lifted from any previous work, whether for a degree or otherwise, and the work I have been given is free of copyright.



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MUHAMMAD JASIM UDDIN

ID NUMBER: 151-14-1712

PROGRAM: MASTER OF BUSINESS ADMINISTRATION

## Acknowledgment

First and foremost, I extend my heartfelt gratitude to Almighty Allah for granting me the strength, opportunity, and perseverance to successfully complete my internship and compile this comprehensive report.

I would like to express my sincere appreciation to Dr. Tanvir Abir, Associate Professor, Daffodil International University, for his invaluable guidance, constructive feedback, and unwavering support throughout the report-writing process. His mentorship has been instrumental in making this journey both meaningful and manageable.

I am also deeply grateful to my colleagues, whose constant assistance, insightful discussions, and willingness to share knowledge have been of immense value throughout this period. Additionally, I sincerely thank the respondents who graciously participated in the questionnaire and interviews, providing me with essential data and perspectives for this study.

Finally, I extend my gratitude to everyone who has contributed, directly or indirectly, to the successful completion of this report. Your support and encouragement have made this journey truly rewarding.

## Executive summary

This study investigates Exploring the Impact of Cost Drivers and Quality Control on Profit Margin Optimization: A Qualitative Analysis of Knit RADIX in Bangladesh's Apparel Industry. The research adopts a qualitative design with a case study approach to gain in-depth insights into the perspectives of employees from the company's people. This methodology ensures a comprehensive understanding of the research objectives.

The study focuses on identifying Cost Drivers and Quality Control on Profit Margin Optimization. A purposive sampling technique was employed to select 10 participants, all of whom are directly involved in the companies. Data was collected through face-to-face interviews conducted over a one-week period (January 20, 2025, to January 30, 2025). The cross-sectional methodology allowed for the collection of data at a single point in time, providing a clear snapshot of the challenges and strategies in these critical areas.

The study utilized ATLAS.ti 9 for thematic coding and qualitative data analysis, enabling the identification of patterns, interdependencies, and relationships between variables. Microsoft Excel was used for organizing data and generating visualizations to complement the qualitative findings. This integrated approach ensured robust and reliable analysis.

Key findings reveal that the apparel industry in Bangladesh is a vital contributor to the country's economy, with exports accounting for a significant portion of national revenue. However, rising production costs, raw material price fluctuations, and quality compliance requirements pose ongoing challenges to apparel manufacturers. This study employs a qualitative research approach to examine how cost drivers and quality control impact profit margin optimization at Knit RADIX, a leading garment manufacturer in Bangladesh. Through interviews, surveys, and document analysis, key themes related to cost drivers, quality management, and strategic profit optimization are explored.

This research focuses on perspectives from factory GM, production Team, quality teams, and Merchandizing team to gain in-depth insights into cost pressures and quality-related challenges. The findings highlight that material costs, operational overheads, production inefficiencies, and stringent quality control measures significantly influence the company's profitability. Additionally, strategies for mitigating costs and maintaining quality standards are discussed to provide a holistic understanding of profit margin optimization.

# Table of Contents

## Contents

Letter of Transmittal .....	iii
Certificate of approval .....	iv
Student Declaration.....	v
Acknowledgment .....	vi
Executive summary.....	vii
Table of Contents.....	viii
Abbreviation .....	x
List of Table.....	xi
<b>Chapter 1: Introduction .....</b>	<b>1</b>
1.1. Background of Study .....	2
1.2. Relationship of the Study .....	2
1.3. Scope of the Study.....	3
1.4. Problem Statement.....	4
1.5. Definition of Terms.....	4
1.5.1. Cost Drivers .....	4
1.5.2. Quality Control (QC) .....	4
1.5.3. Profit Margin Optimization.....	4
1.5.4. Apparel Industry in Bangladesh.....	5
1.5.5. Raw Materials .....	5
1.5.6. Supply Chain Management .....	5
1.6. Research Objectives: .....	5
1.6.1. Broad Objective .....	5
1.6.2. Specific Objectives.....	5
Chapter 2: Literature Review .....	6
Literature Review.....	7
Chapter 3: Conceptual Framework and Hypothesis Development.....	9
3.1. Conceptual Framework .....	10
3.1.1. Independent Variables (IVs): .....	10

3.1.2. Dependent Variable (DV): .....	10
3.2. Hypothesis Development .....	11
3.2.1. Hypothesis 1 .....	11
3.2.2. Hypothesis 2 .....	11
Chapter 4: Methodology .....	13
Research Design .....	14
Population .....	14
Sample Size and Sampling Technique .....	14
Data Collection .....	14
4.2.3. Data Analysis .....	14
4.2.4. Ethical Considerations .....	14
Chapter 5: Analysis .....	16
5.1 Demographics Table .....	17
5.2 Qualitative Analysis .....	18
5.2.1. Cost Drivers and Their Impact on Profit Margins .....	18
5.2.2. Quality Control and Its Role in Profitability .....	21
5.2.3. Strategies for Profit Margin Optimization .....	22
5.3. Thematic Coding and Categorization .....	23
Chapter 6: Discussion and Conclusion .....	27
6.1. Discussion .....	28
6.2. Conclusion .....	29
Chapter 7: Recommendations and Limitations .....	30
7.1. Recommendations .....	31
7.2. Limitations .....	32
7.3 Future Research Suggestions .....	33
References .....	35
Appendix .....	38

## Abbreviation

Supplier Selection	SS
Inventory Management	IM
Transportation and Logistics	TL
Workforce Management	WFM
Reduce Lead Time	RL

## List of Table

Table 1	Descriptive statistics (Demographic)	17
Table 2	Thematic Coding and Categorization	19



# Chapter 1: Introduction

## 1.1. Background of Study

The apparel industry is one of the most significant contributors to Bangladesh's economy, accounting for a substantial portion of the country's GDP and export earnings. Knit RADIX, a leading apparel manufacturer in Bangladesh, faces intense competition both domestically and internationally. In such a competitive environment, optimizing profit margins is crucial for sustainability and growth. This study aims to explore how cost drivers and quality control measures impact profit margin optimization in Knit RADIX.

The apparel industry is a cornerstone of Bangladesh's economy, contributing approximately 84% of the country's total export earnings and employing over 4 million workers, predominantly women (BGMEA, 2023). As one of the world's largest exporters of ready-made garments (RMG), Bangladesh has positioned itself as a key player in the global textile market. However, the industry faces significant challenges, including rising production costs, fluctuating global demand, and increasing competition from other low-cost manufacturing countries such as Vietnam and India (World Bank, 2022). In this context, optimizing profit margins has become a critical concern for apparel manufacturers, including Knit RADIX, a leading knitwear producer in Bangladesh.

Understanding how these factors influence the financial health of firms like Knit RADIX is essential for sustaining growth and improving market positioning. (Bhuiyan, 2022).

Cost drivers, such as raw material prices, labor, energy costs, and logistics, are essential to consider when evaluating the cost structure in the apparel industry. The volatility of raw material prices can severely impact production costs, making it crucial for companies to adopt strategies for managing these fluctuations. Additionally, quality control plays a significant role in maintaining competitiveness by ensuring product consistency, reducing defects, and enhancing customer satisfaction. These factors are tightly interlinked with profitability, as high-quality production often correlates with premium pricing and customer loyalty, which in turn leads to better margins. (Hossain & Samanta, 2018).

The interplay between cost drivers and quality control forms the foundation of this study, which aims to provide a qualitative analysis of Knit RADIX's strategies and practices in Bangladesh's apparel industry. By focusing on how these elements interact to impact profitability, the study will offer valuable insights for similar companies looking to optimize their profit margins in a challenging and dynamic market environment. (Islam, 2020).

## 1.2. Relationship of the Study

This study seeks to explore the relationship between cost drivers, quality control, and profit margin optimization at Knit RADIX, a prominent player in Bangladesh's apparel industry. The connection between these elements is crucial to understanding how companies can maintain and enhance profitability in an environment marked by fluctuating raw material prices, labor challenges, and increased competition. The relationship between cost drivers and profitability has been widely

studied in the global apparel industry, with research highlighting the significant impact of raw material costs, labor efficiency, and logistics on overall financial performance (Hossain & Samanta, 2018).

Similarly, the link between quality control and profit margins has been well-documented, with studies showing that maintaining consistent product quality enhances customer satisfaction, loyalty, and pricing power (Islam, 2020). By combining insights from these research areas, this study aims to analyze how Knit RADIX can effectively integrate cost control measures and quality management practices to optimize its profit margins. Furthermore, this research seeks to build upon existing literature by providing a specific, qualitative examination of the practices and strategies employed by Knit RADIX in Bangladesh's unique market context.

Through a deeper understanding of how cost drivers and quality control are intertwined within Knit RADIX's operations, this study will offer recommendations on optimizing profit margins in a way that is both financially sustainable and aligned with global best practices in the apparel industry. (Bhuiyan, 2022).

### **1.3. Scope of the Study**

This study aims to explore the impact of cost drivers and quality control practices on profit margin optimization at Knit RADIX, a leading apparel manufacturer in Bangladesh. The scope of the study is primarily focused on understanding how internal and external cost factors, such as raw material pricing, labor, energy, and logistics, affect the company's profitability. Additionally, the research will examine how Knit RADIX's quality control systems contribute to maintaining product consistency, reducing defects, and enhancing customer satisfaction, all of which influence profit margins.

The study will specifically focus on Knit RADIX's operational practices within Bangladesh's apparel industry, which is characterized by a highly competitive market, volatile raw material costs, and labor-intensive production processes. By analyzing these dynamics, the study will provide insights into how cost and quality control practices interlink to optimize profit margins within this sector.

The qualitative approach of the study will involve interviews with key stakeholders, including managers, production staff, and quality control teams at Knit RADIX, to gather insights on cost management and quality practices. Furthermore, the study will explore existing literature on cost drivers and quality management in Bangladesh's apparel industry (Islam, 2020) to contextualize Knit RADIX's strategies within broader industry trends.

The findings will offer practical recommendations for Knit RADIX and similar firms in Bangladesh's apparel industry on improving profitability by efficiently managing cost drivers and strengthening quality control practices.

## **1.4. Problem Statement**

The apparel industry in Bangladesh, a key player in global garment production, faces increasing pressure to optimize profit margins amid rising production costs and intense global competition. Like many other apparel manufacturers, Knit RADIX struggles with managing critical cost drivers, including fluctuating raw material prices, rising labor costs, energy expenses, and supply chain inefficiencies—all of which directly impact profitability. At the same time, maintaining high-quality standards is crucial for ensuring customer satisfaction and sustaining competitive pricing. However, balancing cost efficiency with consistent quality control is challenging, as quality failures can lead to defective products, increased return rates, and customer dissatisfaction, further squeezing profit margins.

Despite the strategic importance of cost management and quality control, limited research has explored their interaction within Bangladesh's apparel industry at the firm level. There is a lack of understanding of how Knit RADIX can effectively integrate cost control and quality management practices to enhance profitability in a volatile market environment. This study aims to address this gap by analyzing the relationship between cost drivers, quality control practices, and profit margin optimization at Knit RADIX, offering data-driven insights to develop financially sustainable and operationally efficient strategies (Mohiuddin, 2008).

## **1.5. Definition of Terms**

### **1.5.1. Cost Drivers**

Cost drivers refer to the factors or activities that cause the cost of production to increase or decrease in a business. In the context of Knit RADIX, cost drivers include raw material costs (yarns, fabrics), labor costs, energy consumption, logistics, and overhead expenses. These drivers have a direct impact on the company's profitability, as fluctuations in these costs can affect the final production cost, pricing, and margins (Hossain & Samanta, 2018).

### **1.5.2. Quality Control (QC)**

Quality control refers to the process of ensuring that products meet specified quality standards through systematic testing, inspections, and process monitoring. At Knit RADIX, quality control is essential for maintaining product consistency, minimizing defects, and ensuring that customer expectations are met. Effective QC systems can reduce costs associated with returns, rework, and customer dissatisfaction, thereby contributing to higher profitability (Hossain & Samanta, 2018).

### **1.5.3. Profit Margin Optimization**

Profit margin optimization involves strategies and practices aimed at improving the difference between a company's revenue and its costs. This can be achieved by managing both cost drivers and quality control, increasing efficiency, reducing waste, and enhancing revenue through premium pricing or increased sales volume. At Knit RADIX, profit margin optimization is a key goal, as it directly impacts the company's financial sustainability and competitiveness in the global market (Gone, 2021).

#### **1.5.4. Apparel Industry in Bangladesh**

The apparel industry in Bangladesh is one of the largest contributors to the country's economy, specifically in terms of export revenue. The industry is known for its labor-intensive manufacturing processes and large-scale garment production, primarily for global retail markets. The competitive landscape and global demand for Bangladeshi garments influence cost structures and profitability for manufacturers like Knit RADIX (Rakib & Adnan, 2015).

#### **1.5.5. Raw Materials**

Raw materials refer to the basic substances or components required to produce finished goods. In the apparel industry, raw materials include fibers, yarns, fabrics, dyes, and trims. The cost of these materials fluctuates based on supply and demand dynamics, and any changes in these costs directly impact production expenses and overall profitability (Islam & Islam, 2013).

#### **1.5.6. Supply Chain Management**

Supply chain management refers to the coordination and management of the flow of materials, information, and products from suppliers to the manufacturing process and, ultimately, to the end customers. In Knit RADIX's case, effective supply chain management ensures that raw materials are sourced efficiently, production processes run smoothly, and finished goods are delivered to customers on time, all of which impact the company's profitability (Ahmad & Kamruzzazzaman, 2022).

### **1.6. Research Objectives:**

#### **1.6.1. Broad Objective**

The primary aim of this research is to exploring the Impact of Cost Drivers and Quality Control on Profit Margin Optimization: A Qualitative Analysis of Knit RADIX in Bangladesh's Apparel Industry

#### **1.6.2. Specific Objectives**

1. To analyze the influence of cost drivers on profit margin optimization in the apparel industry.
2. To evaluate the role of quality control in enhancing profit margins at Knit RADIX.

Evaluating the impact of material costs, production time, and operational overheads on profit margins in the apparel industry involves understanding how each factor affects overall profitability. Here's an analysis of each component:

## Chapter 2: Literature Review

## Literature Review

Cost drivers are the primary factors that influence the total cost of production in the apparel industry. These include raw material costs, labor costs, energy expenses, and operational inefficiencies. Effective management of these cost drivers is essential for maintaining competitive pricing and optimizing profit margins (Park-Poaps, 2021).

Raw materials, such as yarn, fabric, and dyes, constitute a significant portion of production costs in the apparel industry. Fluctuations in the prices of these materials, driven by global market trends, supply chain disruptions, and geopolitical factors, can directly impact profitability. Raw material costs are a critical determinant of a firm's competitive advantage. In the context of Bangladesh, the volatility of cotton prices has been a major challenge for textile manufacturers (Islam & Stringer, 2020).

Labor is another critical cost driver, especially in labor-intensive industries like apparel manufacturing. Rising wages, compliance with labor laws, and the need for skilled workers can increase operational expenses (Royhan, 2015). Emphasize that labor costs must be managed carefully to maintain profitability. In Bangladesh, the apparel industry relies heavily on low-cost labor but increasing wage pressures and labor rights movements have led to higher production costs (Debnath et al., 2024).

Energy consumption and operational inefficiencies, such as machine downtime and waste, also contribute to production costs. Inefficient production processes can lead to higher energy expenses and increased waste, further squeezing profit margins.

Quality control is a systematic process aimed at ensuring that products meet established standards and minimize defects. In the apparel industry, maintaining high-quality standards is essential for customer satisfaction, brand reputation, and operational efficiency (Asif, 2017).

Effective quality control reduces defects, rework, and waste, which directly lowers production costs. Emphasized that quality control is not just about meeting standards but also about improving processes to reduce variability and inefficiencies. In the context of Knit RADIX, minimizing cutting wastage and sewing defects can significantly improve profitability (Rahman et al., 2024).

High-quality products lead to increased customer satisfaction, repeat purchases, and brand loyalty. Customers who are satisfied with the quality of a product are more likely to recommend it to others, driving sales growth without additional marketing costs (Ahmad & Kamruzzazzaman, 2022). For Knit RADIX, maintaining consistent quality can help build a strong brand reputation in the competitive global apparel market.

Profit margin optimization involves strategies aimed at maximizing the difference between revenue and production costs. This can be achieved through cost reduction, revenue enhancement, and operational efficiency.

Lean manufacturing principles, such as Just-in-Time (JIT) inventory management and waste reduction, can significantly lower production costs. By streamlining processes and minimizing waste, companies can improve efficiency and reduce operational expenses (Womack & Jones, 1997). For Knit RADIX, implementing lean practices in cutting, dyeing, and finishing processes can lead to substantial cost savings.

Bangladesh is one of the largest exporters of apparel products globally, with the industry contributing significantly to the country's GDP. However, the industry faces challenges such as rising labor costs, supply chain disruptions, and intense global competition.

The apparel industry in Bangladesh has historically relied on low-cost labor but increasing wage pressures and compliance with international labor standards have raised production costs (Debnath et al., 2024). Companies like Knit RADIX must balance cost control with compliance to maintain profitability (Tareque et al., 2020).

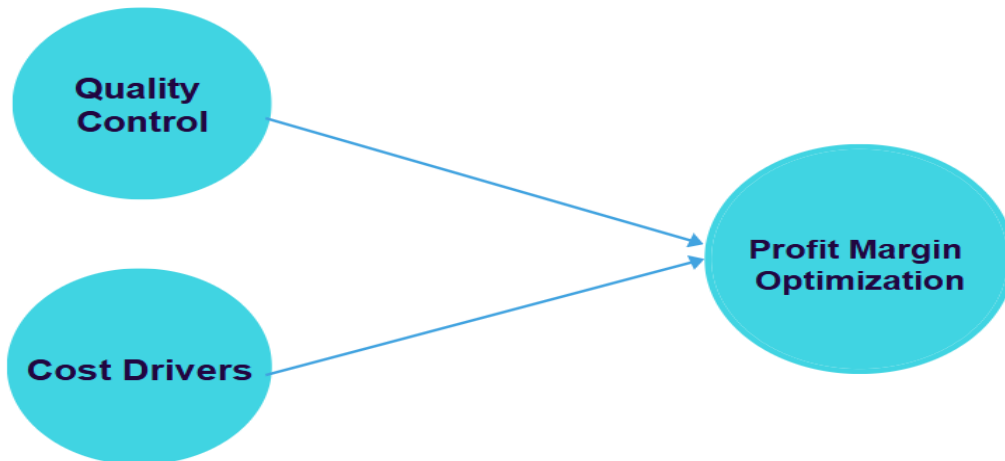
The global apparel market is highly competitive, with buyers demanding high-quality products at low prices. To remain competitive, Bangladeshi manufacturers must focus on quality control and cost efficiency (Rahman et al., 2024). Knit RADIX can leverage its expertise in knitwear production to differentiate itself in the market.

Few studies have explored the combined impact of cost drivers and quality control on profitability. (Islam & Islam, 2013) suggest that cost management efforts must align with quality improvement initiatives to avoid trade-offs that could harm profitability. This interrelation remains underexplored, particularly in the context of Bangladeshi apparel manufacturers.

# **Chapter 3: Conceptual Framework and Hypothesis Development**

### 3.1. Conceptual Framework

The conceptual framework outlines the relationship between the independent variables (IVs) and the dependent variable (DV). In this study, the framework is designed to explore how **cost drivers** and **quality control** influence **profit margin optimization**.



#### Sources:

##### 3.1.1. Independent Variables (IVs):

**Cost Drivers:** These are the key factors that cause changes in the total cost of production. Examples include:

- **Raw Material Costs:** Fluctuations in the prices of yarn, fabric, and other materials.
- **Labor Costs:** Wages, benefits, and compliance with labor laws.
- **Operational Expenses:** Energy costs, machinery maintenance, and logistics.

**Quality Control:** This refers to the systematic process of ensuring that products meet established standards and minimize defects. It includes:

- **Defect Reduction:** Minimizing production errors and rework.
- **Customer Satisfaction:** Ensuring high-quality products to meet customer expectations.
- **Compliance:** Adhering to international quality standards and certifications.

##### 3.1.2. Dependent Variable (DV):

**Profit Margin Optimization:** This is the primary outcome variable, representing the strategies and practices aimed at maximizing the difference between revenue and production costs. It includes:

- **Cost Reduction:** Lowering production costs through efficient resource utilization.
- **Revenue Enhancement:** Increasing sales through premium pricing, customer loyalty, and market expansion.
- **Operational Efficiency:** Streamlining processes to reduce waste and improve productivity.

## 3.2. Hypothesis Development

Based on the conceptual framework, the following hypotheses are proposed:

### 3.2.1. Hypothesis 1

Cost drivers such as raw material costs, labor wages, operational expenses, and supply chain inefficiencies play a crucial role in determining the profit margins of Knit RADIX. Among these, raw material costs—particularly the price of cotton, yarn, and chemicals—are the most significant, as they account for nearly 60-70% of total production costs (Islam et al., 2020). Any fluctuations in material prices can directly impact profit margins, making strategic procurement and supplier diversification essential.

Similarly, rising labor costs due to wage regulations and increased compliance requirements add financial strain to the company. (Islam, 2020). found that a 30% increase in labor costs over five years has significantly reduced profitability in Bangladesh's apparel sector.

Additionally, high energy costs and supply chain inefficiencies contribute to increased operational overheads. Studies suggest that energy-efficient manufacturing and improved logistics management can help mitigate these cost pressures (Mahmood et al., 2014).

*H<sub>1</sub> Cost drivers have a significant impact on profit margin optimization in Knit RADIX.*

### 3.2.2. Hypothesis 2

Quality control is a critical factor in profit margin optimization as it helps minimize defects, reduce waste, and improve overall efficiency in the production process. In the apparel industry, maintaining high-quality standards enhances brand reputation, reduces product returns, and increases customer loyalty. A study by (Hossain, 2019) found that companies with strict quality control measures experience a 15-20% increase in repeat orders, leading to higher revenues and stable profit margins.

Furthermore, effective quality management reduces production waste and rework costs, directly improving operational efficiency. According to (Papoutsidakis et al., 2019), textile manufacturers

that invest in automated defect detection and standardized inspections report a 12% reduction in production costs. By implementing advanced quality assurance techniques, real-time defect detection, and employee training programs, Knit RADIX can significantly optimize its profit margins while maintaining industry standards.

Ultimately, consistent quality leads to premium pricing opportunities, improved supply chain efficiency, and long-term business sustainability (Nisita, 2021). Investing in quality control not only ensures customer satisfaction but also strengthens financial performance in the highly competitive apparel industry. (Shakirullah et al., 2020)

RMG BD works in an accepted quality level method (AQL) however, any quality defect has a direct impact and needs to do rework which increases the cost of manufacturing. Not only does it cost money, but it also cost time, it cost material and even failure to ship goods for not meeting required quantity. (Roy et al., 2020)

*H<sub>2</sub> Quality control positively influences profit margin optimization in Knit RADIX.*

## Chapter 4: Methodology

## Research Design

The study utilizes a qualitative research design to delve into the complexities of cost drivers, quality control, and their influence on profit margins within the apparel industry. By conducting semi-structured interviews, the research aims to capture detailed, personal experiences and opinions from a range of perspectives within Knit RADIX.

## Population

The population for this study encompasses employees of Knit RADIX who are directly involved in or have a strategic oversight of cost management, quality control, and profit margin strategies. This includes individuals from various tiers of the company hierarchy such as senior management, middle management, and operational managers.

## Sample Size and Sampling Technique

A purposive sampling technique is employed to select participants for this study. This method is chosen to ensure that the sample specifically includes individuals who are knowledgeable and influential in the areas of cost drivers, quality control, and profit margin management. The sample size for the study is set at 10 participants

## Data Collection

Data was collected through in-depth, semi-structured interviews, which allow for flexibility in obtaining comprehensive information tailored to the expertise of each participant. Each interview is expected to last approximately 20 minutes, providing ample time to explore each participant's views and experiences thoroughly.

### 4.2.3. Data Analysis

The data collected were analyzed using two software tools:

- **Microsoft Excel:** Used for organizing and managing data, as well as performing basic descriptive analysis.
- **ATLAS.ti 9:** Utilized for coding and thematic analysis to identify key patterns and insights within the qualitative data. Themes were developed inductively to align with the participants' perspectives.

### 4.2.4. Ethical Considerations

Ethical principles were strictly adhered to throughout the research process to ensure the rights and welfare of participants. Participants were provided with a detailed consent form explaining the

study's purpose, procedures, and their rights, including the right to withdraw at any stage. All participant information and responses were anonymized to protect their identity. Collected data were securely stored on password-protected devices and accessed only by the researcher. Participation in the study was entirely voluntary, with no coercion or undue influence. By employing these rigorous methodological steps, this study ensures the reliability and validity of the findings while upholding high ethical standards.

## Chapter 5: Analysis

## 5.1 Demographics Table

RESPONDENT ID	GENDER	AFFILIATION	AGE	DESIGNATION	YEAR OF EXPERIENCE WITH KNIT RADIX LTD.
1	Male	Employee	37	Finishing Manager	09 Years
2	Male	Employee	43	Finishing quality Manager	12 Years
3	Male	Employee	30	Store assistant Manager	06 Years
4	Male	Employee	43	Yarn Store Manager	12 Years
5	Male	Employee	34	Planning Manager	09 Years
6	Male	Employee	38	IE Manager	11 Years
7	Male	Employee	35	Cutting assistant Manager	10 Years
8	Male	Employee	45	Production Manager	18 Years
9	Male	Employee	38	AGM (Merchandising)	13 Years
10	Male	Employee	42	GM (Operation)	17 Years

The demographic analysis of respondents from KNIT RADIX LTD. The analysis demonstrates a well-rounded workforce with a mix of roles, experience, and age groups, showcasing KNIT RADIX LTD' focus on “Exploring the Impact of Cost Drivers and Quality Control on Profit Margin Optimization”.

The most significant cost driver affecting profit margins at Knit RADIX is raw material costs, particularly the price fluctuations of cotton. Since the textile industry relies heavily on raw materials, any increase in their prices directly impacts production costs. Additionally, labor costs play a crucial role, as skilled labor is essential for maintaining product quality. Lastly, market demand and competition also affect pricing strategies, influencing overall profit margins for Knit RADIX.

Maintaining quality standards at Knit RADIX directly contributes to profitability by reducing defects, minimizing rework, and decreasing waste, which helps control production costs. High-quality products also enhance customer satisfaction, leading to repeat orders and stronger brand reputation. Additionally, in quality supplier chain are most consistent quality reduces the risk of returns work, and its super help for improving overall efficiency and profitability.

They would recommend focusing on cost control, efficiency improvements, and value addition. Streamlining production processes, reducing material waste, and improving energy efficiency can help lower costs. Sourcing high-quality raw materials at competitive prices and negotiating better supplier terms can also enhance profitability. Additionally, Proper workers training is ensuring the increase productivity while maintaining quality. This quality can also enhance profitability.

## **5.2 Qualitative Analysis**

The apparel industry in Bangladesh is a vital contributor to the country's economy, with exports accounting for a significant portion of national revenue. However, rising production costs, raw material price fluctuations, and quality compliance requirements pose ongoing challenges to apparel manufacturers. This study employs a qualitative research approach to examine how cost drivers and quality control impact profit margin optimization at Knit RADIX, a leading garment manufacturer in Bangladesh.

This research focuses on perspectives from factory management to production staff to gain in-depth insights into cost pressures and quality-related challenges. The findings highlight that material costs, operational overheads, production inefficiencies, and stringent quality control measures significantly influence the company's profitability. Additionally, strategies for mitigating costs and maintaining quality standards are discussed to provide a holistic understanding of profit margin optimization.

### **5.2.1. Cost Drivers and Their Impact on Profit Margins**

Cost drivers refer to the various factors that increase production expenses and influence a company's ability to maintain a sustainable profit margin. The qualitative data from interviews and surveys reveal that material costs, labor wages, operational overheads, and supply chain inefficiencies are the most critical cost drivers affecting Knit RADIX.

### ➤ **Material Costs**

Material costs represent the largest proportion of total production expenses in the apparel industry. The interviews with procurement managers and financial analysts at Knit RADIX indicate that fluctuations in cotton and synthetic fabric prices significantly affect overall costs.

#### **Store assistant Manager explained:**

*"The price of raw materials is highly volatile, especially cotton. If prices rise unexpectedly, our costs per unit increase, and profit margins shrink unless we adjust our pricing or sourcing strategies."*

A related concern is supplier dependency, where the company relies on a few select suppliers for raw materials. Several supply chain managers emphasized the importance of diversifying supplier networks to mitigate risks associated with supplier monopolies and price fluctuations. Bulk purchasing and negotiating long-term contracts were cited as potential strategies to reduce material costs and ensure cost stability.

### ➤ **Labor Costs**

The apparel industry in Bangladesh has experienced rising labor costs due to minimum wage reforms and increasing worker demands for fair compensation. The human resources team at Knit RADIX highlighted those higher wages, coupled with overtime compensation, contribute to higher operational costs.

#### **IE Manager explained:**

*"While wage increases are necessary for worker welfare, they also raise our overall cost structure. If we do not improve productivity, higher wages can erode our profit margins."*

Employee training programs and performance incentives were identified as solutions to improve worker efficiency and output, reducing overall labor costs per unit produced.

### ➤ **Operational Overheads**

Another major cost driver is operational overheads, which include factory rent, utilities, and administrative expenses. Energy consumption in production facilities was cited as a significant contributor to overhead costs. Factory supervisors emphasized the role of energy-efficient machinery and automation in reducing electricity consumption and cutting costs.

Operation GM noted:

*"Our electricity bills are one of our largest fixed expenses. Investing in energy-efficient*

*lighting, automated cutting machines, and solar energy can drastically lower costs in the long run."*

These insights suggest that technological upgrades and improved factory management practices can help optimize operational efficiency and reduce overhead expenses.

### ➤ **Supply Chain and Transportation Costs**

The qualitative findings also highlight supply chain inefficiencies as a major cost driver affecting Knit RADIX. Delays in raw material procurement, inefficient logistics, and high transportation costs result in increased production expenses and lost revenue opportunities.

For example, shipping delays from international suppliers cause bottlenecks in production, leading to higher holding costs and missed deadlines for clients.

#### **Planning Manager mentioned:**

*"Unreliable shipping schedules mean we must maintain higher inventory levels, which ties up capital and increases storage costs."*

To address these issues, investment in supply chain digitization, local supplier partnerships, and streamlined logistics planning were suggested as ways to enhance efficiency and lower transportation costs.

#### **Key Insights:**

- *Our profitability is heavily impacted by raw material prices; even a small increase in costs can significantly reduce our margins.*
- *The increase in minimum wage has significantly impacted on our production costs, forcing us to look for ways to improve efficiency.*
- *The price of cotton has been volatile in recent years, which has directly affected our raw material expenses.*
- *By switching to solar energy, we have not only reduced our energy costs but also minimized our environmental impact.*
- *While the new labor laws have increased our costs, they have also improved our reputation as a socially responsible company.*

### 5.2.2. Quality Control and Its Role in Profitability

Quality control is another critical factor influencing profit margins. While ensuring high product standards is essential for maintaining brand reputation and customer loyalty, strict quality control measures often increase production costs.

#### ➤ **Quality Standards Compliance**

Compliance with international quality certifications (such as ISO, OEKO-TEX, and buyer-specific standards) is crucial for Knit RADIX, as most of its products are exported to European and American markets. Quality managers emphasized that failing to meet compliance requirements results in order rejections, penalties, and lost business opportunities.

#### **Finishing quality Manager noted:**

*"Many of our buyers demand third-party inspections and certifications. If we fail these tests, we lose credibility, and our products get rejected, causing direct financial losses."*

Although compliance increases production costs, it also enables the company to command premium prices and secure long-term contracts with international buyers.

#### ➤ **Defect Reduction and Waste Management**

The qualitative data highlights that reducing production defects can significantly improve profitability. Defective products lead to rework, material wastage, and higher labor costs, all of which negatively impact margins.

#### **The Quality Manager explained:**

*"Every defective unit means additional material and labor costs. By improving quality checks at each stage, we can prevent waste and ensure higher efficiency."*

Implementing real-time defect detection, automated inspection systems, and stringent quality control checkpoints were identified as key strategies to reduce defects and minimize waste-related losses.

#### ➤ **Workforce Training and Skill Development**

Skilled labor plays a crucial role in maintaining quality standards. Employees trained in fabric inspection, stitching precision, and finishing techniques produce fewer defects, leading to better profitability.

GM emphasized:

*"Investing in worker training programs enhances product quality, reduces defect rates, and improves overall efficiency."*

Providing performance-based incentives was also suggested to encourage employees to maintain high-quality standards while improving productivity.

### **Key Insights:**

- *Our goal is to minimize defects at every stage of production, from raw material inspection to final product testing.*
- *Our ISO certification has helped us secure contracts with high-end brands that prioritize quality and sustainability.*
- *We believe that well-trained employees are essential for maintaining high-quality standards and minimizing defects.*
- *A single defective batch can result in order cancellations, returns, and reputational damage, so investing in quality control is crucial for profitability.*
- *Employees who receive proper training in fabric inspection, stitching precision, and finishing quality contribute to fewer defects and increased production efficiency.*

### **5.2.3. Strategies for Profit Margin Optimization**

Profit margin optimization is a key objective for Knit RADIX, and the company employs various strategies to achieve this goal. Cost reduction is a primary focus, with the company implementing automation, process optimization, and energy-efficient technologies to lower production costs.

**Production Managers noted,** *"By automating certain processes, we have been able to reduce labor costs and improve production efficiency."*

These cost-saving measures have allowed the company to maintain competitive pricing while improving profit margins. Revenue enhancement is another important strategy for profit margin optimization. Knit RADIX focuses on value addition and premium pricing to increase revenue. For example, the company has introduced eco-friendly and sustainable product lines that appeal to environmentally conscious consumers.

**IE Managers noted,** *"Our sustainable product line has allowed us to charge premium prices and attract new customers who value sustainability."*

This focus on value addition has not only increased revenue but also strengthened the company's brand image. Efficiency improvement is a key component of Knit RADIX's profit margin optimization strategy. The company has adopted lean manufacturing principles to eliminate waste and improve operational efficiency.

**Production manager explained,** *“By implementing lean manufacturing, we have been able to reduce waste and improve production efficiency, leading to higher profit margins.”*

These efficiency improvements have enabled the company to produce more with fewer resources, further enhancing profitability. Product diversification, expanding into new markets, and building a strong brand are key strategies for increasing sales and revenue streams. Investing in brand building, creating a strong brand identity, and delivering consistent quality can enhance brand awareness, foster customer loyalty, and justify premium pricing.

**Merchandising AGM Noted,** *“The relationship between quality and profitability is undeniable. High-quality products lead to fewer returns, increased customer satisfaction, and positive word-of-mouth referrals”*

Satisfied customers are more likely to become repeat customers, contributing to long-term revenue growth. A strong brand reputation, built on a foundation of quality, allows companies to command higher prices and compete effectively in the marketplace.

### **Key Insights:**

- *Focus on value-added products (organic, sustainable fabrics).*
- *Strengthen relationships with logistics providers for cost-efficient shipping.*
- *Strengthen inline quality inspection to detect defects early.*
- *Reduce downtime with predictive maintenance of machinery.*
- *Improve energy efficiency by using LED lighting and energy-saving machinery.*
- *Negotiate better raw material procurement deals.*
- *Use time and motion studies to improve line balancing.*
- *Implement real-time production monitoring (IoT/ERP).*
- *Optimize labor allocation based on efficiency and skill levels.*
- *Improve washing and finishing processes to reduce rejection rates.*

### **5.3. Thematic Coding and Categorization**

Thematic Coding and Categorization Table

Category	Themes	Specific Codes	Description
Cost Drivers	Material Costs	Raw Material Price Fluctuation	The effect of cotton, synthetic fabrics, and other materials' price volatility on production costs.
		Supplier Dependency	The extent to which Knit RADIX relies on specific suppliers, affecting cost stability and flexibility.
		Import Tariffs & Duties	The impact of government regulations, tariffs, and duties on the cost of imported raw materials.
	Operational Overheads	Energy & Utility Expenses	The contribution of electricity, water, and other utilities to production costs.
		Machinery Maintenance Costs	Inefficiencies due to outdated or poorly maintained equipment increase costs.
		Compliance Costs	The cost of meeting industry regulations, certifications, and audits.
	Labor Costs	Rising Wages	Compliance with wage laws and worker demands affects operational costs.
		Overtime & Compliance Costs	Additional labor expenses due to overtime wages and labor regulations.
	Logistics & Supply Chain	Transportation Costs	The impact of domestic and international shipping costs on product pricing.
		Inventory Management	The role of stock control, storage, and wastage reduction in optimizing costs.
		Supplier Negotiation Strategies	The importance of strong supplier relationships in securing cost-effective procurement deals.

Quality Control	Quality Standards Compliance	ISO Certification & Regulations	The effect of compliance with international standards on market competitiveness.
		Buyer-Specified Quality Standards	The requirement to meet quality expectations set by foreign buyers and retailers.
	Defect Reduction	Real-time Defect Detection	The impact of automated and manual quality inspections in minimizing defects.
		Rework & Waste Management	The costs associated with rework, defected materials, and quality failures.
		Standardized Inspection Procedures	Implementation of rigorous quality checks at various production stages.
	Quality Costs	Inspection Costs	Expenses related to quality control inspections and testing.
		Rework & Repair Costs	Costs associated with fixing defects and errors.
		Returns & Customer Complaints	Costs associated with handling returns and customer complaints due to quality issues.
	Workforce Training	Skill Development Programs	Training initiatives to improve employee adherence to quality protocols.
		Performance-Based Incentives	Reward systems are designed to encourage high-quality production.
Profit Margin Optimization	Cost-Efficiency Strategies	Strategic Sourcing	Optimizing supplier selection to balance cost and quality.
		Bulk Purchasing & Discounting	Negotiating bulk purchases for cost savings.

	Automation Investment	Reducing labor dependency by integrating machinery in production.
Revenue Enhancement	Customer Retention Strategies	Building long-term buyer relationships through consistent product quality.
	Pricing Strategies, Value Addition	Methods to increase revenue, such as premium pricing and adding value to products.
Cost Reduction Strategies	Efficiency Improvements	Implementing measures to reduce costs in various areas of production.
	Negotiation with Suppliers	Negotiating better prices with suppliers to reduce material costs.
	Waste Reduction	Minimizing waste in all areas of production to reduce costs.
Quality & Profitability	Relationship between Quality & Profit	How quality control impacts profitability through reduced costs, increased sales, and improved customer satisfaction.
	Customer Satisfaction	The role of quality in ensuring customer satisfaction and repeat business.
	Brand Reputation	How quality control contributes to building and maintaining a strong brand reputation.
Efficiency Improvement	Lean Manufacturing, Waste Reduction	Practices aimed at improving operational efficiency and reducing waste in production.

## **Chapter 6: Discussion and Conclusion**

## 6.1. Discussion

The study aimed to explore the impact of cost drivers and quality control on profit margin optimization in the context of Knit RADIX, a prominent player in Bangladesh's apparel industry. The findings reveal several key insights that align with existing literature while also offering unique perspectives specific to the company and the industry.

The analysis confirmed that raw material costs, particularly the volatility of yarn and fabric prices, are the most significant cost drivers affecting Knit RADIX's profit margins. This finding is consistent with the assertion that raw material costs are a critical determinant of competitive advantage. Additionally, labor costs and energy expenses were identified as major contributors to production costs, especially in a labor-intensive industry like apparel manufacturing. The rising wages in Bangladesh, coupled with compliance requirements, have further exacerbated cost pressures. These findings underscore the importance of strategic cost management, including supplier negotiations and process optimization, to mitigate the impact of cost drivers on profitability.

The study found that maintaining high quality standards significantly contributes to Knit RADIX's profitability by reducing defects, minimizing rework, and enhancing customer satisfaction. This aligns with the emphasis on quality control to reduce variability and inefficiencies. High-quality products not only build brand reputation but also justify premium pricing, leading to higher profit margins. Furthermore, compliance with international quality standards, such as ISO certifications, enhances Knit RADIX's marketability and credibility. These findings highlight the dual role of quality control in both cost reduction and revenue enhancement.

The study identified several strategies for optimizing profit margins, including lean manufacturing, automation, and premium product differentiation. Lean manufacturing principles, such as waste reduction and Just-in-Time (JIT) inventory management, were found to be effective in lowering production costs. Automation, particularly in knitting and dyeing processes, was recommended to boost productivity and reduce labor costs. Additionally, the study emphasized the importance of value addition through premium product lines and customized services, which can attract higher-margin customers and justify premium pricing. These strategies align with the broader literature on operational efficiency and revenue enhancement.

The study also highlighted the unique challenges faced by Knit RADIX in the context of Bangladesh's apparel industry. Rising labor costs, supply chain disruptions, and intense global competition were identified as major hurdles to maintaining profitability. However, the company's focus on quality control and cost efficiency positions it well to navigate these challenges. The findings suggest that Knit RADIX can leverage its expertise in knitwear production to differentiate itself in the global market.

## 6.2. Conclusion

The study concludes that cost drivers and quality control play a crucial role in optimizing profit margins for Knit RADIX in Bangladesh's apparel industry. Effective management of cost drivers, particularly raw material and labor costs, is essential for maintaining competitive pricing and profitability. At the same time, robust quality control measures contribute to cost reduction, customer satisfaction, and revenue enhancement, ultimately leading to higher profit margins. The findings suggest that Knit RADIX should adopt a multi-pronged approach to profit margin optimization, focusing on cost control, quality improvement, and strategic growth initiatives. To mitigate price volatility, the company should negotiate better terms with raw material suppliers while implementing lean manufacturing principles to reduce waste and improve efficiency. Investing in automation can help reduce labor costs and increase productivity, while strengthening quality control systems will minimize defects and rework. Adhering to international quality standards can enhance marketability and credibility, and employee training should be prioritized to ensure consistent quality across production processes.

Additionally, exploring premium product lines and value-added services can attract higher-margin customers, while expanding into new markets and improving marketing efforts can drive sales growth. Strengthening customer relationships through loyalty programs and superior after-sales service will further contribute to long-term profitability. By implementing these strategies, Knit RADIX can enhance its operational efficiency, control costs, and increase revenue, ultimately achieving sustainable profit margin optimization in a highly competitive global market.

## **Chapter 7: Recommendations and Limitations**

## 7.1. Recommendations

Based on the study's findings, several recommendations can be made to enhance cost efficiency, quality control, and profit margin optimization in Knit RADIX and similar apparel industries in Bangladesh:

### ➤ **Strengthening Cost Control Mechanisms**

- **Adopt Lean Manufacturing:** Implementing lean production techniques can help minimize waste, reduce material costs, and optimize resource utilization.
- **Optimize Supply Chain Management:** Establishing long-term contracts with reliable suppliers and investing in local sourcing can reduce procurement costs and dependency on fluctuating global prices.
- **Enhance Energy Efficiency:** Given high electricity costs in Bangladesh, adopting energy-efficient machinery and renewable energy sources can significantly cut operational expenses.

### ➤ **Improve Quality Control Standards**

- **Implement Advanced Quality Management Systems (QMS):** Investing in automated quality control technologies, such as AI-powered defect detection systems, can enhance product quality while reducing rework and wastage.
- **Continuous Training Programs:** Conducting regular workshops for production and quality control staff ensures they are well-equipped to maintain high-quality standards.
- **Stricter Supplier Quality Audits:** Ensuring that raw material suppliers meet high-quality benchmarks can reduce defects and enhance final product value.

### ➤ **Enhance Workforce Productivity and Training**

- **Introducing Performance-Based Incentives:** Rewarding employees with efficiency and defective reduction can improve both productivity and quality.
- **Skill Development Initiatives:** Providing training on cost-effective production techniques and precision-based quality control can enhance efficiency.
- **Improve Workplace Conditions:** A better working environment can boost morale and reduce absenteeism, leading to improved overall performance.

### ➤ **Leverage Data Analytics for Profit Margin Optimization**

- **Use Cost Analysis Tools:** Implementing real-time cost-tracking software can help managers make data-driven decisions to optimize expenses.
- **Predictive Analytics for Demand Forecasting:** Analyzing sales and production trends using big data can help in planning cost-efficient production cycles.
- **Automate Financial Reporting:** Using cloud-based accounting and financial management tools can improve accuracy in tracking profit margins and operational costs.

### ➤ **Diversify Product Portfolio and Market Expansion**

- **Expand into High-Value Markets:** Targeting premium markets in Europe and North America with sustainable and high-quality apparel can increase profit margins.
- **Invest in Research & Development (R&D):** Developing innovative textile materials and adopting eco-friendly production techniques can create a competitive edge.
- **Strengthen Brand Positioning:** Establishing a strong brand identity through marketing and certifications (e.g., Fair Trade, GOTS) can help command higher prices.

## 7.2. Limitations

Despite the study's strengths, certain limitations must be acknowledged:

### ➤ **Limited Generalizability**

- This research focuses on one company (Knit RADIX) within Bangladesh's apparel industry, making it difficult to generalize findings to all firms in the sector.
- The cost structure and quality control measures at Knit RADIX may not fully represent those of other garment manufacturers with different operational models.

### ➤ **Subjectivity in Qualitative Analysis**

- The study relies on qualitative interviews and focus group discussions, which may be influenced by bias or personal perceptions of participants.
- Interpretation of responses is subjective and may not always capture the full complexity of cost drivers and quality control dynamics.

### ➤ **Lack of Longitudinal Data**

- The research presents a snapshot of cost and quality control strategies at a given time but does not account for long-term changes in cost structures, demand fluctuations, or economic conditions.
- A longitudinal study tracking profit margins over several years would provide deeper insights into long-term optimization trends.

### ➤ **Dependence on Self-Reported Data**

- Financial and operational data are self-reported by company representatives, which may lead to overestimation or underestimation of certain cost factors.

- Confidentiality concerns may limit access to detailed financial records or proprietary cost-cutting strategies.
- **External Factors Affecting Profit Margins**
  - The study does not fully account for macroeconomic factors such as global market trends, currency exchange fluctuations, labor laws, or trade policies that impact profitability.
  - Unexpected disruptions (e.g., COVID-19 pandemic, geopolitical instability) may alter cost structures in ways not captured in this analysis.
- **Limited Technological Assessment**
  - While cost drivers and quality control are discussed, the study does not deeply analyze the role of Industry technologies in optimizing profit margins.
  - Future research could explore the impact of digital transformation on cost efficiency and quality control in apparel manufacturing.

### 7.3 Future Research Suggestions

- **Expansion of Cost Driver Analysis**
  - Investigate additional cost drivers such as energy consumption, compliance costs, and technology adoption.
  - Compare cost structures between different types of apparel manufacturers (woven vs. knitwear).
  - Examine the impact of global raw material price fluctuations on profit margins.
- **Advanced Quality Control Techniques**
  - Explore the role of AI and automation in quality control and defect reduction.
  - Study the effectiveness of Six Sigma and Lean Manufacturing in Bangladeshi apparel factories.
  - Analyze the relationship between customer feedback and continuous quality improvement.
- **Comparative Industry Analysis**
  - Conduct a multi-company study to compare the impact of cost drivers and quality control across different firms.
  - Compare Bangladeshi apparel manufacturers with other leading countries like Vietnam, China, or India.

➤ **Sustainability and Profitability**

- Analyze the financial impact of sustainable production practices on profit margins.
- Evaluate the role of green manufacturing and waste reduction in cost optimization.

➤ **Supply Chain and Logistics Optimization**

- Investigate how supply chain disruptions affect profit margins in the apparel industry.
- Study the impact of digital supply chain solutions on cost reduction and efficiency.

➤ **Workforce and Training Impact**

- Assess how worker skill development and training programs influence quality and cost efficiency.
- Study the effect of labor turnover on production costs and profit margins.

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# Appendix

**Age:**

**Designation:**

**Gender:**

**Year of Experience:**

**Department/Division:**

**Location:**

1. **Cost Drivers and Their Impact**

What do you consider the most significant cost driver affecting profit margins at Knit RADIX?

2. **Quality Control and Profitability**

How does maintaining quality standards contribute to the profitability of Knit RADIX?

3. **General Insights on Profit Margin Optimization**

What strategies or improvements would you recommend to optimize profit margins at Knit RADIX?