Impact of environmental, social, and governance (ESG) practices on workers' health and productivity: a comparative study of RMG factories in Banglades

Parvin, Naheda

Independent University, Bangladesh (IUB)

IMPACT OF ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) PRACTICES ON WORKERS' HEALTH AND PRODUCTIVITY: A COMPARATIVE STUDY OF RMG FACTORIES IN BANGLADESH

by

Naheda Parvin

ID:2421200

Supervisor

Kazi Mahmudur Rahman, PhD

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Dedication

This thesis is dedicated to my family, whose continuous support, encouragement, and patience have helped me throughout my academic journey.

I also dedicate this work to the millions of workers in Bangladesh's Ready-Made Garment industry whose hard work contributes greatly to the economic development of the country.

Their health, safety, dignity, and well-being are important not only for the sustainability of the garment industry but also for the future development of Bangladesh.

Finally, this work is dedicated to everyone who believes that economic growth and responsible business practices should move forward together.

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Abstract

Bangladesh's Ready-Made Garment (RMG) sector is one of the country's most important industries, providing employment to millions of workers and contributing substantially to national export earnings. At the same time, the industry continues to face challenges related to workplace safety, worker welfare, environmental management, and organizational compliance. Environmental, Social, and Governance (ESG) practices have therefore become increasingly important in the RMG sector, particularly because of pressure from international buyers, government regulations, industry standards, and growing attention to sustainable production. This study examines how ESG practices influence workers' health and productivity in selected RMG factories in Bangladesh. A qualitative comparative multiple-case study design was used. Four export-oriented RMG factories with different levels of ESG and compliance implementation were included. Data were collected from workers and management representatives through semi-structured interviews, key informant interviews, and non-participant observations. The qualitative data were analyzed using thematic analysis. To support systematic comparison among the factory cases, the interview evidence was also organized into a structured descriptive coding framework covering Environmental, Social, Governance, theoretical, and worker-outcome indicators. The coded evidence was compared across higher- and lower-compliance factories using descriptive scores and graphical analysis. The findings indicate that the higher-compliance factories generally demonstrated stronger ESG practices, particularly in training, worker welfare, childcare, environmental management, and structured compliance systems. However, the lower-compliance factories also provided some basic protections, including medical support, personal protective equipment, and occupational safety measures. The results therefore suggest that ESG implementation exists on a continuum rather than as a simple compliant versus non-compliant condition. The findings also show that international buyers and brands play an important role in encouraging ESG implementation, while government regulations, BGMEA requirements, certifications, and audit systems create institutional pressure. Organizational support, training, welfare, and improved workplace conditions further influence workers' well-being and productivity. Better ventilation, medical support, training, and welfare practices were associated with stronger reported worker outcomes, while excessive heat, weak worker participation, limited training, and financial constraints remained important challenges. The study concludes that effective ESG implementation can

contribute to healthier working conditions and improved productivity in Bangladesh's RMG sector. However, formal policies alone are not sufficient; actual implementation at the factory level is necessary to produce meaningful benefits for workers.

Keywords: Environmental, Social, and Governance (ESG), Ready-Made Garment Sector, Workers' Health, Worker Productivity, Workplace Conditions, ESG Compliance, Bangladesh

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Abbreviations

BGMEA Bangladesh Garment Manufacturers and Exporters Association

BSCI Business Social Compliance Initiative

CSR Corporate Social Responsibility

ESG Environmental, Social, and Governance

BKMEA Bangladesh Garment Manufacturers and Exporters Association

ETP Effluent Treatment Plant

ILO International Labour Organization

LEED Leadership in Energy and Environmental Design

PPE Personal Protective Equipment

RMG Ready-Made Garment

UN United Nations

WPC Workers' Participation Committee

Chapter 1: Introduction

1.1 Background of the RMG sector (Bangladesh context)

Bangladesh is a South Asian country with a fairly small geographical area but a large and productive workforce. After gaining independence from Pakistan in 1971, the country faced severe economic challenges and the devastating consequences of war (World Bank, 2024). Initially, Bangladesh's economy was predominantly agriculture-based, with jute and jute

products serving as its principal export commodities. But, as global demand for jute declined, the readymade garment (RMG) industry emerged as a major driver of economic growth (Ahmed, 2009). Since its emergence in the late 1970s and early 1980s, the garment industry has expanded rapidly, establishing Bangladesh as one of the world's leading apparel exporters under the "Made in Bangladesh" label (BGMEA, 2024). The RMG sector has become the country's largest export-earning industry, accounting for about 84% of Bangladesh's total export earnings (BGMEA, 2024; Export Promotion Bureau [EPB], 2024). Despite facing numerous challenges, including industrial accidents, global economic fluctuations, and the COVID-19 pandemic, the industry has showed remarkable resilience (Khurshid et al., 2025). Today, the RMG sector forms the backbone of Bangladesh's economy, generating more than US$38 billion in annual export earnings and providing direct employment to around four million workers, the majority of whom are women (BGMEA, 2024; ILO, 2023).

Table 1: Overview of RMG Factories in Bangladesh

Membership Category	**Number of Factories**	**Percentage(%)**
BGMEA	1766	53.2%
BKMEA	454	13.7%
Both(BGMEA&BKMEA)	284	8.6%
Non-Member	816	24.6%
Total	3320	100%

Source: BGMEA Industry Dashboard (2024).

Table 1 presents the distribution of ready-made garment (RMG) factories in Bangladesh based on their membership status. According to the data, Bangladesh has a total of 3,320 RMG factories. Among them, 1,766 factories (53.2%) are affiliated with the Bangladesh Garment Manufacturers and Exporters Association (BGMEA), making it the largest membership category. BKMEA members account for 454 factories (13.7%)**,** while 284 factories (8.6%**)** hold membership in both BGMEA and BKMEA. Additionally, 816 factories (24.6%) operate as non-members. These figures indicate that more than half of the country's RMG factories are registered under BGMEA, highlighting its dominant role in representing the sector, while a significant proportion of factories remain outside the major industry associations. The distribution reflects the organizational structure of Bangladesh's RMG industry, with BGMEA

serving as the principal trade association. Membership in these associations often facilitates access to compliance support, training, international buyers, and policy advocacy, although a considerable number of factories continue to operate without formal membership.

1.2 Overview of ESG Practices

The fashion and apparel industry is one of the major contributors to environmental degradation and social challenges, making sustainability an more important concern within the sector (Abbate et al., 2024). In response to these challenges, Environmental, Social, and Governance (ESG) frameworks have gained increasing importance in promoting more responsible and sustainable practices across the fashion industry (Rani et al., 2026). The adoption of Environmental, Social, and Governance (ESG) practices in emerging markets has been influenced by increasing global economic integration, evolving institutional frameworks, and growing expectations from international stakeholders (Jamali & Karam, 2018; Khanna & Palepu, 2010; Tashman et al., 2019). The importance of ESG practices in the garment industry is closely linked to challenges within global supply chains. (Hasan & Shehun, 2022) The Rana Plaza collapse in Bangladesh in 2013, which caused more than 1,000 deaths and numerous injuries, highlighted serious concerns about workplace safety and labor conditions in the garment sector (Siddiqui & Uddin, 2016). Complex supply chains and extensive subcontracting can make it difficult to monitor labor and environmental standards consistently. So, effective ESG practices require stronger accountability, monitoring, and coordination among manufacturers, international buyers, governments, and other stakeholders (Iqbal, 2025).

1.3 ESG Practices in Bangladesh RMG Sector

Bangladesh has no formal national ESG policy framework for its RMG sector. Instead, ESG-related practices have emerged gradually, shaped by international buyer requirements, global supply chain pressures, regulatory measures, and voluntary compliance initiatives (Shuvro, 2026). The Rana Plaza collapse of 2013 was the turning point. It exposed deep weaknesses in factory safety, labor rights, and governance, and drew sustained international attention to the conditions behind the country's garment exports (ILO, 2013).

Environmentally, the sector's rapid growth has raised mounting concerns about greenhouse gas emissions, which come mainly from fuel consumption, electricity use, and waste and wastewater management (Lam & Le Luu, 2025). Stronger ESG disclosure and emission monitoring can help

factories identify their largest sources of emissions and move toward more sustainable production practices (Biswas et al., 2023). Socially, ESG in the RMG sector is most visible in workers' wages and working conditions (Rana, 2026). The minimum wage introduced in 2019 raised nominal earnings, yet studies found that many workers still faced demanding production targets, long working hours, intense work pressure, and workplace abuse (Rafique & Islam, 2025). Such conditions erode health and well-being, and they show that wage increases alone cannot guarantee decent work (Kabir et al., 2022). Governance is what ties these commitments together. Where regulatory enforcement is weak and institutional capacity limited, maintaining consistent social responsibility standards across factories becomes difficult; strengthening legislation, monitoring, and accountability would support better social outcomes across the sector (Rahim, 2017).

1.4 Connection between ESG and RMG Workers' Health and Productivity

Each pillar of ESG touches workers' daily lives in a distinct way (Dorusincova & Michalec, 2026). The environmental dimension shapes the physical work environment, including air quality, temperature, lighting, waste management, and exposure to hazardous chemicals (ILO, 2022). The social dimension covers occupational health and safety, fair wages, working hours, access to healthcare, workers' rights, and the prohibition of child labor (ILO & IFC, 2023). The governance dimension concerns the effective implementation of labor laws, ethical business practices, transparency, accountability, and compliance with occupational safety standards (IFC, 2021). These dimensions influence workers' physical and mental health, job satisfaction, and overall well-being (Faragher et al., 2005). The evidence, however, is more mixed than often assumed. Some ESG activities improve employees' psychological well-being, while governance demands can themselves become a source of stress (Han & Lee, 2024) . Where ESG practices are weak, the risk of occupational injuries, work-related stress, and unsafe working conditions rises, leading to absenteeism and lower productivity. Where they are implemented well, healthier workplaces, stronger motivation and retention, and better productivity tend to follow (ILO & IFC, 2023). Recent longitudinal evidence from factory settings supports this: interventions that improved workers' well-being through better work relationships and skills also improved factory performance and worker retention (Bellingan et al., 2024). Over time, these gains contribute to sustainable livelihoods and long-term competitiveness in the RMG sector (ILO & IFC, 2023).

1.5 Problem Statement

Despite growing attention to ESG in the RMG sector, it remains unclear how much ESG compliance actually matters for the workers it is meant to protect. Factories in Bangladesh operate under very different levels of compliance, monitoring, and resources, yet few studies compare their outcomes directly. The one strand of comparative evidence that does exist focuses on physical health: workers in OSH-compliant factories report greatly less musculoskeletal pain than workers in non-compliant factories . What is missing is a broader comparison that looks at health and productivity together, and an understanding of how differences in compliance translate into workers' everyday experiences of work. Without that evidence, the real impact of ESG practices in the RMG industry, particularly in developing-country contexts where compliance varies so widely, remains unclear.

1.6 Research Gap

Two gaps stand out. The first is empirical: there is little comparative evidence on whether differences in ESG implementation across factories are associated with differences in workers' physical health and productivity. Existing studies tend to examine general working conditions or ESG implementation separately, rather than directly comparing compliant and non-compliant factories on both outcomes at once. The second is a gap between policy and practice. The existence of ESG policies and compliance standards does not mean those practices are actually implemented on the factory floor. Compliance pressure can push factories to prioritize measurable, auditable standards over workers' actual needs , and audits can be satisfied on paper while daily practice goes unchanged . This implementation gap between formal ESG commitments and workers' lived experience is especially relevant in Bangladesh, where factory monitoring capacity remains limited .

This study responds to that gap by examining and comparing ESG practices across factories with different levels of compliance, using workers' and managers' own accounts to understand how compliance shapes health and productivity in practice. In doing so, the study contributes a worker- and management-informed comparison of how different levels of ESG implementation are experienced in practice and how these differences are associated with reported health and productivity outcomes in Bangladesh's export-oriented RMG sector.

1.7 Research Objectives

1.7.1 General Objective

To examine the influence of Environmental, Social, and Governance (ESG) practices on workers' health and productivity in Bangladesh's Ready-Made Garment (RMG) sector.

1.7.2 Specific Objectives

To examine how ESG practices influence workers' health and productivity in selected export-oriented RMG factories in Bangladesh.

To compare ESG practices and reported worker health and productivity outcomes across factories with higher and lower levels of ESG implementation.

To identify the key environmental, social, governance, and institutional factors that shape ESG implementation and worker outcomes in the selected RMG factories.

1. 8 Research questions

RQ1. How do ESG practices influence workers' health and productivity in Bangladesh's RMG sector?

RQ2. How do workers' health and productivity differ between factories with higher and lower levels of ESG implementation?

1.9 Significance of the Study

This study is significant because it examines ESG practices from the perspective of workers and factory management in Bangladesh's export-oriented RMG sector, where implementation differs considerably across factories. By comparing factories with higher and lower or partial levels of ESG implementation, the study provides practical evidence on how workplace safety, environmental conditions, training, welfare, governance, buyer requirements, and institutional pressures are associated with workers' health and productivity. The findings may help factory managers, policymakers, industry associations, international buyers, and development organizations identify areas where formal ESG commitments need stronger implementation. Academically, the study also connects Stakeholder Theory, Institutional Theory, and Social

Exchange Theory with factory-level qualitative evidence, contributing to the limited literature that examines ESG, worker health, and productivity together in the Bangladesh RMG context.

1.10 Scope of the Study

This study mainly looks at ESG (Environmental, Social, and Governance) practices in Bangladesh's Ready-Made Garment (RMG) sector and their effects on workers' health and productivity. The study covers selected RMG factories and looks at ESG practices from both workers' and factory management's perspectives. The environmental aspect includes energy and water use, waste management, chemical handling, and workplace environmental conditions. The social aspect focuses on workplace safety, wages, working hours, worker welfare, training, and grievance mechanisms. The governance aspect covers management accountability, compliance, monitoring, transparency, and reporting practices. The study mainly looks at workers' physical health, and productivity using primary data collected from workers and relevant factory representatives. Secondary sources are also used to support the study and provide background information. The study is limited to the selected RMG factories and therefore does not represent the entire RMG industry in Bangladesh. It focuses on workers and workplace ESG practices rather than the financial performance or investment benefits of ESG.

1.11 Organization of the thesis

This thesis is organized into five chapters. Chapter One introduces the study, including the background, problem statement, research gap, research questions, objectives, significance, and scope of the study. Chapter Two presents the literature review and theoretical foundation, focusing on ESG practices, the Bangladesh RMG sector, workers' health and productivity, and relevant theories. Chapter Three explains the research methodology, including the research design, data collection methods, sample, and data analysis techniques. Chapter Four presents and discusses the findings of the study based on the collected data. Chapter Five concludes the study by summarizing the key findings, presenting conclusions and recommendations, discussing limitations, and suggesting areas for future research.

Chapter 2: Literature Review

2.1 Introduction

This literature review aims to examine the relationship between ESG practices and employee outcomes by synthesizing recent studies on worker well-being, organizational performance, and employment. It also points out research gaps that require further investigation.

2.2 Concept of ESG

In today's highly interconnected global economy, integrating Environmental, Social, and Governance (ESG) principles into supply chain management has become essential for achieving sustainable business growth(LightCastle Partners, 2025). ESG refers to a set of standards that evaluate a company's performance in terms of environmental responsibility, social impact, and governance practices. (Thomson Reuters Tax and accounting, February 13, 2026). ESG has become a key concept in corporate governance, investment, and business management over the past two decades (Wang & Phillips-Fein, 2023). Originally introduced through a collaboration between the United Nations and the financial sector, ESG promotes the integration of environmental, social, and governance factors into business and investment decisions(United Nations Global Compact, 2004). Despite its widespread adoption, ESG remains broadly defined, leading to debates over its interpretation, implementation, and effectiveness, as well as concerns about greenwashing and inconsistent ESG assessments (Rock, 2022).

2.3 Definition of ESG

The concept of Environmental, Social, and Governance (ESG) has been widely discussed in the literature; however, there is no universally accepted definition of the term (Alsayegh et al., 2020). ESG (Environmental, Social, and Governance) has become a major framework in corporate governance and investment over the past two decades. Originally introduced through a collaboration between the United Nations and the financial industry, ESG was intended to integrate environmental, social, and governance factors into business and investment decisions. But, its lack of a clear definition has led to different interpretations, creating challenges such as inconsistent ESG ratings, greenwashing, and difficulties in measuring its impact on corporate and financial performance (Pollman, 2022). ESG is actually one of the core ideas promoted through the "Who Cares Wins" initiative, which launched in 2004 by the UN Secretary-General and the UN Global Compact in partnership with the Swiss government, was one of the early

global efforts to promote the integration of Environmental, Social, and Governance (ESG) factors into investment decision-making(Who cares wins,2004–08 (English). It encouraged financial institutions to consider ESG risks and opportunities in order to improve long-term investment performance and support sustainable financial markets (Matos, 2020). Studies suggest that ESG practices create value for organizations and reduce potential risks through strategic, informational, and risk-management mechanisms. According to [Ni Wang , 2022], ESG practices contribute to risk reduction and value creation for organizations. The study found that ESG creates value through three key pathways: risk management, information disclosure, and strategic decision-making. The effectiveness of these practices is influenced by macro-, meso-, and micro-level factors, which shape both the direction and magnitude of ESG's impact (Wang et al., 2024)).

The concept of Environmental, Social, and Governance (ESG) has received more attention in evaluating sustainable business practices, particularly in labor-intensive industries such as the ready-made garments (RMG) sector (Amin et al., 2024). ESG provides a structured framework through which organizations can assess their environmental impact, social responsibilities, and governance practices, all of which are closely linked to workers' well-being and organizational performance (Alhazemi, 2025). Issues such as workplace safety, occupational health, labor rights, and compliance with regulations directly influence workers' health and productivity. Transparent and reliable ESG disclosure helps build stakeholder trust and confidence, ultimately supporting better firm performance (International Labour Organization (2021b). Global events and increased scrutiny from international buyers have further pushed factories to adopt ESG-related practices to ensure ethical production and sustainable supply chains (Yan et al., 2025). So, understanding ESG within the RMG sector is essential for examining how improved working conditions and responsible management practices can enhance workers' health outcomes and overall productivity(Saif & Islam, 2025). This literature review explores the core dimensions of ESG and their relevance to the health and efficiency of garment workers. (United Nations Development Programme (UNDP). (2023). Short guide to ESG.)

2.4 ESG as a framework and the worker dimension

ESG frameworks have become central to economic and policy decisions, but the social pillar is the least developed, and scholars argue it must be assessed relationally, through the

multidimensional well-being of workers and the local community rather than a minimalist "do no significant harm" logic Gillan et al., 2021) . An analysis of twenty CSR/ESG instruments found that labor and working conditions are unevenly captured, with a six-theme framework spanning corporate governance, business and human rights, diversity, industrial relations, occupational health safety and well-being, and HR practices (Bohnenberger, 2022). More recent work positions occupational health, safety and well-being as a core concern of business responsibility and sustainability in the future of work (ILO, 2022).

2.5 ESG Practices in the RMG Industry

Bangladesh's Ready-Made Garment (RMG) industry has made significant progress in sustainability over the past decade (BGMEA, 2024). The sector now has the world's largest number of LEED-certified green garment factories and has strengthened workplace safety through the Accord and Alliance initiatives. (UNIDO & Chatham House, 2025). But, Balcha (2024) noted that ESG implementation remains inconsistent, many of these factories continue to face challenges related to outdated chemical management, inadequate wastewater monitoring, and limited digital documentation, which hinder effective ESG verification and compliance (Balcha, 2024). The McKinsey survey suggests that ESG integration creates business value through improved returns, risk management, and growth(McKinsey Global Survey, 2011). On the other hand, Wagner et al. (2001) reported a negative association between environmental sustainability practices and financial performance. The stakeholder sustainability pressures promote ESG adoption and improve sustainable performance in Bangladesh's RMG industry. But, financial and operational limitations often restrict the effective implementation of ESG practices, which may also affect workplace conditions and employee well-being(Shuvro, 2026). In the context of ESG, Stakeholder Theory is useful for understanding why organizations should prioritize workers' health, safety, and well-being alongside financial objectives (Mahajan et al., 2023). By addressing employees' needs through responsible environmental, social, and governance practices, organizations can enhance worker productivity while promoting long-term sustainability (Parmar et al., 2010)). The importance of ESG in Bangladesh's RMG sector has increased significantly following the Rana Plaza building collapse in 2013, which exposed serious shortcomings in workplace safety, labor rights, and governance (Hossain & Mahmud, 2025). In response, international buyers, development organizations, and industry stakeholders

promoted stronger compliance measures and workplace reforms. Initiatives such as the ILO–IFC Better Work Programmer encouraged factories to improve safety standards, labor practices, and environmental management. Although ESG implementation has expanded across the sector, compliance levels continue to vary among factories, creating differences in working conditions and worker outcomes (ILO, 2013).

2.6 ESG and workers' health and well-being

The direct empirical evidence linking ESG activity to worker health is thin but growing. The most cited study, based on 110,351 observations from 41,998 employees across 11 Japanese corporations, found mixed effects: environmental activities that reduce water stress and adopt clean technology improved psychological well-being, while governance activities acted as a stressor for employees (Koh et al., 2022). Employee perception matters: perceived ESG raises job meaningfulness, which in turn amplifies psychological well-being, an effect that strengthens as pay satisfaction rises (Huang et al., 2024). Employees' positive perceptions of CSR produce both firm-beneficial outcomes (loyalty, trust, positive word-of-mouth) and employee-beneficial outcomes (job satisfaction, emotional well-being), mediated by organizational pride (Farooq et al., 2024). ESG-driven HR practices have also been shown to improve employee performance and well-being, with governance practices amplifying the effect (Rahman et al., 2025). At the conceptual level, "well-being-oriented organizations" are proposed as a framework that connects human flourishing with ecological regeneration (Shrivastava & Zsolnai, 2022) . The "happy-productive worker" thesis provides the theoretical bridge from health to productivity. A meta-analysis of 84 studies found that workplace resources at the individual, group, leader, and organizational levels relate to both employee well-being and organizational performance (Ashfan et al., 2026) . A review in Ecological Economics confirms experimental evidence of a causal effect of worker well-being on productivity, but warns that relentless productivity growth can itself undermine well-being, making the pursuit potentially counterproductive even in productivity terms (De Neve & Ward, 2022). Health status has been directly linked to productivity loss: a corporate health risk instrument found a significant negative correlation between health/well-being scores and productivity decrement (Mills, 2005). At the firm level, ESG performance influences economic performance, with social and governance pillars significant while environmental performance was not in an S&P 500 sample (Cek & Eyupoglu, 2020) . Sustainable human capital management (training, diversity, pay equity, benefits)

improves ESG performance, which in turn improves financial performance, with ESG disclosure strengthening the link (Jorgji et al., 2024). Human capital management effectiveness is positively associated with ESG engagement in S&P 500 firms (Cai et al., 2024). Employee satisfaction predicts better operating performance and helps firms withstand crises (Shan & Tang, 2023). CSR directed toward employees improves contextual performance through perceived organizational support and affective commitment (Bhatti et al., 2022), and perceived CSR boosts job performance via psychological empowerment (Dekoulou et al., 2023) . Two caveats matter for your thesis. First, the United Nations Global Compact adoption improved sales growth and profitability but showed no significant impact on labor productivity (Orzes et al., 2020). Second, in Bangladesh manufacturing specifically, ESG performance improves innovation and sustainability performance, with innovation fully mediating the relationship, which suggests the health-productivity pathway is indirect (Zhou et al., 2023) .

2.7 The export-oriented RMG sector as the case context

Bangladesh's RMG sector is the world's second largest apparel exporter, employing over 4 million workers, mostly women, and generating the bulk of export earnings (Rahman et al., 2017). It has been the largest employer of women in the industrial sector, though workers face low wages, long hours, and limited access to sanitation, sick leave, and trade unions (Islam & Zahid, 2012). Buyer-supplier power dynamics shape the sector: exporters earn higher markups on orders from relational buyers than spot buyers, and sourcing strategies vary with buyer capabilities (Cajal-Grossi et al., 2023) . The Rana Plaza collapse of 2013, which killed over 1,100 workers, became the turning point that forced compliance and safety reform onto the global agenda (Fai, 2016).

2.8 Workers' health in RMG factories

A systematic review of 19 studies found RMG workers across South and Southeast Asia are prone to physical and psychological health vulnerabilities arising from unhygienic, unsafe, and hazardous work environments (Kabir et al., 2019) . Musculoskeletal disorders dominate: a cross-sectional study of 232 workers found lower back and neck pain most prevalent, with 80% of workers at high ergonomic exposure risk (Hossain et al., 2018). Among 410 female workers, 57% reported musculoskeletal pain in the past month, with lower back pain highest at 41%; crucially, workers in OSH-compliant factories had a greatly lower prevalence of MSDs

than those in non-compliant factories (adjusted PR 0.43) (Nabi et al., 2021) . Another study of 486 workers found 78.1% musculoskeletal pain and 57.9% headache, with long working hours and female gender raising the odds (Hasan et al., 2021) . Occupational stress is a distinct pathway: a study of 350 garment employees found occupational stress significantly increased health risk, more so for female workers (Yuan et al., 2022) . Qualitative work shows working conditions severely impact health and well-being, including inadequate facilities, sexual harassment, mandatory night shifts, and workplaces described as "death traps" (Kabir et al., 2019). Female workers report back and joint pain, headaches, eye strain, and breathing difficulty from fabric dust, compounded by a doubled workload from family expectations (Akhter et al., 2019). Health outcomes are worse for women and older workers, and are hindered by high job demands, noise, crowding, and heavy workloads (Nasrin et al., 2019). Systemically, the capacity of Bangladesh's inspection apparatus to monitor occupational health remains weak, with shortages of trained staff and poor employer cooperation in recording health data (Akhter et al., 2019) .

2.9 Worker Productivity in RMG factories

Bangladeshi garment productivity is the lowest among competitors, and wages, benefits, and welfare facilities raise productivity through work motivation (Alam et al., 2020) . The compliance-productivity link appears in early work showing a close relationship between factory compliance and productivity in Dhaka garment industries (Rahman et al. 1970) . Intervention research shows the two can be complementary. Lean manufacturing integrated with occupational health and safety improved both productivity and compliance capability in four Bangladeshi garment suppliers (Hoque et al., 2020), and an action research study in six factories found lean tools improved OHS with no negative short-term health effects and statistically significant health improvements(Hamja, et al., 2019) . But, the complementarity between OHS and operational practices depends on plant size: large factories achieve higher maturity in both, while small and medium plants lag(Romero et al., 2021) .

2.10 ESG in Garment Supply Chains: Qualitative Evidence on Compliance and Worker Voice

ESG practices in garment supply chains provide an important connection between workplace conditions, workers' well-being, and organizational performance. Qualitative research is

particularly valuable in this area because it provides insight into how compliance practices are implemented and experienced by workers. A multiple-case study of three Bangladeshi suppliers following the Rana Plaza disaster found that compliance and auditing pressures encouraged firms to prioritize measurable standards over the socially grounded needs and priorities of workers. In some cases, these practices weakened existing forms of social value and increased work pressure on the labor force (Sinkovics, 2016). Similarly, worker-centered research on the Accord and Alliance multi-stakeholder initiatives examined whether these initiatives represented a genuine paradigm shift or continued business-as-usual practices. The research focused on workers' experiences and perceptions of changes in wages and working conditions. A multi-case study of four RMG suppliers in Bangladesh found that the adoption of social sustainability practices was partly motivated by the need to retain skilled workers, as workers tend to migrate to factories offering better social standards. But, implementation was constrained by the mismatch between Western codes of conduct and the local context. The study also identified forms of "mock compliance," such as maintaining two sets of timesheets, which indicate a gap between formal compliance requirements and actual workplace practices (Huq, 2014). Similarly, a longitudinal multiple-case study of South India's knitwear industry showed that the way intermediaries frame social sustainability requirements influences suppliers' perceptions of fairness and reciprocity (Soundararajan, 2018). An exploratory study of 30 export-oriented Bangladeshi suppliers further found that suppliers are interconnected through horizontal networks, which can restrict unilateral corporate social responsibility engagement (Fontana, 2018). Multinational buyers increasingly develop "social management capabilities" with their suppliers, shifting from traditional third-party auditing toward more consultative and collaborative audit approaches in response to stakeholder pressure (Huq, 2016). Stakeholder pressure has also been identified as a major driver of social and environmental risk management within the clothing industry (Frieze, 2015). In the Sri Lankan apparel sector, internally directed social sustainability practices were found to have a positive impact on economic performance, with internally directed practices having a stronger effect than externally directed practices (Sudusinghe, 2020).

2.11 ESG Practices and Worker Productivity

Environmental, Social, and Governance (ESG) practices play a significant role in improving

worker productivity by promoting safe working conditions, employee well-being, and responsible organizational management. The social dimension of ESG, which includes occupational health and safety, fair labor practices, employee training, and worker participation, has been widely recognized as a key factor influencing employee performance and organizational productivity (International Labour Organization [ILO], n.d.; Better Work, n.d.).Several studies have found that organizations with strong ESG performance experience higher employee engagement, job satisfaction, and organizational commitment, all of which can improve productivity. Employees who perceive their organizations as socially responsible are more likely to show organizational citizenship behavior and actively contribute to organizational success (Kim et al., 2024). In Bangladesh's Ready-Made Garment (RMG) industry, workplace safety and compliance have improved considerably following the Accord and Alliance initiatives. But, challenges such as inadequate occupational safety and health (OSH) training, limited worker participation, inconsistent grievance mechanisms, and poor transparency in working hours continue to reduce workforce effectiveness, particularly in Tier-2 and Tier-3 factories. These limitations hinder the full implementation of ESG practices and negatively affect employee productivity. Also, effective ESG implementation can reduce workplace accidents, lower employee turnover, improve skills through continuous training, and strengthen employee motivation, leading to better organizational performance. On the other hand, weak governance systems, poor working conditions, and insufficient compliance with labor standards may increase absenteeism, reduce morale, and decrease productivity (International Labour Organization, 2021a; Better Work, n.d.). Despite growing evidence that ESG contributes to organizational and financial performance, fairly few studies have specifically examined its impact on workers' productivity in Bangladesh's RMG sector. Most existing research focuses on environmental compliance or corporate sustainability rather than the direct relationship between ESG practices, workers' health, and productivity. So, further research is needed to understand how ESG implementation influences employee well-being and productivity within the Bangladeshi RMG industry.

Table 2. Relationship Between ESG Dimensions and RMG Workers' Health and Productivity

ESG Dimension	Key Practices	Impact on Works Health

Environmental (E)	Energy conservation, waste management, pollution control, water conservation, and reduced chemical exposure	Improves workplace air and water quality, reduces exposure to hazardous substances, and lowers occupational health risks (ILO, 2022).
Social(S)	Workplace safety and compliance, occupational health and safety (OHS), fair wages, labor standards, worker training, education programs, skills development, and community initiatives	Reduces workplace injuries and accidents, improves physical well-being, strengthens health and safety awareness, and promotes employee welfare (ILO & IFC, 2023).
Governance(G)	Ethical leadership, transparency, accountability, ESG reporting, labor law compliance, and effective grievance mechanisms	Ensures fair labor practices, protects workers' rights, and fosters a safe and supportive working environment (IFC, 2021).

Source: ILO 2022, ILO & IFC, 2023, IFC, 2021.

2.12 Synthesis, Theoretical Framing and Research Gaps for a Qualitative Case Study

Bringing these strands of literature together, the social pillar of ESG operationalized through working conditions, welfare facilities, occupational health and safety (OHS) compliance to be the mechanism most consistently associated with both worker health and productivity. The strongest evidence concerning workers' health relates to the social dimension of ESG, while

evidence concerning the environmental pillar shows mixed effects. Governance practices may also create additional pressure and stress for workers (Piao, 2022). In relation to productivity, the evidence is strongest for improvements in welfare and working conditions (Alam, 2020;) and for operational practices that complement occupational health and safety (Huq, 2020).

Four major research gaps justify the need for a qualitative case study. First, the existing systematic evidence base contains limited research that looks at ESG practices from the workers' perspective. A qualitative research design can address this limitation by exploring workers' experiences, perceptions, and interpretations of workplace practices (Barbosa, 2023).

Second, the relationship between ESG, workers' health, and productivity is rarely examined as an integrated process within the RMG sector. Existing evidence from Bangladesh suggests that the effects of ESG practices may operate through innovation rather than directly through workers (Zhou, 2023). This indicates the need for further research examining how ESG practices are experienced at the workplace level and how these practices may influence workers' health and productivity.

Third, there is a significant gap between audited or certified compliance and actual workplace practices. Issues such as "mock compliance" and limited inspection capacity suggest that formal certification may not always reflect the realities experienced by workers. So, the actual effects of ESG practices on workers remain an open question that can be explored effectively through qualitative methods such as interviews and workplace observation (Huq, 2014; Sinkovics, 2016; Akhter, 2019).

Fourth, much of the existing ESG and worker-related research is quantitative and has been conducted in developed countries or outside the manufacturing sector. For this reason, export-oriented RMG factories in developing countries remain comparatively under-examined. This gap highlights the importance of qualitative research that explores how ESG practices are implemented and experienced by workers within Bangladesh's export-oriented RMG sector.

2.13 Theoretical Foundations of the Study

Theory	Main Idea	Relevance to the Study	Key References

Stakeholder Theory (Freeman, 1984)	Organizations should consider the interests of all stakeholders, including employees.	Explains why RMG factories should implement ESG practices to protect workers' health, safety, and well-being, ultimately improving productivity.	Freeman (1984)
Institutional Theory (DiMaggio & Powell, 1983)	Organizations adopt practices due to regulatory, normative, and competitive pressures.	Explains why export-oriented RMG factories implement ESG practices to comply with buyer requirements, government regulations, and international standards.	DiMaggio & Powell (1983); Scott (2014)
Social Exchange Theory (Blau, 1964)	Employees reciprocate positive organizational treatment with positive attitudes and behaviors.	Explains how good ESG practices improve workers' commitment, motivation, and productivity.	Blau (1964)

Source: Freeman (1984); DiMaggio and Powell (1983); Blau (1964).

The theoretical foundation of this study is built on three complementary theories: Stakeholder Theory, Institutional Theory, and Social Exchange Theory. These theories help explain why export-oriented ready-made garment (RMG) factories adopt Environmental, Social, and Governance (ESG) practices and how these practices influence workers' health and productivity. Stakeholder Theory highlights the responsibility of organizations toward employees and other stakeholders, Institutional Theory explains the influence of external regulatory and market pressures on ESG adoption, and Social Exchange Theory explains how employees reciprocate positive organizational practices with improved commitment, well-being, and productivity. These theories collectively provide the conceptual basis for examining the relationship between ESG practices and workers' health and productivity in Bangladesh's RMG sector.

2.14 Conceptual Framework

Based on the reviewed literature and the three theoretical perspectives, the study uses a

conceptual framework in which external stakeholder and institutional pressures influence the level of ESG implementation within factories. ESG practices then shape workplace mechanisms such as safety, medical support, training, welfare, worker voice, heat management, and ventilation. These workplace conditions are expected to influence workers' health and well-being and, in turn, reported productivity outcomes. Stakeholder Theory explains the influence of buyers and other stakeholders, Institutional Theory explains regulatory and industry pressure, and Social Exchange Theory explains how workers may respond to organizational support through motivation, commitment, and productive behavior.

Figure 2.1. Conceptual Framework of the Study

External Drivers: International Buyers and Brands | Government and BGMEA | Certifications and Audits
↓
ESG Implementation: Environmental | Social | Governance
↓
Workplace Mechanisms: Safety | Medical Support | Training | Welfare | Heat/Ventilation | Worker Voice
↓
Worker Outcomes: Health and Well-Being → Productivity
Theoretical lenses: Stakeholder Theory | Institutional Theory | Social Exchange Theory

Source: Developed by the researcher based on the literature review and theoretical framework.

This framework directly links the literature review to the research questions and the comparative case analysis. It guides the examination of why ESG practices differ across factories, how those practices are experienced at the workplace level, and how the resulting conditions are associated with reported worker health and productivity.

Chapter 3: Research Methodology

3.1 Introduction

This chapter explains the method used to explore the effects of Environmental, Social, and Governance (ESG) practices on workers' health and productivity in Bangladesh's export-oriented

Ready-Made Garment (RMG) industry. It outlines the research philosophy, approach, and qualitative multiple-case study design used in the study. The chapter also explains the study area, how participants were selected, and the sampling strategy. It details the data collection methods, research tools, and data analysis processes. Also, it discusses the steps taken to ensure the trustworthiness of the findings, ethical issues, and the study's limitations. These components form the basis for producing reliable findings that meet the research objectives.

3.2 Research Design

This study adopted a qualitative research design to explore how Environmental, Social, and Governance (ESG) practices influence workers' health and productivity in Bangladesh's export-oriented Ready-Made Garment (RMG) sector. The qualitative approach was selected to gain a deeper understanding of participants' experiences, perceptions, and views regarding workplace conditions, occupational health and safety, worker welfare, and organizational practices.A comparative multiple-case study design was used involving four export-oriented RMG factories with different levels of ESG implementation. This approach is appropriate for examining similarities and differences across cases and understanding how practices and experiences vary within different contexts (Bartlett & Vavrus, 2016). Two factories represented higher ESG/compliance implementation, while the other two represented lower or partial implementation. Comparing these cases helped identify differences in ESG practices and understand their reported influence on workers' health, well-being, and productivity from both worker and management perspectives.

3.3 Study Area

The research took place in four export-oriented Ready-Made Garment (RMG) factories in Bangladesh. Two of these factories have adopted recognized ESG and green manufacturing practices both is located Gazipur. They also meet international buyer requirements and environmental standards. The other two factories do not have green certification and show lower levels of ESG implementation both located Savar. These factories were chosen because they offer different organizational settings. This helps in understanding how varying levels of ESG implementation affect workers' health and productivity

Table 3.1. Profile of the Four Factory Cases

Case	Compliance level	Approx. workforce	Respondent source	Main analytical value
C1	Higher compliance; not green certified	800 production workers	Factory representative	Formal compliance system and buyer pressure
C2	Higher/green compliance	Not reported	10 worker/frontline respondents	Worker experience, welfare, training, safety and voice
N1	Lower compliance; resource-constrained	500 workers	Management participant	Small-factory constraints and limited formal systems
N2	Lower/partial compliance	3,000 workers	Senior management participant	Policy-implementation gap and partial compliance

Note: The case labels are used for comparative analysis. N2 is treated as a lower/partial-compliance case rather than as a completely non-compliant factory because the interview evidence shows formal policies and several existing compliance practices alongside important implementation gaps.

3.4 Population and Sampling

A purposive sampling technique was used to select participants for this study. Purposive sampling was suitable because the study required participants who had direct knowledge and experience of factory operations, workplace conditions, worker welfare, and Environmental, Social, and Governance (ESG) practices. Participants were selected from both ESG-compliant and ESG-non-compliant export-oriented Ready-Made Garment (RMG) factories to make comparison possible. A total of 20 participants were selected for the study, including 10 management representatives and 10 workers. From the ESG-compliant factories, 11 participants were included, consisting of six management representatives and five workers. The management representatives included a Director, HR Personnel, Compliance Officer, Supervisor, Manager, and Quality Checker. The worker participants consisted of three Helpers and two Sewing Operators. From the ESG-non-compliant factories, 9 participants were selected, including four management representatives and five workers. The management representatives included a Marketing Director, Supervisor, Quality Checker, and HR Personnel. The worker participants consisted of three Helpers, one Line Man, and one Operator. The inclusion of participants from different occupational positions allowed the study to capture perspectives from both managerial and worker levels. Management representatives provided information about factory policies,

compliance procedures, ESG implementation, and organizational practices, while workers provided insights into their actual workplace experiences, health and safety conditions, welfare provisions, and productivity. The comparison between ESG-compliant and ESG-non-compliant factories was important for identifying differences in ESG practices and their potential implications for workers' health and productivity.

Table 3.2. Participant Distribution

Factory group	**Management representatives**	**Workers**	**Total**
Higher-compliance factories	6	5	11
Lower/partial-compliance factories	4	5	9
Total	10	10	20

Factory Type	Occupation	Participant Category	Number
ESG-Compliant Factories	Management representatives	Director HR Personnel Compliance Officer Supervisor Manager Quality Checker	1 1 1 1 1 1
ESG-Compliant Factories	Worker	Helper Swing operator	3 2
ESG-Non-Compliant Factories	Management representatives	Marketing Director Supervisor Quality Checker HR Personnel	1 1 1 1
ESG-Non-Compliant Factories	Workers	Helper Line Man Operator	3 1 1
Total			20

Source: Author's Analysis based on Interview Data, 2026.

3.5 Data Collection Methods

Primary data were collected using semi-structured in-depth interviews. Separate interview guides were developed for factory management representatives and garment workers to explore their experiences and perceptions about Environmental, Social, and Governance (ESG) practices, workplace conditions, occupational health and safety, labor rights, governance, and productivity. Semi-structured interviews were conducted with factory management representatives, including compliance officers, marketing directors, human resource personnel, and administrative staff. These interviews lasted about 20–25 minutes, allowing the researcher to ask predetermined questions while using follow-up probes to obtain detailed explanations and examples. In-depth interviews were conducted with garment workers outside the factory premises. Conducting the interviews outside the workplace provided participants with a more comfortable and fairly private setting in which they could openly share their experiences and perceptions about workplace conditions, ESG practices, health, safety, and productivity. The interviews were conducted at a time convenient for the participants and were designed to allow sufficient time for detailed responses. Detailed field notes were taken throughout the interviews, and audio recordings were made only when participants provided informed consent. In cases where audio recording was not possible, detailed notes were taken during or immediately after the interviews to ensure the accuracy and completeness of the collected information. In addition, secondary data from relevant academic literature, reports, and other credible sources were used to support and validate the findings obtained from the primary data.

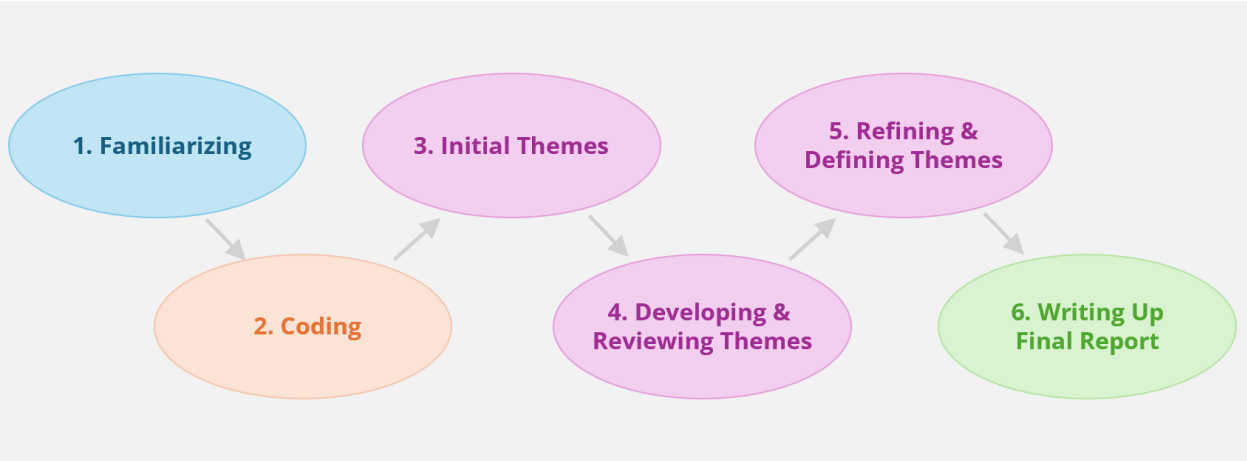
3.5.1 Data Collection Procedure

Data collection followed a consistent qualitative procedure across the selected factory cases. Participants were approached according to the purposive sampling criteria and were informed about the purpose of the research before participation. Semi-structured interview guides were used to keep the discussion focused on ESG practices, workplace conditions, worker health, welfare, governance, external compliance pressures, and productivity while still allowing participants to explain their experiences in their own words. Management and key informant interviews focused more strongly on policies, compliance systems, buyer and regulatory requirements, and organizational practices, while worker interviews focused on lived workplace

experiences. Non-participant observations were used where available to support and compare the interview evidence. The collected material was then organized for thematic coding and cross-case comparison.

3.6 Data Analysis

The qualitative data collected through in-depth interviews was analyzed using thematic analysis following the six-phase framework proposed by Braun and Clarke (2006).



Source: Thematic Analysis (2026): Step-by-Step Guide(Branun and Clarke 2006)

The analysis began with repeated reading of the interview transcripts and observation notes to become familiar with the data. Initial codes were generated manually by identifying meaningful words, phrases, and concepts relevant to the research objectives (Saldaña, J. (2009).. The coded data were organized using a structured hierarchical coding framework. Similar codes were grouped into sub-themes and then developed into broader themes. The coding framework covered key areas of the study, including Environmental, Social, and Governance (ESG) practices, occupational health and safety, worker welfare, governance and compliance, training and capacity building, barriers to ESG implementation, and workers' health and productivity. To make comparison easier across the four factory cases, the same coding framework was applied to data from the two ESG-compliant and two non-compliant factories. Evidence related to buyer and brand influence was interpreted through Stakeholder Theory, while government regulations, certifications, audits, and other institutional pressures were examined through Institutional

Theory. Evidence concerning worker support, welfare, incentives, organisational treatment, motivation, and reciprocal expectations was considered in relation to Social Exchange Theory. Worker health and productivity were analyzed as the main outcome dimensions. The themes were continuously reviewed and refined by comparing participants' responses across the four factories. Findings from non-participant observations were used to complement and cross-check the interview data. Finally, representative quotations were selected to support the interpretation of the themes and to ensure that the findings accurately reflected participants' experiences and perspectives.

3.7 Trustworthiness

To maintain the quality and trustworthiness of the qualitative findings, this study followed the trustworthiness criteria proposed by Lincoln and Guba (1985), namely credibility, transferability, dependability, and confirmability. Credibility was enhanced by collecting data from multiple sources, including in-depth interviews allowing for the triangulation of findings across different participant groups and factory settings. Transferability was supported by providing detailed descriptions of the research context, participant characteristics, and data collection procedures, enabling readers to determine the applicability of the findings to similar settings. Dependability was maintained through a systematic and transparent data collection and analysis process, with all interview transcripts, field notes, and coding procedures carefully documented. Confirmability was strengthened by ensuring that the findings were grounded in participants' responses and supported by direct quotations, thereby minimizing researcher bias and enhancing the objectivity of the analysis.

3.8 Ethical Consideration

Ethical principles were carefully observed throughout the research process. Ethical approval for the study was obtained from the relevant academic authority prior to data collection. Participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw from the research at any stage without any negative consequences. Informed consent was obtained from all participants before conducting interviews and observations. To protect participants' privacy, personal identities and factory names were kept confidential. All collected data were stored securely and used solely for academic purposes.

3.9 Limitation of the Study

Although this study provides valuable insights into the influence of ESG practices on workers' health and productivity in Bangladesh's RMG industry, several limitations should be acknowledged. First, the study was conducted in four export-oriented garment factories, which may limit the ability to generalize of the findings to the broader RMG sector. Second, the sample size was fairly small, involving twenty participants, and therefore may not capture the full diversity of experiences across the industry. Third, the findings are based mainly on participants' perceptions and experiences, which may be influenced by personal opinions or recall bias. Finally, time constraints and limited access to factory operations restricted the duration of field observations. Despite these limitations, the study provides rich qualitative evidence that contributes to understanding the relationship between ESG practices, workers' health, and productivity.

3.10 Qualitative Coding and Descriptive Analytical Method

For a more systematic comparison across the four factory cases, the qualitative interview data were analyzed using a structured coding and descriptive scoring approach. The purpose was not to convert the qualitative study into a quantitative study, but to organize the interview evidence in a consistent form so that similarities, differences, and patterns across the cases could be identified more clearly.

The analytical process followed the study framework. Interview responses were first reviewed and organized under the main areas connected with the research questions. These included Environmental, Social, and Governance (ESG) practices; Stakeholder Theory, Institutional Theory, and Social Exchange Theory; and worker health and productivity outcomes. Individual indicators were then developed within these broader analytical dimensions based on the interview questions and the evidence reported by respondents.

For the ESG analysis, the coded indicators included environmental policy and practices, waste and wastewater management, resource and energy efficiency, heat and ventilation, occupational safety, personal protective equipment (PPE), medical and first-aid support, training and skill development, childcare and maternity support, worker welfare and benefits, wage or incentive support, written policies, compliance monitoring, grievance mechanisms, and worker

participation. This structure allowed broad concepts such as "ESG compliance" to be examined through specific workplace practices instead of treating ESG compliance as one broad idea.

A similar procedure was followed for the theoretical analysis. Evidence concerning buyer and brand influence was interpreted in relation to Stakeholder Theory. Evidence concerning government regulation, BGMEA requirements, certification, audits, and other formal institutional pressures was examined through Institutional Theory. Evidence concerning worker support, welfare, incentives, organizational treatment, motivation, commitment, and expected reciprocal benefits was considered through Social Exchange Theory. Worker health and productivity were coded separately as the main outcome areas of the study.

Table 3.3. Qualitative Coding Framework

Analytical area	**Examples of indicators**	**Interpretive purpose**
Environmental	Waste/wastewater, resource efficiency, heat and ventilation	Workplace environmental conditions and environmental management
Social	Safety, PPE, medical support, training, childcare, welfare, wages/incentives	Worker protection, support and well-being
Governance	Written policy, monitoring, grievance mechanisms, worker participation	Accountability and implementation systems
Theory	Buyer pressure, government/BGMEA/certification pressure, organizational support	Stakeholder, Institutional and Social Exchange evidence
Outcomes	Health benefits, comfort, motivation, efficiency, absenteeism, turnover, production performance	Reported worker health and productivity outcomes

The coding framework was used to organize qualitative evidence consistently across cases. The subsequent 0/1/2 values are descriptive coding aids only; they are not statistical measurements, official ESG ratings, or formal compliance audit scores.

3.10.1. Coding and scoring procedure

Each indicator was evaluated from the qualitative evidence available for each factory and assigned a descriptive score using a three-level coding scale:

Score	Interpretation
0	Practice absent, weak, or clearly inadequate

1	Practice partially present, basic, informal, or mixed
2	Practice strongly present, structured, or clearly supported by the interview evidence
NR	Not reported, not sufficiently supported by the interview, or not applicable

The use of NR (Not Reported) was important. The four factory interviews were not identical in perspective or coverage, and not every respondent provided information about every indicator. So, absence of evidence was not automatically interpreted as evidence of absence. An indicator was scored zero only when the interview evidence reasonably supported the conclusion that the practice was absent or weak. When sufficient information was unavailable, the indicator was coded as NR and excluded from the relevant average calculation. This reduced the risk of artificially lowering a factory's score simply because a particular topic was not discussed.

The numerical values were therefore used as descriptive coding devices and not as official compliance measurements. A score of 2, for example, does not mean that a factory achieved a formally audited 100% compliance level. Instead, it indicates that the qualitative evidence provided fairly strong support for that practice within the boundaries of this study. Likewise, the resulting percentages and averages should be interpreted as structured summaries of the interview evidence and not as externally verified ESG ratings.

3.10.2 Case-level and dimension-level comparison

After the indicators were coded, the scores were organized at several analytical levels. First, an overall average was calculated for each factory using only the indicators for which evidence was available. This provided a general descriptive comparison of the four cases.

Second, indicators were grouped according to the Environmental, Social, and Governance dimensions. Average scores were calculated separately for each dimension. This made it possible to determine whether a factory's overall performance resulted from consistently strong practices or whether strength in one ESG dimension was accompanied by weakness in another.

Third, individual indicators were compared across the four factories. This indicator-level analysis was important because overall averages can conceal specific strengths and weaknesses. For example, two factories may have similar overall scores while having very different patterns in medical support, training, environmental management, worker participation, or governance.

3.10.3 Compliance-group comparison

For an additional level of comparison, the four cases were grouped into higher-compliance and lower/partial-compliance categories. Factory C1 and Factory C2 represented the higher-compliance group, while Factory N1 and Factory N2 represented the lower or partial-compliance group.

Average Environmental, Social, and Governance scores were then compared between these two groups. The purpose was not to conduct statistical hypothesis testing because the study contains only four purposively selected cases. Rather, the grouped comparison was used to identify whether a consistent descriptive pattern existed between factories with stronger compliance systems and factories with weaker or incomplete implementation.

3.10.4 Theory-based analysis

The coding framework was also used to connect the empirical evidence with the three theoretical perspectives adopted in the study. Evidence for buyer and brand pressure, government and institutional pressure, and worker-support relationships was compared across the cases.

This allowed the theoretical framework to be incorporated directly into the empirical analysis rather than being discussed separately from the interview findings. The approach examined whether external stakeholders, institutional requirements, and internal employer-worker relationships appeared to operate differently across factories with different compliance characteristics.

3.10.5 Health and productivity outcome analysis

Finally, the analysis examined reported evidence concerning worker health benefits and productivity benefits. These outcomes were compared with the ESG patterns identified in the earlier stages of the analysis.

Particular attention was given to evidence connecting workplace practices with outcomes, such as occupational safety, medical support, training, ventilation, heat management, welfare support, worker motivation, efficiency, absenteeism, turnover, and production performance. This analysis was used to examine the central relationship proposed in the conceptual framework:

ESG practices → worker health and working conditions → worker productivity.

Because the study is qualitative and based on four case studies, this relationship was interpreted as an evidence-based pattern or association and not as statistical proof of causation.

Finally, the structured dataset was processed computationally to calculate the descriptive averages, group comparisons, and graphical summaries consistently. Python was used for this final computational and visualization stage, while the interpretation of the scores remained grounded in the original qualitative interview evidence.

3.11 Chapter Summery

This chapter presented the research methodology used for the study. It described the research philosophy, research approach, qualitative comparative multiple-case study design, study area, population and sampling strategy, data collection methods, research instruments, and data analysis procedures. The chapter also outlined the measures taken to ensure the trustworthiness of the findings, addressed the ethical considerations observed during the research process, and discussed the study's limitations. The next chapter presents the qualitative findings, organized according to the major themes that emerged from the thematic analysis of the interview and observational data.

Chapter 4: Findings and Data Analysis

4.1 Introduction

This chapter presents the findings from the qualitative data collected through semi-structured interviews, conducted in four export-oriented Ready-Made Garment (RMG) factories in Bangladesh. The study included two ESG-compliant (green) factories and two non-compliant (non-green) factories to examine how Environmental, Social, and Governance (ESG) practices influence workers' health and productivity. The qualitative data were analysed using thematic analysis following the six-phase framework proposed by Braun and Clarke (2006). Interview transcripts and observation notes were reviewed repeatedly to achieve familiarity with the data. Initial codes were generated manually from participants' responses and field observations and were subsequently organised into sub-themes and overarching themes based on recurring patterns related to ESG awareness, occupational health and safety, worker welfare, governance, and productivity. The findings are presented under major themes, supported by direct quotations from participants and evidence from field observations. Where appropriate, comparisons are

made between ESG-compliant and non-compliant factories to highlight similarities and differences in workplace practices and to demonstrate how ESG implementation influences workers' health, well-being, and productivity.

4.2 Overview Of Thematic Analysis

Table 4.1. Branun and Clarke Thematic Analysis of ESG Practices in Compliance and Non-Compliance RMG Factories

Theme	Compliance Factory	Non-compliance Factory	Interpretation
Worker Welfare	Childcare facilities, welfare programmes, attendance bonuses lockers, drinking water, annual programmes.	Childcare and festival bonuses are available, but no transport, health insurance, subsidised meals, or structured training.	Compliance factories demonstrate broader welfare initiatives, while non-compliance factories provide only basic legal benefits.
Health and Safety	Workers described clean workplaces, 6S practices, ventilation, safe drinking water, wastewater recycling, and safety measures.	Management reported medical facilities, PPE, fire drills, sanitation, and emergency exits but acknowledged excessive heat inside the factory.	Both factories prioritize safety, but the non-compliance factory still struggles with infrastructure issues affecting worker comfort.
Training and Skill Development	New workers receive one month of training, experienced workers receive refresher training.	No formal training centre; experienced workers are recruited instead.	Continuous training appears stronger in the compliance factory, supporting higher productivity and ESG awareness.

Worker Voice and Governance	Workers reported HR support and a Workers' Participation Committee that communicates with management.	Complaints are handled informally through supervisors; worker participation in decisions is limited.	Compliance factories provide more structured employee participation than non-compliance factories.
ESG Awareness	Workers recognize compliance, sustainability, LEED certification, and environmental practices.	Management understands ESG but cites financial barriers to full implementation.	ESG awareness exists in both settings, but implementation differs substantially.
Barriers to ESG Implementation	Few concerns reported by workers.	High production costs, expensive ETP installation, buyer pricing pressure, limited finance, and shortage of skilled workers.	Financial constraints are the primary barrier preventing full ESG compliance.

Source: Branun and Clarke Thematic Analysis(2006)

4.3 Computationally Supported Comparative Analysis

Following the qualitative coding procedure described in Section 3.12, the standardized interview evidence was organized into a structured dataset for comparative analysis. Each observation contained the factory identification, factory group, analytical code, dimension, indicator, descriptive score, reporting status, and supporting qualitative evidence. This structure maintained a direct connection between each numerical score and the original interview evidence from which the score was developed. The complete computational analysis was conducted using a Python-based computational notebook. An HTML-rendered version of the notebook was also produced to allow the analytical steps, tables, calculations, and graphical outputs to be reviewed without executing the original code. The computational notebook and its HTML-rendered

version are provided in the Appendix to support transparency and reproducibility. Before calculating the results, the dataset was checked to confirm the consistency of the factory codes, compliance groups, ESG dimensions, indicator names, scores, reporting status, and evidence. An important part of this process was distinguishing between a score of 0 and NR. A score of 0 represented interview evidence of an absent, weak, or clearly inadequate practice. NR represented information that was not sufficiently reported or was not applicable. NR values were therefore excluded from the average calculations rather than being treated as zero. The computational analysis was used to examine the data from six related perspectives: overall factory performance, Environmental-Social-Governance performance, individual indicator patterns, higher- versus lower-compliance groups, the three theoretical perspectives, and worker health and productivity outcomes. These outputs are not separate statistical tests. Instead, they provide different views of the same qualitative evidence. The broad scores identify patterns, while the original interview evidence is used to explain why those patterns appear. The first comparison examines the overall descriptive score for each factory. Scores for all reported indicators were averaged within each factory. This provides a general view of the relative position of the four cases before examining the individual ESG dimensions in greater detail.

Table 4.3: Overall Descriptive Score by Factory

Factory	Compliance Group	Average Score (0–2)	Normalized Overall Score
Factory C1	Higher compliance	1.87	93.3%
Factory C2	Higher compliance	1.72	86.1%
Factory N2	Lower/partial compliance	1.16	57.9%
Factory N1	Lower/partial compliance	0.83	41.7%

Note: NR indicators were excluded from the calculation.

As shown in Figure 4.3, Factory C1 received the highest overall descriptive score at approximately 1.87 out of 2, followed by Factory C2 at approximately 1.72. Factory N2 scored approximately 1.16, while Factory N1 received the lowest overall score at approximately 0.83.

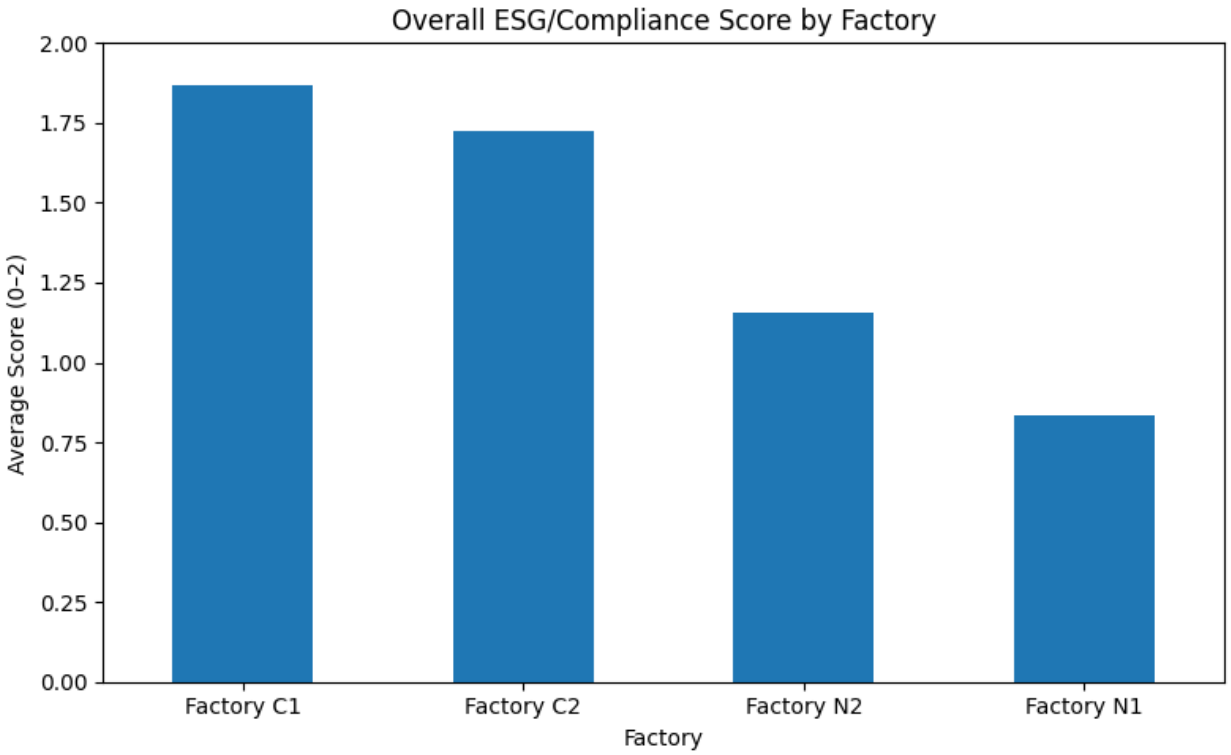


Figure 4.3. Overall ESG/Compliance Score by Factory

Source: Author's Analysis based on Interview Data, 2026

The result shows a clear overall difference between the two higher-compliance factories and the two lower/partial-compliance factories. However, the result also shows that ESG compliance is not simply divided into two opposite categories.

Factory N2 is particularly important in this comparison. Although it was placed in the lower/partial-compliance group, its overall performance was considerably stronger than Factory N1. Factory N2 already had several formal systems, including written policies, HR and compliance structures, medical support, PPE, and fire and emergency systems. At the same time, important weaknesses remained in environmental investment, training, worker participation, and some welfare areas.

Factory N1 showed a different pattern. The factory provided an on-site doctor, a medical room, PPE, ETP and some basic forms of worker support, but several formal systems were absent or weak. These included a dedicated HR department, formal worker participation, a structured

training programme, and comprehensive written ESG-related policies. Financial capacity was also repeatedly identified as an important limitation.

Therefore, the overall analysis suggests that ESG compliance operates more as a continuum than as a simple compliant versus non-compliant condition. A factory can have some strong safety or worker-support practices even where the wider ESG system remains incomplete**.** The findings of this study support the view that ESG adherence should be understood as a continuum rather than a binary condition (Diomande, 2026)**.** Although factories were categorized as relatively ESG-compliant or non-compliant for comparative purposes. For example, a factory with relatively weak environmental practices may nevertheless maintain adequate workplace safety measures and worker-support mechanisms. One participant state that*(case 2)*

"We have a doctor and a medical room in the factory for workers' health needs. We also provide PPE. For wastewater, we use a shared ETP with nearby factories, which helps us treat and reuse the water and reduce the cost"

4.4 Environmental, Social and Governance Dimensions

The overall factory score provides a broad comparison, but it does not show which particular areas are responsible for the differences between the cases. Therefore, the coded indicators were separated into the three main ESG dimensions: Environmental, Social, and Governance. The Environmental dimension included environmental practices, waste and wastewater management, resource and energy efficiency, and workplace conditions such as heat and ventilation. The Social dimension included occupational safety, PPE, medical support, training, childcare and maternity support, worker welfare, and wage or incentive support. The Governance dimension included written policies, compliance monitoring, grievance mechanisms, and worker participation. Average scores were calculated separately for each ESG dimension within each factory.

Table 4.4: Average ESG Dimension Scores by Factory

Factory	Environmental	Social	Governance
Factory C1	1.50	2.00	1.50

Factory	Environmental	Social	Governance
Factory C2	2.00	2.00	1.00
Factory N1	1.00	1.00	0.25
Factory N2	0.67	1.29	1.25

Note: Scores range from 0 to 2. NR indicators were excluded.

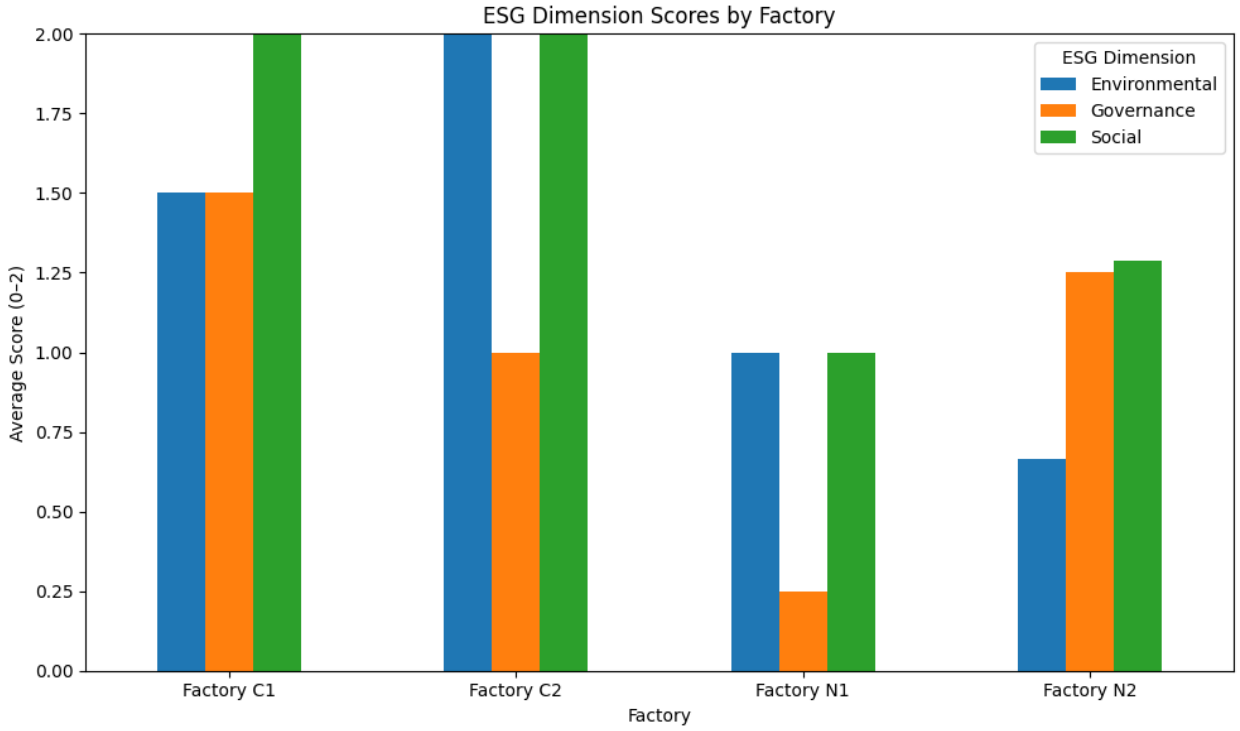


Figure 4.4. Environmental, Social and Governance Scores by Factory

Figure 4.4 shows that the strongest and most consistent difference appears in the Social dimension. Both Factory C1 and Factory C2 received an average social score of 2.00, while Factory N1 scored 1.00 and Factory N2 scored approximately 1.29.

The strong social performance of Factory C1 was supported by occupational safety systems, PPE, medical support, formal training, childcare and maternity support, and other welfare facilities. Factory C2 also showed strong evidence of medical support, training, childcare, worker welfare, incentives, safe water, toilets, and workplace organization. Factory C2 is especially

important because much of this evidence came directly from workers and frontline employees rather than only from management.

The Environmental results show a wider difference across the cases. Factory C2 received the highest environmental score of 2.00, reflecting green practices, resource-efficiency awareness, wastewater treatment and recycling, and workplace ventilation.

Factory C1 received an environmental score of 1.50. The factory reported improvements in workplace environmental conditions, particularly after additional fans were introduced to reduce heat stress. Some environmental indicators, however, were either not applicable or were not sufficiently reported. For example, Factory C1 did not operate an ETP because it did not conduct dyeing or washing operations. This item was therefore recorded as NR rather than being incorrectly treated as poor environmental performance.

Factory N2 received the lowest Environmental score at approximately 0.67. Although the factory had a formal environmental policy, an ETP had not been installed, and excessive summer heat remained an important workplace problem. Financial limitations were identified as one of the major barriers to stronger environmental investment.

Factory N1 scored 1.00 in the Environmental dimension. It used a shared ETP arrangement with nearby factories to reduce operating costs. This indicates some environmental action, but the broader environmental management system remained less developed than those of the higher-compliance factories.

Governance presents a different pattern. Factory C1 received a score of 1.50, supported by a dedicated compliance team, HR functions, inspections, audit documentation, and coordination with external auditors. Factory C2 received 1.00. Its worker interviews reported HR representatives, worker complaint channels, and some worker representation, but they did not provide complete information about the wider formal governance structure.

Factory N1 had the lowest Governance score at 0.25. The interview indicated weak formal governance arrangements, including the absence of written policies in several areas, no dedicated HR department, and little formal worker participation.

Factory N2, in contrast, received a Governance score of 1.25. The factory had formal written policies and established HR and compliance structures despite being classified as only partially compliant. However, worker participation and grievance arrangements remained weaker.

This comparison shows why formal governance structures alone do not guarantee full ESG implementation. Factory N2 provides the clearest example. Formal policies and compliance structures existed, but important gaps remained in environmental conditions, training, worker participation, and worker welfare. Previous research similarly shows that buyer-driven compliance requirements can result in formal compliance systems without necessarily ensuring meaningful improvements in actual workplace practices (Alamgir & Banerjee, 2019) Quote from case no 1:

"We maintain these mainly because international buyers and certification bodies require them."

4.5 Indicator-Level ESG Comparison

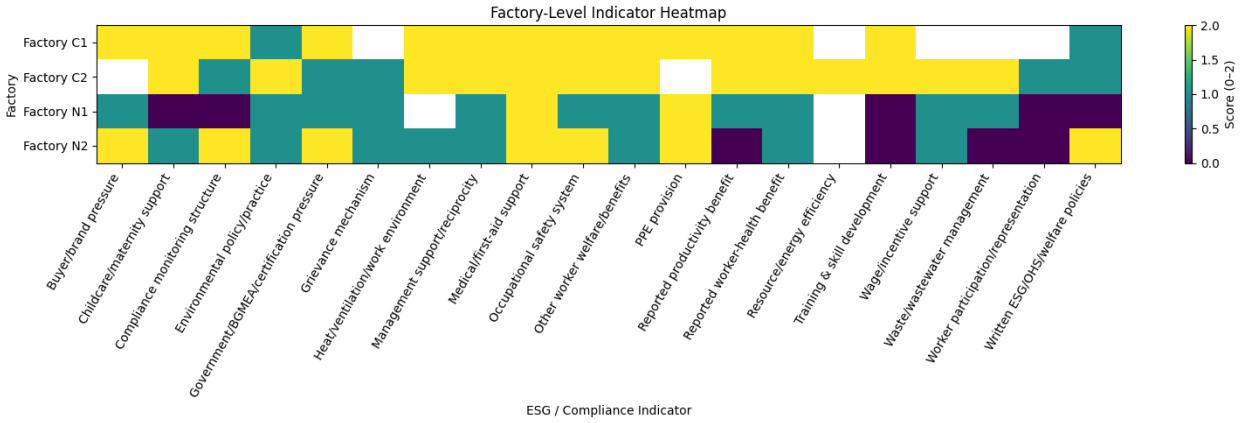
The ESG dimension averages provide a useful summary, but they can hide important differences between individual workplace practices. Therefore, the analysis was also conducted at the individual indicator level.

The factory scores were arranged in a matrix and visualized using a heatmap. This allowed areas of common strength, common weakness, and major differences to be seen more clearly.

Table 4.5: Indicator-Level ESG Scores

Indicator	**C1**	**C2**	**N1**	**N2**
Environmental policy/practice	1	2	1	1
Waste/wastewater management	NR	2	1	0
Resource/energy efficiency	NR	2	NR	NR
Heat/ventilation/work environment	2	2	NR	1
Occupational safety system	2	2	1	2
PPE provision	2	NR	2	2

Indicator	**C1**	**C2**	**N1**	**N2**
Medical/first-aid support	2	2	2	2
Training and skill development	2	2	0	0
Childcare/maternity support	2	2	0	1
Other worker welfare/benefits	2	2	1	1
Wage/incentive support	NR	2	1	1
Written ESG/OHS/welfare policies	1	1	0	2
Compliance monitoring structure	2	1	0	2
Grievance mechanism	NR	1	1	1
Worker participation/representation	NR	1	0	0



Source: Author's Analysis based on Interview Data, 2026

Figure 4.5. Factory-Level Indicator Heatmap

The heatmap shows several important patterns that are less visible in the overall averages.

First, medical and first-aid support was consistently strong across all four factories. Every factory received a score of 2 for this indicator. Therefore, medical support alone does not clearly distinguish the higher-compliance factories from the lower-compliance factories.

A similar pattern appears in PPE and some areas of occupational safety. PPE was strongly reported in Factory C1, Factory N1, and Factory N2. Factory C2 was recorded as NR for PPE because the worker interviews did not provide sufficient direct information on this specific indicator. Occupational safety was also relatively strong in several cases, including Factory N2. These findings suggest that some basic worker-protection systems can exist even where the overall ESG system is incomplete. The strongest differences appear in training and skill development. Both Factory C1 and Factory C2 received a score of 2, while Factory N1 and Factory N2 both received a score of 0.

Factory N1 reported that experienced employees were generally recruited rather than being developed through a formal training programme. Factory N2 similarly reported no regular internal training programme. In contrast, the two higher-compliance factories had more structured systems for worker training and skill development. Childcare and maternity support also separated the cases. Factory C1 and Factory C2 both received scores of 2. Factory N1 received 0 because no formal childcare programme was reported, while Factory N2 received 1 because childcare was available but the overall support system was more limited.

Worker welfare showed the same general direction. The higher-compliance factories had broader welfare arrangements, while the lower-compliance cases generally provided more basic or limited support. The Governance indicators provide another important contrast. Factory N2 received strong scores for written policies and compliance monitoring even though it was not fully compliant. This confirms that written policies and formal structures can exist without complete implementation.

Factory N1 showed the opposite pattern, receiving a score of 0 for written ESG/OHS/welfare policies and 0 for compliance monitoring structure. Worker participation was one of the weakest indicators across the four cases. Factory N1 and Factory N2 both received scores of 0. Factory C2 received a score of 1 because worker representatives or the Worker Participation Committee were mentioned, although systematic worker consultation was not clearly established. Factory C1 was recorded as NR because the management interview did not provide enough information

on this issue. This finding is important because it suggests that worker voice may remain weaker than technical compliance areas such as PPE, fire safety, and medical support.

Overall, the heatmap demonstrates why ESG performance should not be judged based on only one or two visible practices. A factory may have good PPE, medical facilities, or fire safety while still lacking training, worker participation, grievance mechanisms, environmental investment, or broader welfare systems.

4.6 Higher- and Lower-Compliance Group Comparison

The factory-level analysis showed differences among the individual cases. To examine whether a broader pattern existed, the factories were then combined into two analytical groups. Factory C1 and Factory C2 formed the higher-compliance group, while Factory N1 and Factory N2 formed the lower/partial-compliance group.

The Environmental, Social, and Governance scores were averaged within each group. This comparison was used only as a descriptive case comparison. Because each group contained only two factories, no inferential statistical testing was conducted.

Table 4.6: ESG Scores: Higher- vs Lower-Compliance Factory Groups

ESG Dimension	**Higher-Compliance Group**	**Lower/Partial-Compliance Group**
Environmental	1.83	0.80
Social	2.00	1.14
Governance	1.17	0.75

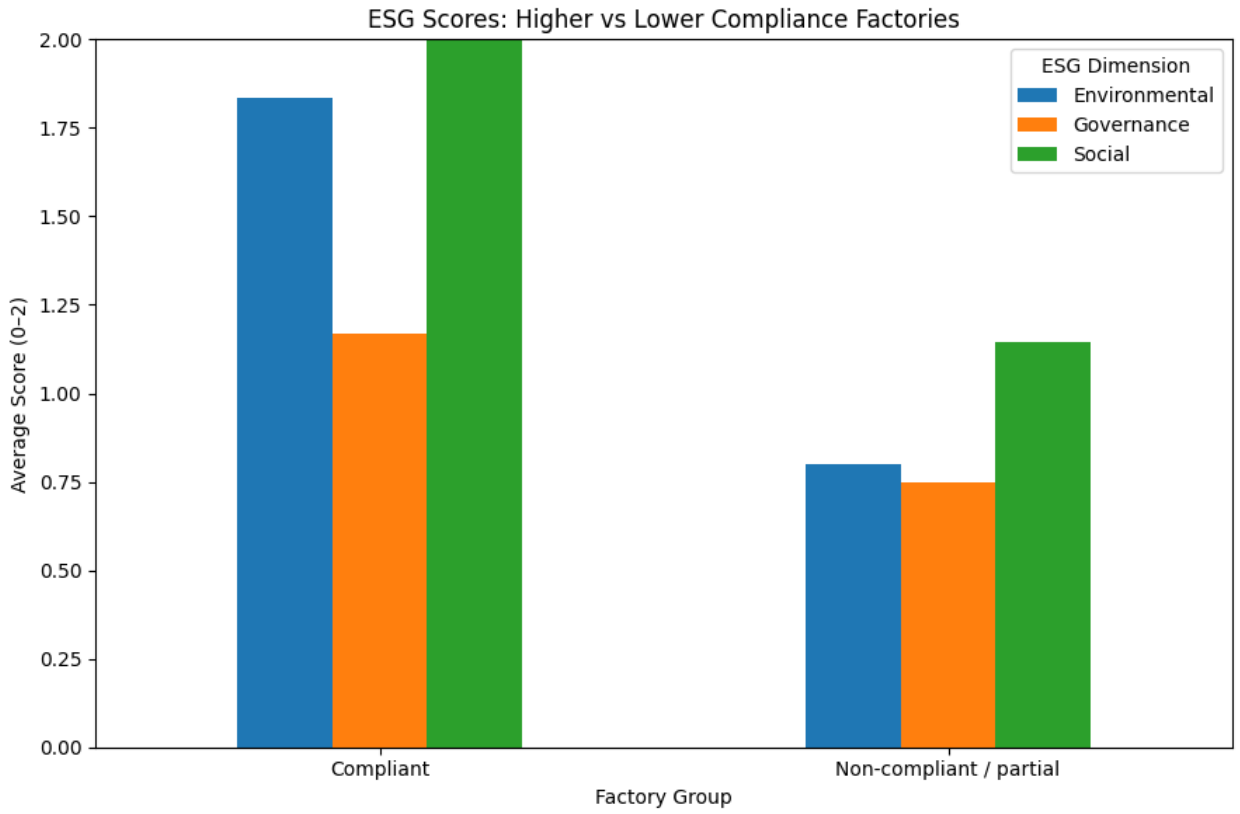


Figure 4.6. ESG Scores: Higher- vs Lower-Compliance Factories

Source: Author's Analysis based on Interview Data, 2026

Figure 4.6 shows that the higher-compliance group scored higher in all three ESG dimensions.

The largest difference appears in the Environmental dimension, where the higher-compliance group received an average score of approximately 1.83, compared with 0.80 for the lower/partial-compliance group.

This difference reflects stronger environmental practices in Factory C2 and better workplace environmental controls in Factory C1. In contrast, the lower-compliance factories faced greater financial and implementation limitations, particularly regarding environmental infrastructure and heat control.

The Social dimension also shows a substantial difference. The higher-compliance group received an average score of 2.00, while the lower/partial-compliance group scored approximately 1.14.

This difference cannot be explained simply by medical facilities or PPE because these basic practices were present in several factories from both groups. The clearer difference comes from

the broader social system. The higher-compliance factories provided more structured training, childcare, welfare programmes, and other forms of worker support.

The Governance difference is smaller. The higher-compliance group scored approximately 1.17, compared with 0.75 for the lower/partial-compliance group.

One reason for this smaller gap is Factory N2. Although it was classified as partially compliant, it already had written policies and formal compliance structures. At the same time, Governance was not perfect in the higher-compliance group. Worker participation and grievance-system evidence remained incomplete or moderate in some cases.

The group comparison therefore supports the main expectation of the study that stronger ESG implementation is associated with stronger workplace practices. However, the results also show that the differences are more visible in some areas than others. Basic safety and medical support may be found across different compliance levels, while structured environmental systems, training, welfare, and organizational practices provide a clearer separation between higher and lower ESG implementation.

4.7 Theoretical Interpretation of ESG Practices

The next part of the computational analysis examined the evidence through the three theoretical perspectives used in this study: Stakeholder Theory, Institutional Theory, and Social Exchange Theory.

The purpose of the analysis was not to statistically test these theories. Instead, evidence related to each theoretical mechanism was identified and compared across the four cases.

Stakeholder Theory was represented mainly by evidence concerning international buyers, brands, buying houses, buyer requirements, and audits. Institutional Theory was represented by government regulations, BGMEA requirements, certifications, audits, and formal industry rules. Social Exchange Theory was represented by organizational support, welfare, incentives, workplace treatment, worker motivation, and reciprocal worker responses.

Table 4.7: Evidence for the Three Theoretical Perspectives

Factory	Stakeholder Theory	Institutional Theory	Social Exchange Theory
Factory C1	2	2	2
Factory C2	NR	1	2
Factory N1	1	1	1
Factory N2	2	2	1

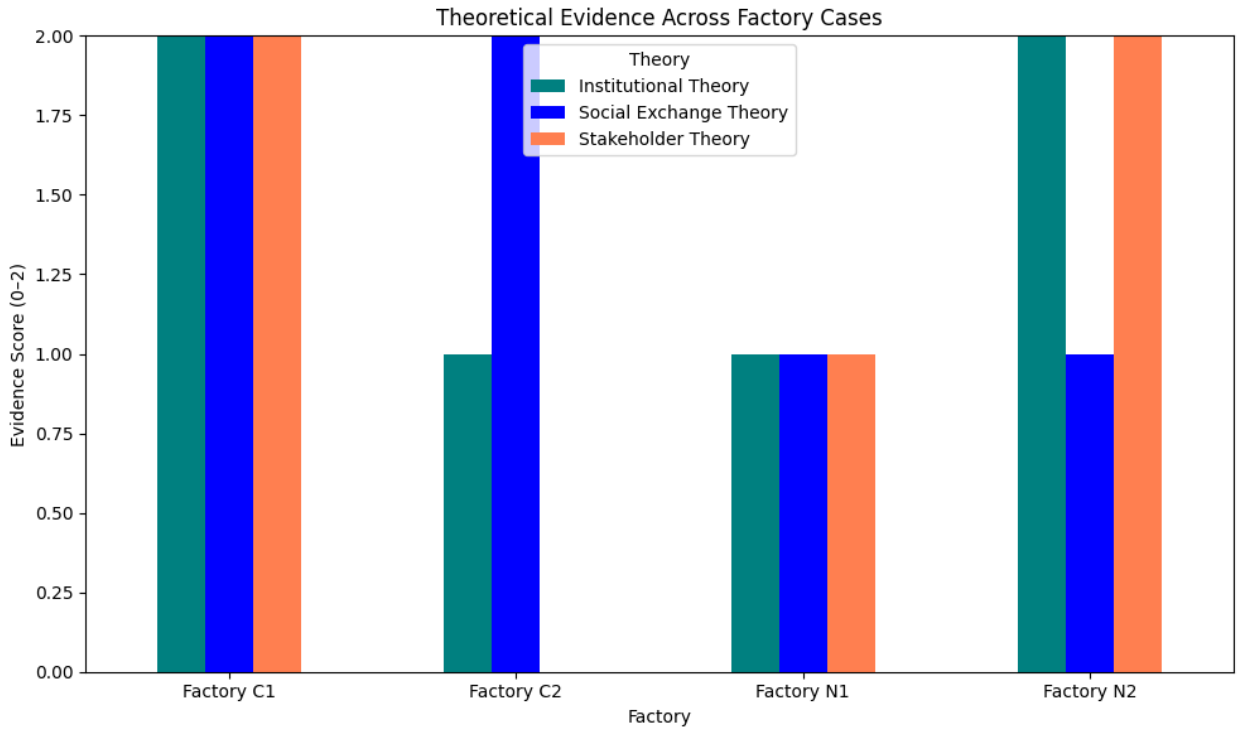


Figure 4.7. Evidence for the Three Theoretical Perspectives Across Factories

Source: Author's Analysis based on Interview Data, 2026

4.7.1 Stakeholder Theory

Stakeholder Theory is most clearly demonstrated in Factory C1 and Factory N2. Both received a score of 2 for buyer and brand pressure.

In Factory C1, international buyer requirements and audits were important reasons for maintaining compliance systems, standards, and documentation. This indicates that external customers have considerable influence over factory practices.

Factory N2 showed a similar relationship. The factory reported strong requirements from international buyers and buying houses, including formal standards such as BSCI, RSC, and other compliance expectations.

Factory N1 received a score of 1, showing a weaker but still visible stakeholder influence. International buyers and buying houses required compliance, but the factory mainly received orders through third-party buying houses and had less direct contact with international buyers.

The respondent suggested that this lower level of direct buyer exposure reduced the immediate pressure to meet higher international standards.

This finding supports Stakeholder Theory because buyer expectations clearly influence ESG behaviour. However, the cases also show that external pressure by itself may not be enough. A factory may understand buyer expectations but still lack the financial resources, infrastructure, or management capacity required to meet them fully.

This is particularly relevant for smaller factories such as N1. Buyer pressure can encourage improvement, but the cost of implementation may remain largely with the factory.

4.7.2 Institutional Theory

Institutional Theory is also strongly reflected in the results.

Government regulations, BGMEA requirements, certification systems, industry rules, BSCI, RSC, and formal audit requirements influenced the factories at different levels. Factory C1 and Factory N2 received the strongest Institutional Theory scores. Factory C1 connected compliance with national labour requirements and formal audits. Factory N2 also discussed formal policies, industry standards, government expectations, and the role of BGMEA. Factory N1 followed basic BGMEA requirements despite having weaker internal structures. This indicates that even lower-compliance factories remain influenced by the wider institutional environment. The comparison shows that factory behaviour is not determined only by management preferences. Factories operate within a wider system of government regulations, trade-association

requirements, industry standards, audit processes, and certifications. However, the findings also show that the existence of rules does not guarantee equal implementation. Financial capacity, factory size, buyer relationships, and management systems influence how effectively institutional requirements become actual workplace practices.

Therefore, Institutional Theory helps explain why similar formal expectations can produce different implementation outcomes across factories.

4.7.3 Social Exchange Theory

Social Exchange Theory is particularly important for explaining the worker-related findings.

Factory C1 and Factory C2 showed the strongest evidence of organizational support. Factory C2 is especially valuable because the evidence came directly from workers. Employees described training, medical support, childcare, welfare programmes, attendance incentives, performance incentives, and special support arrangements. These practices can be understood as forms of organizational support. Under Social Exchange Theory, workers who perceive that the organization supports their welfare may respond through stronger commitment, motivation, cooperation, or performance. Factory C1 showed a similar pattern through medical support, maternity benefits, childcare, formal training, and improvements in workplace conditions. However, the evidence mainly represents the management perspective rather than direct worker perceptions. Factory N1 and Factory N2 showed more mixed relationships. Both provided important forms of basic safety and medical support, but formal training, worker participation, and broader welfare arrangements were weaker. This difference is important. Providing minimum occupational safety or medical support is not necessarily the same as creating a broader workplace relationship based on employee development, participation, welfare, and organizational support. Taken together, the three theories explain different parts of the ESG process. Stakeholder Theory explains the external pressure mainly coming from buyers and brands. Institutional Theory explains the influence of government regulations, associations, certifications, and formal industry rules. Social Exchange Theory helps explain how internal workplace support and treatment may influence worker attitudes, well-being, and productivity.

The findings therefore suggest that ESG implementation is shaped by a combination of external market pressure, institutional requirements, and internal worker-management relationships, rather than by one factor alone.

4.8 Worker Health and Productivity Outcomes

The final computational analysis focused directly on the two main outcomes of this study: worker health and worker productivity. The coded evidence related to reported health benefits and productivity benefits was extracted and compared across the four factories. These results connect the ESG analysis directly with the main purpose of the thesis.

Table 4.8: Reported Worker Health and Productivity Outcomes

Factory	Worker Health Benefit	Productivity Benefit
Factory C1	2	2
Factory C2	2	2
Factory N1	1	1
Factory N2	1	0

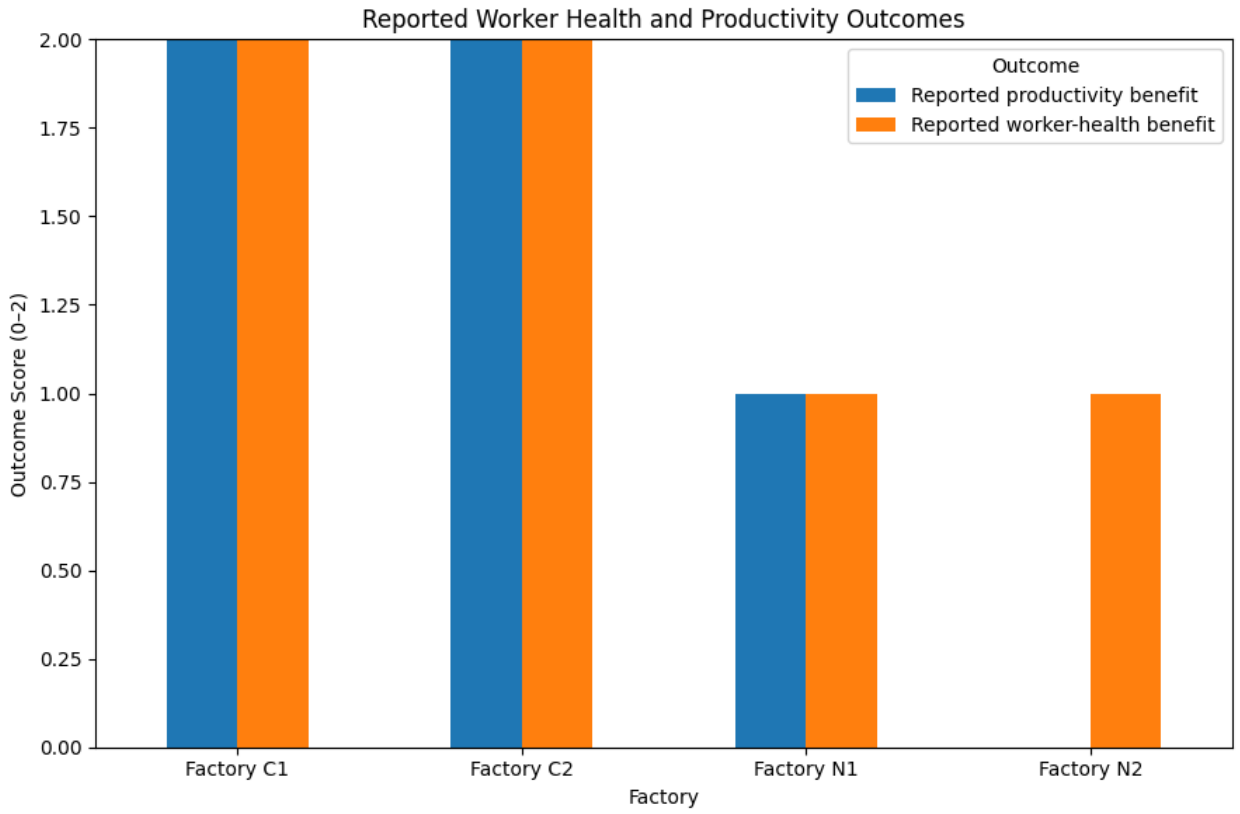


Figure 4.8. Reported Worker Health and Productivity Benefits by Factory

Figure 4.8 shows the clearest overall difference between the higher- and lower-compliance cases. Factory C1 and Factory C2 both received scores of 2 for worker health and 2 for productivity. Factory N1 received a score of 1 for both outcomes, while Factory N2 received 1 for worker health and 0 for the current productivity benefit.

Factory C1 provides one of the clearest examples of the relationship between ESG practices, worker health, and productivity. The respondent reported that excessive heat had previously reduced worker efficiency. Additional fans were installed to improve air circulation and reduce heat stress. The improved workplace conditions were then associated with better worker comfort, health, and productivity.

This provides direct case evidence supporting the conceptual relationship proposed in the study:

ESG practices → improved worker health and working conditions → improved productivity

Factory C2 provides similar evidence from the workers' perspective. Workers described medical facilities, ventilation, safe drinking water, toilets, childcare, welfare support, and other workplace practices related to well-being.

Training was also directly connected with productivity. Workers reported that training helped improve skills and working ability. The 6S workplace system was also described as contributing to efficiency and reducing waste.

Factory N1 showed a more limited pattern. PPE, an on-site doctor, and a medical room supported some basic worker health needs. However, the interview did not provide strong direct evidence that these practices had already produced a measurable improvement in worker health.

Similarly, the respondent believed that stronger ESG compliance could improve factory performance and production capacity, but this was mainly an expected future benefit rather than a clearly observed improvement. This is why Factory N1 received partial scores rather than strong scores for both health and productivity outcomes.

Factory N2 provides an important contrasting case. The factory reported strong fire-safety measures, PPE, and medical support, but excessive summer heat remained an important workplace problem.

The respondent connected high temperature with worker discomfort and reduced productivity. Worker turnover was also identified as a factor affecting production performance.

This case illustrates an important issue: a factory can have formal compliance structures and several strong safety measures while still experiencing workplace conditions that negatively affect workers and productivity.

The comparison therefore suggests that formal policies alone are not sufficient. The practical implementation of ESG measures in the workplace is what determines whether they are likely to produce meaningful worker benefits.

4.9 Integrated Interpretation of the Quantitative Coding Results

Taken together, the six computational outputs show a consistent overall pattern.

The two higher-compliance factories performed better overall, especially in social practices, environmental management, training, childcare, welfare support, and reported health and productivity outcomes. At the same time, the lower/partial-compliance factories were not completely without worker protection. Both provided several important practices, particularly medical support, PPE, and occupational safety measures.

Therefore, lower compliance should not be interpreted as the complete absence of ESG practices.

The analysis instead suggests that the main difference between higher and lower ESG implementation is the breadth, structure, and consistency of practices.

Basic safety measures may be present across several types of factories. However, the higher-compliance factories were more likely to combine these basic protections with structured training, childcare, worker welfare, environmental management, formal compliance systems, and stronger workplace improvements.

The results also show that factory size alone does not determine ESG performance. Factory N2 was a large factory with approximately 3,000 workers and had formal policies and compliance structures, yet important gaps remained. Factory N1 was smaller and faced greater financial limitations.

This suggests that ESG implementation is influenced by several interacting factors, including financial capacity, management commitment, international buyer pressure, institutional requirements, factory infrastructure, and the ability to translate written policies into actual workplace practices.

A second major finding is the difference between policy and implementation.

Factory N2 had relatively strong written policies and compliance monitoring but weaker results in areas such as environmental conditions, training, worker participation, and productivity. In contrast, the higher-compliance factories combined formal systems with stronger worker-related practices.

This supports the central research concern of the study regarding the possible gap between formal ESG commitments and workers' actual workplace experience.

A third important finding concerns the relationship between ESG and worker outcomes.

The strongest direct evidence came from practical working conditions and social support. Better ventilation and heat control were associated with improved worker comfort and efficiency in Factory C1. Training was directly linked with improved skills and productivity in Factory C2. Medical support, childcare, occupational safety, and worker welfare also contributed to better reported working conditions.

In contrast, unresolved heat and worker turnover were associated with weaker productivity in Factory N2.

The theoretical comparison provides further explanation for these patterns. Buyer and brand requirements created important external pressure for compliance, supporting Stakeholder Theory. Government regulation, BGMEA requirements, certifications, and audit systems created broader institutional pressure, supporting Institutional Theory. Worker welfare, training, organizational support, incentives, and workplace treatment provided evidence for Social Exchange Theory.

The results therefore suggest that ESG implementation in Bangladesh's RMG factories does not arise from one single source. Rather, it develops through the interaction of external buyer expectations, institutional requirements, financial and organizational capacity, and the quality of worker-management relationships.

Overall, the findings support the conceptual framework of the study. Within the four selected cases, stronger ESG implementation was associated with stronger reported workplace conditions and better worker health and productivity outcomes.

However, the numerical scores should be interpreted carefully. This remains a qualitative multiple-case study, and the coded scores are structured summaries of interview evidence rather than formal audit scores or statistical measurements of the Bangladesh RMG industry. The computational analysis was used to improve consistency, comparison, and visualization; it does not replace the qualitative evidence.

The computational analysis was used to improve the consistency of the coding, comparative analysis, and graphical presentation of the findings. The analytical process maintained a clear connection between the qualitative interview evidence and the descriptive tables and figures presented in this chapter.

Together, these findings provide the basis for the conclusions and recommendations presented in Chapter 5

Chapter 5: Conclusions & Future Works

5.1 Conclusion

This study examined the influence of Environmental, Social, and Governance (ESG) practices on workers' health and productivity in Bangladesh's Ready-Made Garment (RMG) sector. The study used a qualitative comparative multiple-case approach covering four export-oriented RMG factories with different levels of ESG implementation. Two factories represented higher-compliance cases, while the other two represented lower or partial-compliance cases. Information collected from workers and management representatives was analyzed through thematic analysis and a structured descriptive coding approach.

The findings show that ESG practices are related to workers' health, workplace conditions, and productivity, but the level of implementation is different from one factory to another. The higher-compliance factories generally showed stronger practices in environmental management, occupational safety, training, childcare, worker welfare, and workplace support. They also showed stronger reported outcomes for worker health and productivity. However, the lower-compliance factories were not completely without ESG practices. Medical facilities, PPE, fire safety, and some basic welfare measures were also found in these factories. Therefore, the findings suggest that ESG implementation should not be understood only as compliant or non-compliant. In practice, there are different levels of implementation.

Among the three ESG dimensions, the Social dimension showed one of the clearest differences between the higher- and lower-compliance factories. Both higher-compliance factories had stronger systems for training, worker welfare, childcare, medical support, and occupational safety. The lower-compliance factories provided some basic support, but structured training and broader welfare facilities were more limited. This indicates that providing only basic safety facilities may not be enough to improve the overall working experience of employees.

Environmental practices also showed an important difference. Better ventilation, heat control, wastewater management, and resource-efficiency practices were more visible in the higher-compliance cases. Heat was an important issue identified from the factory evidence. In one

higher-compliance factory, additional fans were installed after heat was found to affect workers' comfort and efficiency. Improvement in ventilation was associated with better working conditions and productivity. On the other hand, excessive summer heat remained a problem in one of the lower/partial-compliance factories and was reported to affect worker comfort and productivity.

The findings regarding Governance were more mixed. Some lower or partially compliant factories already had written policies, HR structures, and compliance systems. However, having written policies did not always mean that ESG practices were fully implemented in the workplace. Worker participation, training, environmental investment, and grievance arrangements remained weak in some cases even where formal policies were present. This finding highlights an important gap between having ESG policies and actually implementing them in workers' everyday working conditions.

The findings also support the three theoretical perspectives used in this study. Stakeholder Theory helps to explain the role of international buyers, brands, and buying houses in influencing factory compliance. Buyer requirements and audits were important external pressures, especially in factories that worked more directly with international buyers. Institutional Theory explains the influence of government regulations, BGMEA requirements, certifications, industry standards, and formal audit systems. At the same time, the findings show that factories may respond differently to similar institutional requirements because of differences in financial capacity, management systems, infrastructure, and buyer relationships.

Social Exchange Theory provides an important explanation for the relationship between ESG practices and workers. Workers who receive better training, medical support, welfare facilities, childcare, incentives, and better workplace treatment may develop stronger motivation and commitment toward their work. In the higher-compliance cases, stronger organizational support was associated with better reported worker health and productivity outcomes. This suggests that workers should not only be considered as part of a compliance requirement but also as important stakeholders whose well-being can contribute to factory performance.

Overall, the study finds that stronger ESG implementation is associated with better reported workplace conditions, worker health, and productivity within the four selected factory cases. However, this relationship should be interpreted carefully. The study is qualitative and based on

a small number of purposively selected factories. The descriptive scores used in Chapter 4 are not formal ESG ratings or statistical measurements. They were used to organize and compare the qualitative evidence in a systematic way.

The main conclusion of this research is that ESG can create meaningful benefits for workers when policies are properly implemented at the factory level. Having policies, certificates, or audit documents alone is not enough. Practical actions such as maintaining a safe workplace, controlling excessive heat, providing medical support, developing workers through training, supporting childcare and welfare, and creating opportunities for worker participation are more directly connected with workers' daily experiences. Therefore, effective ESG implementation should focus not only on meeting external compliance requirements but also on improving actual workplace conditions.

5.2 Recommendations

Based on the findings of this study, several recommendations can be made for improving ESG practices in Bangladesh's RMG sector.

First, factories should give more attention to the practical implementation of ESG policies. Written policies and audit preparation are important, but management should regularly check whether these policies are actually improving workplace conditions. Particular attention should be given to ventilation, heat management, occupational safety, medical support, sanitation, and other conditions that directly affect workers.

Second, training and skill development should be strengthened, particularly in lower-compliance factories. The findings showed a clear difference in training between the higher- and lower-compliance cases. Regular training can improve workers' knowledge of safety and ESG practices while also improving their skills and productivity.

Third, worker welfare should be considered an important part of ESG implementation. Childcare, maternity support, medical facilities, incentives, safe drinking water, sanitation, and other welfare facilities can support workers' well-being and help create a more supportive working environment. Factories should also strengthen worker participation and grievance mechanisms so that workers can communicate their concerns to management without fear.

Fourth, international buyers and brands should recognize the financial difficulties faced by smaller factories. Buyer pressure can encourage factories to improve compliance, but environmental infrastructure, training systems, and other ESG improvements can require significant investment. More cooperation between buyers and suppliers may help factories improve ESG practices without placing the full financial burden on suppliers.

Government agencies, BGMEA, and other industry organizations should also continue to strengthen monitoring, training, and technical support. Particular support may be necessary for smaller factories that understand compliance requirements but do not have sufficient financial or technical capacity for full implementation.

Finally, future research should include a larger number of RMG factories from different regions of Bangladesh. Future studies may also include more workers and use both qualitative and quantitative methods. Long-term studies could examine whether improvements in ESG practices lead to measurable changes in worker health, absenteeism, turnover, production efficiency, and productivity over time.

5.3 Final Remarks

Bangladesh's RMG sector has made important progress in workplace safety, compliance, and sustainable production, but the findings of this study show that there is still a difference between formal compliance and actual implementation. ESG should therefore be viewed as an ongoing process rather than only a certification or audit requirement.

The long-term sustainability of the RMG industry depends not only on export growth and international competitiveness but also on the people working inside the factories. Improving workers' health, safety, welfare, participation, and working conditions can support both responsible production and better productivity. For this reason, stronger and more practical ESG implementation can benefit workers, factories, international buyers, and the future development of Bangladesh's RMG sector.

Appendix A

Appendix: In-Depth Interviews ESG-Noncompliant Factory

Case No.: 1

Factory Type: ESG Non-Compliant Factory

Participant Category**:** Management Representative

Present Occupation: Marketing Director

Age: 45 years

Experience: 10 years

Factory Size: Approximately 3,000 workers

Location: Kaliakair

Date: 22.07.2026

The participant is a 45-year-old Marketing Director with approximately 10 years of experience in the factory. The factory employs around 3,000 workers. His responsibilities include marketing, business development, attracting international buyers, maintaining buyer relationships, coordinating with the compliance department, and overseeing back-office operations.

How familiar are you with the concept of Environmental, Social, and Governance (ESG)? What are the main reasons your factory has not yet fully adopted ESG or international compliance standards?

I am familiar with ESG and understand what international buyers expect from us. We are trying to follow ESG requirements, but the main problem is the cost. For example, if we want to install and maintain an ETP, it requires a very large investment. Buyers want us to maintain these standards, but they do not normally share the cost with the factory. So, even though we are willing to comply, financial limitations make it difficult for us to implement everything. We do, however, follow mandatory requirements such as BSCI and the specific codes of conduct required by our buyers.

Does your factory currently have any written policies related to worker welfare, occupational health and safety, environmental protection, or ethical business practices?

"*Yes, we have written policies for worker welfare, occupational health and safety, environmental issues, and ethical business practices. We maintain these mainly because international buyers and certification bodies require them. For example, we make sure workers receive their salaries on time and we follow the codes of conduct required by buyers. But I would say there are still areas where we need improvement. One important issue is the heat inside the production floor, especially during summer. We have installed exhaust fans, but sometimes they are not enough. The excessive heat can affect workers' comfort, health, and also their productivity.*

In your opinion, what are the biggest challenges your factory faces in improving workers' welfare and workplace conditions?

"One of our biggest challenges is the increasing cost of production. We need to invest in infrastructure, occupational health and safety, environmental measures, and worker welfare. At the same time, buyers put pressure on us regarding product prices. They expect high-quality products and compliance with international standards, but there is limited flexibility in the prices they offer. This makes it difficult to allocate additional resources for ESG improvements. Another challenge is employee turnover. When workers leave frequently, we have to recruit and train new workers, which increases costs and affects productivity. Therefore, financial limitations remain a major barrier to making significant ESG improvements."

Case No.: 2
Factory Type**:** ESG Non-Compliant Factory
Participant Category**:** Management Representative
Present Occupation: supervisor
Age: 53 years
Experience: 32 years
Factory Size: Approximately 500 workers
Location: Mirpur
Date: 28.07.2026

Could you briefly describe your role and responsibilities within the factory?
"*I have been working in the garment industry for almost 32 years. I actually started my career as a general worker, and gradually, with experience, I became a supervisor. At present, I supervise*

the overall production activities and make sure that the work is being carried out properly. I also look after production and quality-related issues and coordinate with other staff when necessary. Since our factory does not have a separate HR department, some HR-related responsibilities are also handled by the managerial staff."

Does the factory provide any welfare programmes for workers?
"*We provide some welfare facilities, although they are limited. We have childcare facilities for workers with young children, and workers receive the two annual festival bonuses required by law. When workers do overtime, we also provide light snacks. However, we do not provide transportation services or regular subsidised meals. We also do not currently provide health insurance or have a formal employee loan programme. Another limitation is worker training. We do not regularly provide training for new workers. We normally prefer to recruit experienced workers, and inexperienced people are expected to obtain training externally before joining the factory."*

How can workers raise complaints or concerns?
"*Normally, if workers have a complaint or problem, they first speak to their line manager or floor supervisor. The supervisor tries to solve the issue at the production level. If it cannot be resolved there, the matter is referred to the HR department. We have an HR department, but some other formal grievance mechanisms are not very active. For example, complaint boxes are not regularly used, and workers have limited awareness of anonymous complaint systems. We also do not have an active trade union, and the Worker Participation Committee has a limited role. In practice, workers usually feel more comfortable speaking to their immediate supervisors."*

Case No. 3

Factory Type: ESG Non-Compliant Factory
Participant Category: Management Representative
Present Occupation: Quality Checker
Age: 36
Experience: 5 years
Location: Mirpur
Date: 28.07.2026

Could you briefly describe your position and responsibilities within the factory?
"*I work as a quality checker. My main responsibility is to check the quality of garments during production and before the products move to the next stage. I have to identify quality problems and communicate them to the production team so that corrections can be made. From my position, I also observe how production pressure and workplace conditions can affect both workers and product quality.*"

What are the main challenges to improving ESG and workplace conditions?
"*From what I see, financial limitations and production pressure are major challenges. The*

factory has to maintain quality and meet buyer requirements, but at the same time there are costs involved in improving workplace facilities and compliance. When orders or financial resources are limited, it becomes difficult for management to make all the improvements at once."

Case No. 4

Factory Type: ESG Non-Compliant Factory
Participant Category: Worker
Present Occupation: Helper
Age: 27, Female
Experience: 3 years
Location: Kaliakair
Date: 28.07.2026

How do you raise a complaint when you face a problem at work?
"*If I have a problem, normally I tell my supervisor first. We do not have a worker representative that we regularly go to. So, for us, the supervisor is usually the first person we approach when something happens on the production floor*."

What welfare facilities are available to workers?
"*There are some basic facilities, but not many additional welfare programmes. Medical support is available if we become sick or need first aid. But facilities such as employee loans or some other welfare benefits are limited."*

Case No. 5

Factory Type: ESG Non-Compliant Factory
Participant Category: Worker
Present Occupation: Helper
Age: 31, Female
Experience: 6.5 years
Location: Kaliakair
Date: 22.07.2026

How would you describe health and safety in the factory?
"*We have some health and safety facilities. There is medical support in the factory, and workers receive protective equipment depending on their work. These things are helpful, but workplace conditions can still be improved."*

Are you consulted about decisions affecting your working conditions?
"Usually, management makes the decisions. Workers are not regularly asked for their opinions before a decision is made. We normally hear about the decision after management has decided what will happen."

Case No. 6

Factory Type: ESG Non-Compliant Factory
Participant Category: Worker
Present Occupation: Helper
Age: 31, Female
Experience: 6.5 years
Location: Mirpur
Date: 28.07.2026

What improvements would you like to see in worker welfare?
"*I think workers would benefit from more welfare support. Some basic benefits are available, but things like regular meal support, transportation, health insurance, or financial assistance could make a difference for workers*."

Does the factory provide training?
"*There is no regular formal training programme for workers. The factory generally prefers people who already have experience. So, workers mostly depend on the skills they already have when they join*."

Case No. 7

Factory Type: ESG Non-Compliant Factory
Participant Category: Worker
Present Occupation: Helper
Age: 33, Male
Experience: 6.5 years
Location: Kaliakair
Date: 22.07.2026

What workplace challenges do you observe?
"*Production has to continue according to the orders we receive, so there can be pressure on the production floor. At the same time, workplace conditions need continuous improvement. For example, heat inside the production area can become difficult during summer. Exhaust fans are available, but sometimes they are not enough*."

How are workers' concerns communicated to management?
"*Usually, a worker first talks to the supervisor about a problem. If the issue cannot be solved at that level, it can be taken further. Most communication happens through the supervisory structure rather than through a formal worker representative*."

Case No. 8

Factory Type: ESG Non-Compliant Factory
Participant Category: Worker
Present Occupation: Helper
Age: 28, Female
Experience: 4 years

Location: Mirpur
Date: 28.07.2026

What health and safety support do workers receive?
"*We receive basic health and safety support in the factory. Medical and first-aid facilities are available, and workers are provided with safety equipment depending on the work they do. These facilities are important because we spend a large part of the day on the production floor*."

What do you think could improve workers' working conditions?
"*Better welfare facilities and improvements to the working environment would help workers. More training would also be useful because formal worker training is limited. Workers should also have more opportunities to communicate their opinions and concerns to management."*

Appendix: In-Depth Interviews ESG-Compliant Factory

Case No. 1: Director
Factory Type: ESG-Compliant Factory
Participant Category: Management Representative
Present Occupation: Director / Marketing and Merchandising
Experience: 12 years
Location: Not specified
Date: Not specified

Could you briefly describe your role and responsibilities within the factory?
"*I have been involved with this factory for around 12 years. My responsibilities mainly cover the director-level functions as well as marketing and merchandising. I am involved in dealing with buyers, business-related activities, and different aspects of factory operations. From the management perspective, compliance is very important for maintaining relationships with buyers, although I would also say that being compliant does not automatically mean that a factory is a green factory."*

What ESG practices are implemented in your factory?
"*We have different compliance practices in the factory, and there is a dedicated compliance team responsible for looking after these issues. ESG involves environmental, social, and governance aspects, so we have to consider worker welfare and safety as well as environmental practices and management systems. Compliance is continuously monitored because buyers expect us to maintain the required standards."*

What motivated your factory to adopt ESG practices?
"*Buyer requirements are one of the major reasons. If we want to work with international buyers, we have to meet their compliance expectations. Legal compliance is also important. At the same time, maintaining good standards helps the factory remain competitive and protects its reputation. Management therefore has to remain committed to compliance and continuous improvement."*

How does the factory ensure workers' health and safety?
"Worker health and safety are important parts of compliance. We have workplace safety measures, PPE, fire-safety arrangements, health services, and safety-related training. These areas have to be maintained because both workers and buyers expect the factory to provide a safe working environment."

What welfare facilities are available for workers?
"Different welfare facilities are provided for workers, including medical support, maternity-related benefits, childcare, drinking water and sanitation facilities. Training and development are also important because workers need the skills required to perform their jobs properly."

How is ESG compliance monitored?
"*We have a whole compliance team that monitors these matters. Compliance is also reviewed through buyer requirements and audits. Internal monitoring is important because we cannot wait for an external audit to identify every issue. Management has to continuously review whether the required standards are being followed*."

What challenges do you face in implementing ESG?
"*Cost is definitely one of the challenges. There are also issues related to awareness, worker participation, government regulations, buyer expectations, import-related matters, and resource limitations. Buyers expect high standards, so factories have to continuously invest and improve."*

What support would improve ESG implementation?
"Government support, BGMEA support, cooperation from international buyers, more training, and financial incentives could help factories improve further. ESG is a continuous process, so factories need support from different stakeholders as standards and buyer expectations continue to develop."

Case No. 2: HR Personnel
Factory Type: ESG-Compliant Factory
Participant Category: Management Representative
Present Occupation: HR Personnel
Location: Not specified
Date: Not specified

How does the HR department support workers when they face health problems?
"*We have HR support available at the floor level. If a worker becomes sick during working hours, the worker can be taken to the HR room first for immediate assistance. If additional treatment is required, the worker is referred to the factory medical centre. In a serious situation, the factory can also provide a referral letter so that the worker can receive treatment at a hospital."*

What welfare facilities are provided for workers?
"*The factory provides different welfare facilities. For example, we have a childcare centre on the ground floor where eligible workers can leave their children. Management may also make*

special arrangements when a worker has a particular personal situation. Welfare programmes are organised, and management tries not to create unnecessary pressure on workers."

How can workers raise complaints?
"*Workers are informed about factory rules and procedures, including where they can submit complaints when they face a problem. HR personnel are available on the floors, so workers can communicate workplace concerns through the established channels*."

What role does worker participation play in the factory?
"*The factory has a Workers' Participation Committee that can raise workplace concerns. When there is a serious issue, worker representatives can communicate with management, and if necessary, support can also be sought from BGMEA. This creates a channel between workers and management."*

Case No. 3: Compliance Officer

Factory Type: ESG-Compliant Factory
Participant Category: Management Representative
Present Occupation: Compliance Officer
Location: Not specified
Date: Not specified

What are your main responsibilities regarding ESG and compliance?
"*Our responsibility is to make sure the factory follows the required compliance standards. We look at environmental, social, worker-safety, and governance-related requirements. Buyer requirements are also important because international buyers expect factories to maintain specific standards."*

How is compliance monitored?
"*The factory has a compliance team responsible for internal monitoring. Buyer audits and other external assessments are also important. Management reviews compliance issues, and when a gap is identified, corrective measures have to be considered*."

What environmental practices are visible in the factory?
"*The factory follows sustainability practices related to resource consumption, energy efficiency, workplace management, and wastewater treatment. Wastewater from dyeing is treated and recycled before being reused for non-potable purposes. We also have practices connected with green-factory and sustainability requirements*."

What are the major challenges in maintaining ESG compliance?
"*The major challenges include cost, awareness, worker participation, government requirements, buyer expectations, and limited resources. Compliance cannot be treated as a one-time activity. It requires continuous monitoring and improvement*."

Case No. 4: Supervisor

Factory Type: ESG-Compliant Factory
Participant Category: Management Representative
Present Occupation: Supervisor
Age: 38 years
Gender: Male
Experience: 5 years
Location: Not specified
Date: Not specified

How long have you been working in the garment industry?
"*I am 38 years old and have around five years of experience in the garment industry. At present, I am working as a supervisor. My position requires me to remain involved with the workers and day-to-day production activities."*

What does sustainability or a green factory mean to you?
"*From my understanding, sustainability and a green factory are related to things such as LEED Platinum certification, responsible resource consumption, energy saving, and efficient use of electricity. A green factory should try to reduce unnecessary consumption and operate in an environmentally responsible way*."

Do you think ESG practices are important for workers?
"*Yes. ESG and compliance practices can influence the workplace environment, worker safety, and welfare. Workers may not always know the term ESG, but they are familiar with many of the compliance practices they experience inside the factory*."

Case No. 5: Manager
Factory Type: ESG-Compliant Factory
Participant Category: Management Representative
Present Occupation: Manager
Status: Constructed/adapted role-specific case
Location: Not specified
Date: Not specified

Question 1: Why is ESG important for factory management?
"ESG and compliance are important because they affect buyer relationships, legal requirements, competitiveness, and the reputation of the factory. International buyers expect factories to maintain certain standards, so management has to ensure that these requirements are incorporated into factory operations."

Question 2: How does management support worker welfare?
"*The factory provides several forms of worker support, including medical assistance, childcare facilities, safe drinking water, sanitation, training, attendance bonuses, and performance incentives. Management can also make special arrangements depending on individual circumstances."*

Question 3: What role does training play in improving productivity?
"*Training is important because it improves workers' skills and competence. New workers can receive longer training, while experienced workers need a shorter orientation or training period. Better skills can improve productivity and help workers perform their jobs more effectively."*

Question 4: What challenges remain?
"Even in a compliant factory, improvement is an ongoing process. Cost, buyer expectations, awareness, worker participation, regulations, and resource limitations can all create challenges. Management therefore has to continue reviewing and improving factory practices."

Case No. 6: Quality Checker
Factory Type: ESG-Compliant Factory
Participant Category: Management Representative
Present Occupation: Quality Controller / Quality Checker
Age: 45 years
Gender: Male
Experience: 12 years
Location: Not specified
Date: Not specified

Question 1: How long have you been working in the garment industry?
"I am 45 years old and have around 12 years of experience in the garment industry. At present, I work in quality control. My work is connected with maintaining the required quality standards during production."

Question 2: How would you describe the workplace facilities related to worker health and well-being?
"*The factory provides several facilities for workers. Workers have individual lockers where they can keep their personal belongings. Safe drinking water is available, and separate toilet facilities for male and female workers are provided on every floor. We also have exhaust fans to maintain ventilation and improve air quality inside the workplace."*

Question 3: What environmental practices have you observed?
"*One important environmental practice is wastewater treatment. Wastewater generated from the dyeing process is treated and recycled before it is reused for non-drinking purposes. This helps reduce waste and supports the factory's environmental sustainability practices."*

Question 4: What additional benefits are provided to workers?
"*Workers can receive line-based performance incentives, and there is also an attendance bonus for workers who maintain full attendance. However, comprehensive healthcare benefits are not part of the regular welfare programme. Medical assistance is mainly available when there is an emergency or immediate need."*

Case No. 7: Helper 1

Factory Type: ESG-Compliant Factory
Participant Category: Worker
Present Occupation: Helper
Age: 31 years
Gender: Female
Experience: 9 years
Current Job: Second job
Location: Not specified
Date: Not specified

Question 1: How long have you been working in the garment industry?
"*I am 31 years old and have been working in the garment industry for around nine years. This is my second job, and I am currently working as a helper."*

Question 2: If you have a problem at work, do you know where to report it?
"*There is HR support available on every floor. If a worker becomes sick, they can be taken to the HR room immediately for first aid. If more treatment is required, the worker is sent to the factory medical centre. In a serious situation, the factory can also provide a referral letter so that the worker can receive treatment at a hospital*."

Case No. 8: Helper 2
Factory Type: ESG-Compliant Factory
Participant Category: Worker
Present Occupation: Helper
Age: 25 years
Gender: Female
Experience: 6 years
Current Job: Third job
Location: Not specified
Date: Not specified

Question 1: How long have you been working in the garment industry?
"*I am 25 years old and have around six years of experience in the garment industry. This is my third job, and I am currently working as a helper*."

Question 2: Does the factory provide childcare or other welfare programmes?
"*Yes. There is a childcare centre on the ground floor where mothers can leave their children once they reach the required age. Management sometimes also makes special arrangements depending on a worker's personal circumstances. The factory organises welfare programmes, and in my experience, management does not put unnecessary pressure on workers*."

Case No. 9: Helper 3

Factory Type: ESG-Compliant Factory
Participant Category: Worker
Present Occupation: Helper

Age: 22 years
Gender: Female
Experience: 3 years
Location: Not specified
Date: Not specified

Question 1: How long have you been working in the garment industry?
"*I am 22 years old and have around three years of experience in the garment industry. At present, I am working as a helper."*

Question 2: Do you know about ESG or factory compliance?
"*I do not really know the term ESG very well, but I know about factory compliance and understand that the factory follows compliance requirements. Workers may be more familiar with the rules and practices that we follow every day than with the term ESG itself*."

Case No. 10: Sewing Operator 1
Factory Type: ESG-Compliant Factory
Participant Category: Worker
Present Occupation: Sewing Operator
Age: 27 years
Gender: Female
Experience: 7 years
Career Entry Position: Helper
Location: Not specified
Date: Not specified

Question 1: How long have you been working in the garment industry?
"I am 27 years old and have around seven years of experience in the garment industry. This was my first job. I initially joined the factory as a helper, and with experience I gradually developed my skills and became a sewing operator."

Question 2: Do you know your factory's rules regarding worker rights and workplace procedures?
"Yes, I know the basic factory rules. For example, I know the procedures regarding leave, overtime, entry and exit, and where I should submit a complaint if I face any problem at work."

Question 3: Do you think training and experience help workers develop their careers?
"Yes. I started as a helper and later became an operator, so developing skills is important for workers. The factory also has a training system. Training can help workers improve their skills, become more competent, and perform their work more effectively."

Case No. 11: Sewing Operator 2

Factory Type: ESG-Compliant Factory
Participant Category: Worker

Present Occupation: Sewing Operator
Age: 35 years
Gender: Male
Experience: 8 years
Location: Not specified
Date: Not specified

Question 1: How long have you been working in the garment industry?
"I am 35 years old and have around eight years of experience in the garment industry. At present, I am working as a sewing operator."

Question 2: Have you received any training that helped you improve your skills?
"*Yes. Our factory has a training centre. New workers receive around one month of training, while workers who already have experience receive about five days of training. I think the training is useful because it improves our skills and competence. It also helps increase productivity and allows us to perform our jobs more effectively*."

Question 3: How important is training for workers?
"*Training is very important because workers need proper skills to perform their jobs efficiently. Even experienced workers can benefit from training because it helps them understand the factory's working methods and improve their performance. For new workers, longer training gives them an opportunity to develop the skills they need before taking on regular production responsibilities.*

Appendix B

In-Depth Interview Question Form

Research Title: Impact of Environmental, Social, and Governance (ESG) Practices on Workers' Health and Productivity: A Comparative Study of RMG Factories in Bangladesh

Participant Information

1. What is your age?
2. What is your gender?
3. What is your current occupation or position in the factory?
4. How many years of working experience do you have in the garment industry?
5. Where is your factory located?

Interview Questions

6. Could you briefly describe your role and responsibilities within the factory?
7. What do you understand by ESG, sustainability, or factory compliance?
8. What ESG practices are implemented in your factory?
9. What environmental practices are followed in your factory?
10. How does the factory manage environmental issues such as waste, wastewater, energy consumption, and resource use?
11. How would you describe the workplace environment in terms of ventilation, heat, air quality, drinking water, and sanitation?
12. How does the factory ensure workers' health and safety?
13. What medical, first-aid, fire-safety, and personal protective equipment facilities are available for workers?
14. What welfare facilities and benefits are provided to workers?
15. Does the factory provide childcare, maternity support, bonuses, incentives, meal support, transportation, health support, or other welfare facilities?
16. Does the factory provide training and skill-development opportunities for workers?
17. In your experience, how does training affect workers' skills and productivity?
18. How can workers raise complaints or concerns when they face problems at work?
19. Are workers involved or consulted in decisions that affect their working conditions?
20. How is ESG and compliance monitored in the factory?
21. What role do buyer requirements and international brands play in influencing ESG and compliance practices?
22. How do government regulations, BGMEA requirements, certifications, and audits influence the factory's ESG practices?
23. In your experience, how do ESG and compliance practices affect workers' health and well-being?
24. How do workplace conditions, worker welfare, health and safety, and training affect worker productivity?
25. What are the biggest challenges your factory faces in improving ESG practices, workers' welfare, and workplace conditions?

26. How do financial limitations, production costs, buyer price pressure, and employee turnover affect the factory's ability to improve ESG practices?
27. What support would help the factory improve ESG implementation?
28. What improvements would you like to see in workers' health, safety, welfare, and workplace conditions?
29. In your opinion, what should factories do to improve both workers' well-being and productivity?

Appendix C

Ethical Consideration Form

Naheda Parvin
ID: 2421200
Independent University, Bangladesh
Date: 20 August 2026

Subject: Ethical Considerations for Thesis Research

This study, titled "Impact of Environmental, Social, and Governance (ESG) Practices on Workers' Health and Productivity: A Comparative Study of RMG Factories in Bangladesh," aims to examine how Environmental, Social, and Governance (ESG) practices influence workers' health, workplace conditions, and productivity in Bangladesh's Ready-Made Garment (RMG) sector. The research seeks to explore ESG practices in selected RMG factories and understand the experiences and perceptions of workers and management representatives regarding environmental practices, occupational health and safety, worker welfare, governance, compliance, and productivity. Participants will include workers and management representatives from selected RMG factories, and data will be collected through in-depth interviews. Participation in this research will be completely voluntary. Before conducting the interviews, participants will be informed about the purpose of the research and how their information will be used. Informed consent will be obtained from all participants before their involvement in the study. Participants will have the right to refuse to answer any question or withdraw from the study at any time without any negative consequences. The confidentiality and privacy of all participants will be maintained throughout the research. Participants' personal identities and factory names will not be disclosed in the thesis. Participant codes and general occupational descriptions will be used where necessary to protect their identities. The information collected during the interviews will be used only for academic purposes and will be stored securely. The findings of this research may contribute to a better understanding of ESG practices in Bangladesh's RMG sector and their relationship with workers' health and productivity. The study may also provide useful insights for factory management, workers, policymakers, industry organizations, and other stakeholders interested in improving workplace conditions and responsible business practices. The research will follow the ethical and academic guidelines of Independent University, Bangladesh. All information obtained from participants will be treated responsibly and confidentially throughout the research process.

I am committed to adhering to all relevant ethical principles throughout this research. If you have any questions or require further information regarding the study, please feel free to contact me.

Thank You

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