Implementing Sustainability Programs toward improving bottom-line practices in the Global Garment Sector: Bangladesh perspective

Md Sultan Mahmood

Japan Advanced Institute of Science and Technology

Doctoral Dissertation

Implementing Sustainability Programs toward improving bottom-line practices in the Global Garment Sector: Bangladesh perspective

Md Sultan Mahmood

Supervisor: Professor Yukari Nagai

Graduate School of Advanced Science and Technology,
Japan Advanced Institute of Science and Technology
Knowledge Science
March 2022

Abstract

Purpose of the study. Sustainability is a long-debated issue, and there is no universal approach to implement sustainability programs for all organizations. The broad aim of this study is to explore the implementation of sustainability programs (SP) by the lead suppliers improving all bottom lines performances of the labor-intensive global garment sector. The purpose is reached through three research queries. First, what does sustainability mean to the garment suppliers, and how important is sustainability program to consider in the current business practices? Second, what are the key performance indicators to implement sustainability programs by garment suppliers? Furthermore third, how do the workplace compliance pressures mediate to improve suppliers' sustainability programs?

Materials and Method. We designed an exploratory case study with multiple cases from the Bangladesh garment sector. The study chose the Bangladeshi garment industry as the study context due to the increased pressures for social and environmental compliances after several workplace occurrences. We selected only three case companies after considering the research aim, data collection protocols, and accessibility to the study setting. The study employed multi-methods of interviews, observations, and document reviews for data collection from the three Bangladeshi apparel manufacturers. We selected the twenty-two respondents through non-probability sampling for interview data collection. The researcher analyzed all interview data through the thematic content analysis technique.

Study Result. The study uncovered three key findings. First, the case companies considered sustainability programs as standardized practices or corporate business policies overcoming the internal and external challenges. These challenges appeared after the stakeholders' pressures since the 2013 Rana Plaza collapse. The internal challenges concerning organizational operational and external forces led case firms to adopt regulatory safety compliance initiatives immediately after the 2013 factory collapse. Second, case firms developed five bottom lines (FBL) capabilities by focusing on the workplace, environmental, social, economic, and governance dimensions. These capabilities help firms tackle organizational and operational challenges facing day-to-day business activities. They developed almost twenty-three key performance indicators (KPIs) under the FBL capabilities. Although there were many differences among the KPIs, they set them as visible measures to scale their SPs. Third, workplace compliance was underpinned as the initial effort that mediated the SPs through several phases. They addressed factories' safety

issues and set initiatives to remediate them. Second, they extended the programs that contribute to societal and environmental practices, and finally, they combined SPs to continue the changes for creating new business scopes.

To firm A, workplace safety, occupational health, and cleaner production assessment are the three key initiatives to embrace sustainability practices. These initiatives became very visible and measurable toward improving bottom-line performance. On the other hand, firm B emphasized transforming human capital through ensuring workers' human rights, labor codes practices, empowerment, skilled training, and other volunteering activities alongside workplace safety and occupational health. However, this firm also addressed the ecological impacts, process wastes, and resources barriers to expedite environmental assessment, offset the carbon emissions, and develop resource management. However, case firm C is more structured in sustainability orientation than the other two firms. They adopted legal compliance, ethical business practices, and environmental footprint management toward their sustainability journey. The global business norms such as United Nation Global Compact (UNGP) and Global Reporting Initiative (GRI) are two parameters to set their standards in the bottom-line performances. The top management considers employees' health, workplace safety, empowerment, social sponsorships, decarbonization, green infrastructure, etc., as strategic initiatives to lead garment export business in the competitive edge.

All three firms differentiated among them, deeming their corporate strategies, policy-making, and KPIs practices. Their corporate statement showed how to embody sustainability through their business activities. Each firm set a vision to be the most regarded company by offering quality products and the best manufacturing services with less social and environmental costs. The study results revealed that the corporate leaders of all three firms learned triple-bottom-line issues from many national regulations international and global management standards. They combined their knowledge with their internal organizations and converted these into policies and action plans to implement sustainability programs. The study argued that the garment suppliers' sustainability programs should be considered five bottom lines instead of three bottom lines.

Theoretical implications. The study argued that the case firms of the global garment sector integrated knowledge management alongside institutional, resource-based, and stakeholder approaches to create core values, corporate policies, and business practices toward sustainability programs. The study found that the firms accepted global climate

issues and societal impacts as core to rethink with the business activities. Therefore, they combined those concerns with core business activities to set the sustainability programs in operational and organizational practices. The corporate team of all three companies socializes with different knowledge partners, auditors, and international organizations to understand business norms and standards toward sustainability practices. The management employees became more scope to receive outside knowledge on implementing policies, standards, and indices over safe, healthy, and green work environment toward sustainability programs.

Practical Implication. The study results have a high impact considering practical implications. The study identified a set of key performance indicators (KPIs) with hundreds of the above measures. These indicators help the small and medium garment suppliers incorporate the SP in their operating model. The managers of direct garment exporters in the GGS can use the specific measures to scale their facilities' performance concerning bottom lines. Again, the manufacturers who fell in the indirect sourcing model also use the KPIs of this study to promote sustainability practices within their facilities. To implement SP, the Bangladesh garment sector needs to carefully align its economic contributions with its long-term workplace safety, social security, environmental accountability, and corporate governance. In this light, the study results provide the hundreds above practical measures under twenty-third KPIs for enhancing the five bottom lines practices of the garment suppliers.

The originality of this study. The study identified the garment suppliers' sustainability program (SSP) through a case study research strategy to promote the bottom-line practices in the GGS context. Many business frameworks have been illustrated in the prior literature that is overgeneralized, including macro views, and challenging to translate into practice garment sector context. Therefore, the context-specific framework on SSP became craving need to be explored. This study aimed to explore such framework from lead suppliers' sustainability practice for the whole garment sector on implementing sustainability practices in the complex production network. The study, thus, designed a framework that three factors: independent factors (barriers), motivating factors (drivers), and dependent variables such as KPIs from three case firms toward sustainable business practices.

Limitation and the future study. The main limitation of this study is to exclude the indirect garment exporters. Due to access limitations, reluctance to share information, and lack of business data, this study did not consider the subcontractor or informal garment sector. However, these limitations invite future studies on greater context, including direct and indirect suppliers in a global production network. Future investigations can also seek the relationship between materiality issues and business performances, excluded here. How much impact on productivity and worker efficiencies after implementing sustainability issues may offer an exciting insight for future research?

Keywords: Sustainable development, readymade garment, Textile and Apparel Industry, Workplace Safety, Social Compliance, Ethical Trading, Environmental, Social and Governance, Ecological Footprint.

Acknowledgment

I pay my sincere gratitude and heartfelt thanks to *Professor Yukari Nagai*, my dear supervisor, for constant suggestions and encouragement during this research. She supports preparing a research plan, design, data collection, and analysis and report writing phases. I became fortunate to receive her cooperation and insights to improve my research skills.

I am also indebted to the second supervisor of *Associate Professor Riehyei Kang* for her valuable cooperation and suggestions across the research processes. I am grateful to *Dr. Jader Zelaya*, assistant professor of Nagai Lab, for his fruitful comments and feedback in the seminar presentation that helped rearrange the research processes.

I am also indebted to all Ph.D. committee members, including *Professor Youji Kohda*, *Professor Shungo Kawanishi*, *Associate Professor Kim Eunyoung* of Japan Advanced Institute of Science and Technology, and the external examiner, *Associate Professor Norani Nordin* of University Utara Malaysia, for their thoughtful guidance, suggestions, comments, and constant supports in preparing the final dissertation.

My special appreciation and thanks are conveyed to *Mr. Shahin, Mr. Shibly, and Mr. Azad*, whose great cooperation helped in accessing the case companies' production sites. Besides, I showed my sincere gratitude to the Directors, Chief Operating Officers, and Senior Managers of the case firms who gave their valuable time to share their opinions and experiences during data collection.

Moreover, I thank two assistances, *Sudipta Das Gupta* and *Maliha Samiha Zaman*, graduate students of Shahjalal University of Science and Technology, Sylhet, Bangladesh, for their abundant supports during data collection in the second phase. I also owe to the three anonymous reviewers whose detailed comments in research articles provide me with concrete guidelines to improve the research quality and internal and external validity of the research results.

I want to convey my appreciation to JAIST for offering me the fellowship in the doctoral study that enhanced motivation to pursue the empirical investigation in the minor research project as a substantial part of the doctoral degree requirement.

Lastly, I am very much thankful to my parents, whose everyday prayers guide me to the right path. I would like to express gratitude to my wife Nilima Haque Ruma, whose love, cooperation, and encouragement have always been with me throughout my doctoral degree. My thankfulness also goes to my beloved daughter, Yousra Mahmood, who has sacrificed lots of times without me in her infant age.

Table of Contents

List of Tables and Figures

List of Tables

Tables of Figure

Acronyms

BAU – Business as usual

BGMEA – Bangladesh Garment Manufacturing and Exporter Associations

BKMEA - Bangladesh Knitwear Manufacturing and Exporter Associations

BODs – Board of Directors

BLP - Bottom-line practices

BLA – Bangladesh Labor Act

BSCI - Business Social Compliance Initiative

CBP -Conventional Business Practices

CBMs – Corporate Board Members

CE - Circular Economy

CEP - Corporate Environmental Performance

CEO – Chief Executive Officer

COCs – Code of conducts

COO- Chief Operating Officer

COPs – Code of practices

CSP - Corporate Social Performance

CSR - Corporate Social Responsibility

DMD – Deputy Managing Director

ECOS - Economic Sustainability

EDP – Employee Development program

EIA - Environmental Impact Assessment

EMS - Environmental Management System

ENVS – Environmental Sustainability

ETI – Ethical Trading Initiative

ETP – Effluent Treatment Plant

FTA – Foreign Trade Association

GGS -Global garment sector

GGVC – Global Garment Value Chain

GOB -Gobernment of Bangladesh

GRI -Global Reporting Initiative

GSC- Global supply chain

GVC - Global Value Chain

ILO – International Labor Organization

ISO – International Standardized Organization

ISMS -International Standardized Management Systems

KPIs - Key Performance Indicators

KBV - Knowledge-based View

LCA - Life-cycle assessment

MD – Managing Director

MNCs - Multi-national Companies

MSC – Manufacturing Supply Chain

MTO - Management Trainee Officer

NGOs – Non-government Organizations

NIT - Neo Institutional Theory

NMOs - Negative Manufacturing Outputs

OECD – Organization of Economic Co-operation Development

OM - Operation Management

PC – Participatory Committee

R&D - Research and Development

RBV - Resource-based View

RMG - Readymade Garment

SOCS - Social Sustainability

SCM - Supply Chain Management

SC – Safety Committee

SPs - Sustainability Programs

ST - Stakeholder Theory

SWOT - Strengths, Weaknesses, Opportunities, and Threats

TBL- Triple Bottom Line

T&C - Textile and Clothing

IUCN - International Union for Conservation of Nature and Natural Resources

UNEP – United Nation Environmental Program

UNGC - United Nation Global Compact

VOC - Volatile Organic Compounds

WFCs – Western Fashion Companies

WHS - workplace health and safety

WWF – World Wild Fund

CHAPTER ONE: BACKGROUND

1. Introduction

The sustainability concept has become influential agenda for corporate firms regardless of their size, location, and economic functions during the 1990s. The 'Sustainable Development' announcement by the Brundtland Commission, United Nations in 1987 has focused on the long-term policies and practices concerning socio-economic prosperity and environmental outcomes instead of short-term profitability in any context [1]. Nowadays, this term has become a popular 'catchphrase' for every action and policy change.

The curiosity of sustainability in the global supply chain (GSC) literature has been growing interest over the decades. However, its implementation knowledge in the global garment sector (GGS) and its GSC has been minimal since the 1990s because of the infancy of SDGs literature [2] in the context of the clothing industry. The rise of ethical trading, labor codes, and stakeholders' pressure appeared as normative guidelines toward addressing legal and social accountability issues [3], [4]. Over the years, the multi-national companies (MNCs) emphasized ethical trading as a starter of the corporate sustainability agenda.

The GGS is very complex concerning its functions, actors, and dynamism. The sustainability program in the GGS is the most challenging one because of the constant market flux that features with short product lifecycle, fragmented supply chain, and multiple actors [2], [4]–[6]. It is often a true challenge for corporations what sustainability initiatives are to be considered. Most MNCs perceived the sustainability concept as an assessment tool to reduce the supply chain risks and the vulnerability in downstream supply chain partners such as garment and footwear producers. Companies like Nike, Adidas, H&M, and Inditex have been held accountable for the actions of their producers concerning environmental or social impact [2].

1.1 Problem Statement

Bangladesh's Readymade Garment (RMG) sector has held a critical role as a significant contributor to national economic growth. Concurrently, it was seen as a potential hindrance to the nation's future development [7]. The sector has become the engine of the country's economic growth since the 1990s contributing to employment generation, export

revenues, and improving living standards. Again, the production facilities of the RMG sector also exploit a significant number of natural resources and emit industrial wastes [8]. Additionally, several unexpected occupational accidents, like workplace fires and building collapses, have caused massive fatalities and occupational injuries.

The RMG sector often grips the media attention because of industrial mishaps. The workplace events like the Tazreen fire accident and the Rana Plaza collapse have occurred in the two consecutive years, 2012 and 2013, respectively [9]. These accidents have uncovered the hidden scenarios of the working conditions of the world's reputed apparel brands' productions network. Simultaneously, they have been accused of aggressive supply chain activities, unethical buying strategies, and suppliers' contracting policies [6], [10]. These scandals have stressed fashion brands and their license producers to raise awareness of workplace regulations related to worker safety, health, and work conditions [11]. The 2013 factory collapse depicted the governance gaps over social, ethical, workplace safety dimensions. Therefore, the continuous pressures over legal and social compliance have motivated the Western Fashion Companies (WFCs) to introduce their code of conduct (COCs) to protect workplace hazards, health safety, and workers' rights [12], [13].

These regulatory and voluntary COCs have diffused throughout the garment supply chain activities and transmitted the additional pressures to the production locations of the developing countries' suppliers like Bangladesh. The global brands have been progressively imposed their COCs and standardized audit requirements on the Bangladeshi suppliers over workplace safety compliance [3]. Moreover, the stakeholders' environmental and social governance pressures have emerged to enhance corporate transparency and accountability [7]. Therefore, the Bangladesh RMG sector has been fallen into two challenges after the 2013 Rana Plaza collapse. First, the industry must provide regulatory safety inspections over factories' constructions and third-party audits over social and environmental regulations. Secondly, they need to compromise the external pressures of third-party interventions.

Numerous empirical investigations have taken place after the 2013 Rana Plaza accident that has disclosed several internal and external challenges and motivating factors of the Bangladesh RMG sector. Many of those studies have depicted worker's safety issues, inadequate workplace compliance, inhumane work conditions, and human rights violations [2], [6], [10], [13]–[15]. Several others have highlighted resource crisis,

pollution/emissions, corporate social responsibility and accountability, and other legal issues [4], [8], [16]–[18]. However, those studies are isolated concerning a holistic sustainability perspective. But the literature has focused on several issues related to workplace, social and environmental dimensions.

Nevertheless, the implementation of sustainability programs from the garment suppliers' perspective is little acknowledged in the prior studies. In this study, we have endeavored to find a pathway to overcome the challenges. Therefore, this study fills the academic lacuna of the sustainability literature in the labor-intensive garment sector.

1.2 Research Aim, Objectives, and Questions

The inhumane work condition, resource constraints, environmental risks, and societal impacts stimulate garment suppliers to rethink the sustainable business case beyond the business-as-usual (BAU)[1] over the years. Many frameworks and models are found on implementing sustainability agenda from developed countries' contexts. This study explores the implementation of sustainability programs by the developing country's garment suppliers. The novel point of this research is to develop the key performance indicators toward improving bottom lines performance.

1.2.1 Research Aim

The broad aim of this study is to explore the implementation of sustainability programs toward improving all bottom-line performances by the garment suppliers of the labor-intensive global garment sector.

1.2.2 Research Objectives

The study also focuses on a few specific objectives to be achieved. These are as follows.

- ✧ To explore the meaning of sustainability from the garment supplier's perspective.
- ✧ To identify the key performance indicators developed by garment manufacturers toward sustainability.
- ✧ To explore the importance of workplace safety compliance pressures mediating sustainability programs.

[1] BAU –refers as the conventional business practices that are high consumption-led and waste-driven.

1.2.3 Research Questions (RQs)

Major Research Question (MRQ): How do the lead suppliers implement the Sustainability Program (SP) toward bottom-line practices (BLP) in the labor-intensive global garment sector?

And, the SRQs are,

- ✧ SRQ1: How do garment suppliers define sustainability, and why is it important to consider improving business practices?
- ✧ SRQ2: What are the key performance indicators set by garment suppliers toward sustainability programs?
- ✧ SRQ3: How do workplace safety compliance pressures mediate sustainability programs suppliers' sustainability programs?

1.3 Significance of the study

In response to the research's main aim and objectives, the study put several contributions in multidisciplinary fields on sustainability literature. First, the study focuses on lead garment suppliers' viewpoints in implementing workplace safety programs in the production facilities of the labor-intensive industry in developing countries, which is yet less investigated. Second, it also emphasizes exploring and interpreting the lead suppliers' strategies on environmental, social, and governance initiatives in production sites which is rarely covered in the prior works. Third, it engages managers' perceptions of the garment suppliers who are an indispensable part of the company's policymaking and sustainability program, which has been often overlooked in the literature. Fourth, it builds the sector-specific indicators using the qualitative case study research on the manufacturing setting. Finally, the study outlines several theoretical perspectives to examine sustainability programs for increasing knowledge science roles in sustainability literature.

Besides, the study findings leave many hints for future investigations that will be untouched due to the limitation of the research subject, methodology, and analytical technique. This case study research represents the critical perspectives of the sustainability agendas from the three leading suppliers of the Bangladesh RMG sector, which can validate and reproduce the originality of its finding. Therefore, the study can be utilized as a guideline or a set of examples for effectively improving sustainability practices.

1.4 Research Originality

The study advocates the sustainability program for promoting BLP in the global garment supplier context. There have been seen many frameworks such as Triple Bottom Line (TBL) by Elkington (1997), Sustainable Manufacturing by the Organization of Economic Co-operation Development (OECD), and Circular Economy (CE) by McAurther Foundation discussed in the previous literature. These frameworks have suggested the generalizations organization's performance either a single dimension or all three dimensions of sustainable development. But they have not scaled specific guidelines for the garment sector to address sustainability issues in the complex production network. The study, thus, has identified three critical issues that motivated garment suppliers to implement sustainability programs. First the necessity of sustainability programs (SPs) for overcoming the barriers of the CBP. Second, to maintain their financial growth and other bottom-line practices by setting key performance indicators of SPs. Finally, to develop a safe workplace and workers' health safety to overcome the internal and external pressures.

The study extends sustainability literature in multi-disciplinary fields, including the knowledge science discipline. The results differ from the previous literature that broadens the perspectives in the different academic angles and practical applications. In line with prior studies, the study highlights efficient resource management, waste/emission reduction, social equity, human rights practices, social responsibility, productivity improvement, automation, and cleaner technology integration as key performance indicators toward improving bottom line practices. However, the human capital, knowledge resource, workplace regulations and norms, and stakeholders' partnership projects are the main driver to implement sustainability programs across the supplier's BLP. They are hardly revealed in the literature. These drivers are supported by the resource-based view (RBV), knowledge-based view (KBV), neo-institutional theory (NIT), and stakeholder theory (ST).

This study finds that the corporate board members of the case firms are pursuing to develop their knowledge and experiences for corporate governance and leadership practice. They have emphasized organizational learning and vocational education, stakeholders' involvement, standardized systems, and management training as corporate governance agendas. Here, the study results argue that the employees' knowledge capital and collaboration are the creative assets of firms. All firms should continuously upgrade these intangible assets through training and knowledge sharing with all stakeholders.

Previous literature's major drawbacks are excluding workplace compliance and corporate governance issues to implement sustainability. The study has focused on these two aspects as significant dimension toward implementing sustainability programs for the garment suppliers' context. The Bangladesh RMG sectors often criticize inhumane work conditions due to weak factory constructions and inadequate safety preferences. Besides, the external stakeholders have charged the garment suppliers and manufacturers for poor corporate governance concerning workplace safety compliance. Therefore, we considered these two significant factors with the three other BLP as the holistic sustainability perspective.

1.5 Structure of the study

The dissertation paper consists of six chapters: 'Research Background,' 'Literature Review,' 'Research Methodology,' 'Research results and discussion,' 'Answer to research questions,' 'and 'Conclusion, Implication, and Limitations.'

Chapter 1 draws the motivation of this study on the sustainability concept. Besides, the chapter contains the problem statement that discusses why the sustainability issue has become a business plan in the GGS. The study also illustrates its contributions and novel points that guide practitioners and multidisciplinary literature toward future studies.

Chapter 2 provides extensive analyses and a critical review of prior literature on the sustainability paradigm and its insertion into the fashion supply chain and garment production network. Moreover, the study also explains the theoretical connections of sustainability research and extends the position of the knowledge-based management approach for this research.

Chapter 3 reminds us of the overall research procedures, including research approach, design, strategies, sampling procedures, methods of the data collection, and data analysis protocols. Moreover, the chapter highlights the research setting at the beginning to understand why this is crucial to select for investigating sustainability issues in the GGS context.

Chapter 4 demonstrates the data analyses to reveal research findings. The data analysis comprises three subsections: the case firm's introduction, cross-case analysis using observation and document summaries; finally, the respondents' perception of sustainability program from interview analyses. This chapter mainly contains the data analysis presented

in the three subsections. The data analysis has outlined the case organization's economic activities, corporate governance, and social and environmental bottom-line practice.

Chapter 5 discusses the results derived from case study investigations. The first subsection includes the respondents' perceptions of the sustainability agenda to describe case firms' sustainability approach. The second subsection describes their key performance indicators (KPIs) to improve SPs, and the third subsection outlines the factors that mediate implementing sustainability programs. The final subsection highlights the case firms' strategies toward improving sustainability programs

Chapter 6 answers all three subsidiary research questions and the central research question to model the SPs in the garment export business. Moreover, the research examines prior studies and four dominant theories to support the results. And we also describe how this study helps practitioners transform sustainability knowledge into practice. Third, the study has depicted the research limitation from various perspectives and discussed how these gaps promote future study scopes. In the concluding remark section, we briefly discuss the claims of the study findings.

CHAPTER TWO: LITERATURE REVIEW

2. Introduction

Sustainability orientation is not new, and it has gained profound attention across disciplines and business practices since the 1990s. To date, many literatures have been yielded on sustainability issues and practice concerning environmental risks, social justice, economic prosperity, health safety, corporate governance, and so on. The remainders of this chapter shed light on several multi-disciplinary literature on the barriers, motivating forces and importance of sustainability implementation in the global garment production network. Moreover, the broad objective of this chapter is to address the gaps in the prior literatures and develop a framework in the context of the global garment sector from a theoretical perspective.

2.1 Operational Definitions

2.1.1. Sustainability: Definition, Origin, and Dimension

2.1.1.1 Definition of the Sustainable Development or Sustainability

The term ‘sustainability is robust and contains diversified meaning that varies depending on disciplines and business practices. Broadly, it refers to a fundamental paradigmatic shift around the concept of human progress [19]. The Oxford Language Dictionary defines sustainability “as an ability to be maintained at a certain rate or level.” The Brundtland commission of the United Nations provided a widely accepted definition in their assembly report, ‘Our Common Future’ in 1987. They defined, the SD is “the development that meets the needs of the present without compromising the ability of future generations to meet their own needs [20].”

Many scholars have criticized Brundtland's definition because of its incomprehensible and elusiveness to achieve sustainable development [21]. Since 1987, Brundtland’s call for sustainability has resulted in two opposite perceptions among scholars, such as the ‘growth as usual’ and ‘development without growth’ in a system or process beyond environmental capacity [22]. The typical definition of sustainability has failed to guide practitioners to what it is or is not at a functional level [23], [24]. The IUCN, UNEP, and WWF in 1991 defined sustainable development as a development of human life that addressed within ecosystem carrying capacities [21]. Mihelcic et al. have defined sustainability as a system

that ensures human and industrial system design without adverse impacts on social conditions, human health, and the environment [25, p. 5315]. On the other hand, Gladwin et al. [19] has argued that sustainability could be conceptualized as an eco-efficiency problem, mostly involving pollution prevention and resource conservation

John Elkington's [26] coined the 'triple bottom line (TBL) to model corporate sustainability. He suggested that corporations should focus on economic prosperity with environmental quality and social justice to measure the organization's "triple bottom line (TBL)" performance [26]. Dyllick and Dyllick [23] specified corporate sustainability as meeting the needs of a firm's direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups, communities, etc.) without compromising the needs of future stakeholders as well [23, p. 131]. Mark Parker, CEO of NIKE Inc. in 2011, considered sustainability as the nexus of transformation in business, economics, and markets. The corporation must address economic, social, and environmental requirements considering the interest groups at 'stake.' However, the corporations and their leaders have promoted a limited view of sustainability since its inception [24].

The above definitions suggest that corporations revisit economic growth by protecting human, social, and natural capital. Almost all literature defines sustainability as a balanced human, social, and natural capital growth. By nature, it is a complicated issue because of numerous meanings and conflicts among experts and academic research. Therefore, organizations become confused about comprehending its application in a practical context. Again, the overgeneralized definitions often fail to render guidelines for sustainability implementation.

In this study, sustainability is considered to maintain and improve the organization's bottom lines' performance by creating a workplace, social, environmental, and governance capabilities. A firm can balance the three critical resources: human, nature, and social through corporate governance, collaboration, and stakeholder engagement. Again, the study has interpreted the sustainability program to refer to the long-term policies and actions toward managing business activities without impacting employees' health, social livelihood, and environmental loss.

2.1.1.2 The origin of the Sustainability concept

Many scholars have agreed that it is primarily linked to environmental movements such as 'limit to growth and climate change issues during the twentieth century [27]. The numerous literatures mentioned Hans Carl von Carlowitz, *a German forester*, as the pioneer of the 'Sustainability' concept. The German forester introduced the term in 1712 in his book '*Sylviculture Oeconomica'* to refer to the "sustainable use" of the forest [27], [28]. The IUCN officially adopted the sustainability concept in 1969 [29], but the idea was conceived in 1972 as a central theme of the United Nations Conference on the Human Environment in Stockholm [21].

Nevertheless, the Brundtland Commission coined 'Sustainable Development' explicitly in 1987 to address the global warming and climate change issues. The Rio Summit in 1992 and Johannesburg Summit in 2002 designed SD policies, plans of action, and partnership projects to attain the sustainable use of water, sanitation, and energy. Finally, the UN adopted the long-term plan under the "Transforming our world: the 2030 Agenda for Sustainable Development" program in the 2015 Paris Agreement. This agenda had become a universal SDGs framework integrating the 17 goals with 169 targets to eradicate poverty, protect the planet, and prosperity by 2030 [30].

2.1.1.3 Dimensions or pillars of Sustainability

The SD is characterized by three interlinked dimensions: environment, social, and economical. None can be achieved independently without considering others. Many prior pieces of literatures argue that the sustainability concept is re-interpreted as three dimensions [31] or three pillars: economic, environmental, and social [21]. Elkington [26] has coined the term 'TBL' instead of three-pillar sustainability to evaluate corporate performance. The TBL refers to the firm's commitment to measuring societal and environmental impacts and financial growth. More specifically, it motivates corporations to design the business practices by balancing three P's: product (economic), people (social), and planet (environment).

The SD concept has portrayed a variety of conceptual models [32], and the most common one that characterized the SD concept was the three-pillar model [33]. The body of literature has considered Brundtland's sustainability concept as a conventional economic view of sustainability shown in figure 2.1-a. The proponents of Brundtland's SD concept often misinterpret the relationships among the three independent pillars of sustainability as mutually exclusive. However, these three pillars are not mutually exclusive; this concept is

identified as week sustainability [21], [32]. Many critics of the Brundtland's definition argue that the three pillars are often overlapped with each other. These pillars have a strong relationship among them that could be drawn in the concentric circle shown in figure 2.1-b.

Figure 2.1: (a) Weak Sustainability (interconnecting pillars); and (b) Strong Sustainability (overleaping pillars)

In prior literatures, we see that the sustainability practices have been divided into two diverse perspectives: strong sustainability and weak sustainability based on the costs incurred in achieving them [34]. Moreover, these three dimensions serve as the basis of many sustainability indicators, standards, and certification systems. Strong sustainability has little consideration of financial costs to attain system quality. It mainly focuses on the environmental case. In contrast, weak sustainability is normally based on a cost-benefit analysis that involves the trade-offs[2] between socio-environmental and economic benefits [34, p. 14]. Nevertheless, the trade-offs are not always possible among the three pillars [21].

***Environmental Sustainability (ENVS*).** The conventional production systems usually exploits a massive volume of renewable and non-renewable resources to manufacture industrial goods. However, the systems cannot return the regeneration capacities at the same rates to natural systems [35] except promoting industrialization. The rise of industrialization has been promoting numeric economic growth, and simultaneously, it has created negative environmental pressures. Therefore, environmental sustainability has become inevitable to corporations since the 21st century [36]. Nowadays, it refers to the maintenance of the natural capital that can regenerate and restore itself. The term 'ENVS' is one essential pillar of Sustainable Development [26].

[2] In economics, the term trade-off refers an opportunity cost. To increase continuous financial growth, we are compromising societal and environmental impacts.

The environmental issue has been recognized as a global problem since the last century. International organizations and states have addressed climate changes and global warming as nation-wide problems beyond economic growth [27]. Several literatures show that sustainability programs have focused on improving external environmental pressures since the 1992 Rio summit in the manufacturing sector [22], [37]. The rise of environmental conservation by international organizations and transnational states has pushed business communities to develop measures to improve environmental performance across the firm's operating model.

The manufacturing sector heavily relies on energies, freshwater, raw materials, and other artificial resources. The literatures have revealed that the global garment productions have regularly encountered significant issues: resources exploitation, carbon emission, air/water/sound pollution, and habitat destructions as environmental impacts [28], [37], [38]. The greenhouse gases, wastewater, excessive heats, and solid wastes are the negative manufacturing outputs (NMOs) from textile and garment production that are constantly sinking to the surrounding environment. These NMOs affect biodiversity, regeneration capacity, and societal processes [39]. Industrial pollutions contain many harmful pollutants that are adverse to human health and microbes.

Many sustainability literatures put emphasis on environmental conservation laws and state regulations to reduce the environmental impacts. The MNCs have adopted environmental cost/benefit (CB) analyses, environmental accounting, and environmental impact assessment (EIA) to reduce NMOs from manufacturing operations [39], [40]. The global production network has been quickly embracing environmental regulations and standardized management practices to minimize the negative impacts across the product life cycle's stages [37]. Many expertise and standardized organizations have developed numerous science-based measures to cooperate with manufacturing industries to minimize NMOs.

Social Sustainability (SOCS). Social issues have become a vital part of the three-pillar SD. The SOCS often refers to managing human and social capital [23] or societal resources [2]. However, it has emerged to settle many unsustainability issues that have firmly rooted in traditional world views, ideologies, and socio-economic institutions [19]. The SOCS considers that the human being is a central force of the societal issue, and their economic activities are strongly tied with natural capital. Dyllick et al. [23] specified that human

capital consists of skills, experiences, motivation, and loyalty that are considered the driving force for an organization to create policies for sustainable development.

Again, it also combines quality services such as a culture, manners, sound education system, solidarity, institution, or cooperative entrepreneurship [23]. These qualities shape employees' behavior and value system. Literature shows that a manufacturing firm's SOCS relates to meeting labor codes' needs, workers' human rights, employees' social well-being, stakeholders' expectations, and contributions to societies. The SOCS has combined the internal and external factors including human resources (skills, experiences, and knowledge), financial resources, corporate contracts (relationship between actors), tools, and technologies of a firm. However, several prior studies have described these factors as the social capabilities of a firm to implement sustainability [41], [42].

On the other hand, a few authors suggest that the SOCS policies consider ethical business practices and socially accountable behavior of an organization toward its stakeholders throughout the supply chain [2], [41], [43]. The rise of corporate social responsibility (CSR) initiatives by MNCs also admit a few facets of SOCS [44], [45]. Before adopting the SDGs, many MNCs started to embrace CSR issues as philanthropic intents to meet societal and environmental needs across their business practices. However, the CSR initiatives turned into corporate sustainability practices [23], [46] over the decades because of the 'dark side' of globalization [47], environmental externalities, societal expectations [48], and emergent ethical trading [49].

Economic Sustainability (ECOS). The ECOS refers to the 'maintenance of capital' or keeping capital undamaged [28], and accountants and economists have possessed these perceptions since Middle age. Economic growth was considered the numeric success of rapid goods and services, dictated by ad hoc globalization since the 20th century. Schumpeter [50] argued for 'development' instead of growth by combining quality and quantity improvements. In the subsequent decades, many influential management experts [51]–[53] emphasized external environmental elements toward a firm's economic performance. The experts evaluated the firm's internal and external strengths, weaknesses, opportunities, and threats (SWOT) linked with competitive strategy, resources dependence, and resource-based diversifying capabilities to sustain business competitiveness.

The ECOS is more desirable in business research due to financial reasons [54] and tracked more attention than social and natural capital because of direct short-term benefits

[55]. Their risks and brand management underpin almost all companies' sustainability initiatives [54], [55]. Nowadays, companies rethink the environmental protection and societal impacts of external pressures or self-defense strategies. Therefore, the firm's strategic initiatives tackling bottom-line issues promote the conventional economic mainstay. Goodland [28] criticized the traditional resource-based economic system, which is rarely concerned with protecting natural capital (such as intact forests, quality air, etc.) and environmental sink capacities. Economics needs to apply preventative principles and measure the actions to tackle uncertainties and risks [40].

Dyllick et al. [23, p. 133] mentioned that economic sustainability requires the company to cope with several categories of economic capital: financial capital (equity, debt), tangible capital (machinery, land, stocks), and intangible capital (brand image, innovations, technical know-how, organizational routines). Economic capital management helps firms to achieve bottom-line performance, which is the goal of TLB. Harik et al. [55] focused on some internal issues with implementing ECOS. He suggested that firm should address research and development costs, money waste, brand-related expenses, measuring brand success, branding strategy, innovation and price level management, loyalty, brand officials, foreign labor, customer satisfaction, expectations, and bribery to minimize financial losses [55, p. 4125].

Although we discussed three pillars of sustainable development, the sustainability program's dimension is not limited to the three-pillar context. Several literature emphasized time-perspective [26], manufacturing dimensions [55], technology dimension [37], safety dimensions [56], [57].

2.1.2. Global Garment Sector (GGS): A brief introduction

2.1.2.1 Introduction to GGS.

The GGS has been recognized as the 'textile and clothing (T&C) industry or textile and apparel industry (ATI) in the multi-disciplinary literature. It is a diverse and heterogeneous industry, including many independent operations such as upstream, focal manufacturing, and downstream suppliers [58]. The global supply chain (GSC) or the global value chain (GVC) of the T&C industry is very complex because of multiple actors. This study recognizes the GSC or GVC of the T&C sector as the global garment value chain (GGVC). Because the sector includes several other independent industries such as backward linkage,

textile mills, garment makers, fashion branding and retailing sector, and recycle industries. Besides, the credit sectors and service providers are intensely connected with the GGS.

In recent decades, many large garment makers have developed a vertical linkage between textile processing units (washing, dyeing, finishing, printing) with garment-making facilities (such as cutting, sewing, finishing). The textile industry and clothing sector are largely integrated through vertical supply networks, including distribution and sales [58]. The WFCs in the GGS increasingly manage the value chain activities such as design, outsourcing, distribution, and sales. Above all, the GGS generally is labor-intensive and creates great basic jobs for unskilled or semi-skilled people. Almost all jobs created in the production facilities employ the vast majority of marginalized women in Bangladesh and other developing economies [59].

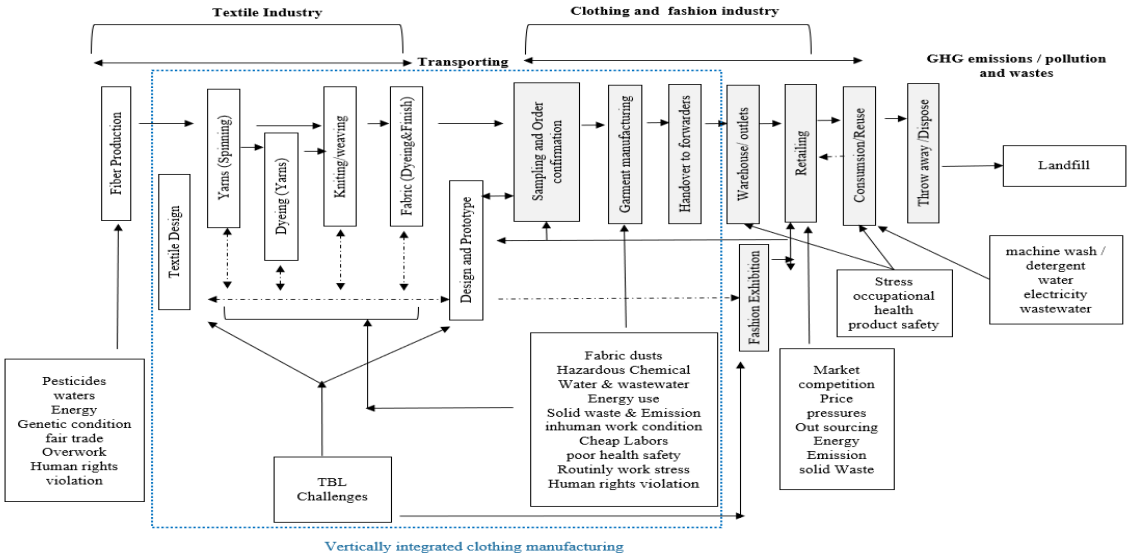


Figure 2.2 Environmental and social bottom-lines impacts of the T&C fashion industry {Source: adapted from Gardetti & Torres [58] but modified by the author.

The sector uses old technologies, insufficient research and development (R&D) spending, and conventional management practices with low investment costs [58]. Many authors find the sector as a first rung of the developing countries' industrialization process that shares the high economic contributions [60], [61]. Simultaneously, the GGVC industry has been rapidly expanding with high-value-added segments such as fashion, luxury, and iconic products. These become possible because of increasing consumers, market competitiveness, disrupting innovation, automation, digital technologies, and increased R&D spending by Western fashion and luxury brands.

2.1.2.2 Sources of Social and environmental impacts of the GGVC

According to sustainability literature and the global media coverage, the GGVC put huge impacts that adverse to the internal work condition and surrounding ecosystem. All steps of the GGVC: from fiber production to yarn and fabric manufacturing, garment assembling, retailing, final usage, and post-consumption phases, create the significant economic outcomes. Simultanously, these steps are the major sources of substantial negative impacts shown in figure 2.2. Each phase of the T&C generates emissions, pollution, hazardous wastes over the natural resources (energy, water, air, landfill) that are detrimental to employees' health and communities' livelihoods.

Although the sector is increasing the economic revenues by an average of 8 to 10 percent [62], the economic impacts on environmental and social dimensions are countless. The prior literatures have identified carbon emissions as the most common negative impact that discharges from all steps of the T&C sector. Again, the high volume of wastewater has discharged from the T&C sector included volatile organic compounds (VOC) such as toxic chemicals, solid suspended particles, and other hazardous metals. The VOC affects the natural water bodies and landfills that endanger the microbes. So the necessity of harmonizing the economic growths with environmental protection and social wellbeing is essential to address as corporate responsibility of the manufacturing firm.

2.2 The multi-disciplinary literature on sustainability programs

During 1990s, several influential business terms: ethical trading, green economy, resource efficiency, eco-efficiency, sustainable manufacturing, social manufacturing, and circular economy emerged in the scientific literature. These concepts had been changed rapidly over the decades and transformed to sustainability movement to tackle waste-driven production and climate changes. The GSC, GVC, operation management, and other management and social sciences literatures have depicted several unplanned challenges and uncertainties to implement sustainability practices in the GGS. These businesses challenges have pushed corporations to reconsider a holistic approach to mitigate organizational bottom-lines risks. The modern firms had been constantly addressing those business challenges and improving capabilities toward improving bottom-lines practices. Here the multi-disciplinary literature review sheds light on the 'sustainability' construct from two

viewpoints: first, the business barriers that motivated sustainability programs, and second, the capabilities toward achieving sustainability practices.

2.2.1 Business barriers toward sustainability practices in the GGS

The multi-disciplinary literatures have identified that the GGVC one of the most polluting industries and unsafe working environment across production network [6], [63]. The global media, academicians and NGOs have condemned the WFCs like Nike, Disney, Levi Strauss, Adidas, C&A, and Benetton in the recent decades for unethical business practices in their southern production locations [64]. The experts have found that the lack of tighter regulations, legal aspects and standardized management systems in the production locations of the WFCs [39], [65]. The rise of sustainability programs in the GGVC have gained attention over the last few decades [66] to overcome several unintended challenges.

The prior literatures have revealed numerous challenges in terms of sustainability thinking that can broadly categorize as internal and external challenges. The prior researches including Hussain et al. [67], Barrientos et al.[3], Labowitz et al.[6], Hasan Ashraf [68], Akbar & Ahsan [69], Prentice et al.[70], Dey and Islam [17], Laila Hossain [8], Huq et al. [2], [43] have argued that the internal barriers influence firms to set long-term goals toward improving bottom-lines practices. Again, many other literatures [4], [6], [18], [43], [65], [69], [71] have provided evidence on the behalf of external pressures or interventions that are continuously pushing suppliers to integrate sustainability standards.

2.2.1.1 Internal barriers

The workplace health and safety (WHS) compliance drew much consideration as an internal obstacle to achieve social sustainability across the GGS supply network. Many previous researches emphasized unsafe work conditions (concerning weak factory structures and fire safety risk) [6], [15], [72], routinely work pressures [13], [70], and inadequate health safety [68], [70], [73], lack of participatory management [4], [6], [74], absence of social compliance [3], [43], [75], and corporate governance practices as key *internal organizational challenges*. These internal organizations issues have resulted in frequent occupational accidents, fatalities, and injuries at the production locations.

Labowitz et al. [6] identified governance gaps, lack of inspections, monitoring mechanism, and noncompliant behaviors that promoted the ad hoc growths of the garment manufacturing. Taplin [76] addressed management ignorance, poor management policies

and lack of monitoring as organizational issues that led poor work conditions. Huq et al. [2] identified the misalignment between COCs and local culture, mock compliance, and hostile relationships (between suppliers and third-party auditors) as barriers that affected organization's internal culture. Prentice et al. [70] Siddiqui [10] and Wadud et al. [72] criticized garment suppliers for poor hygiene system, routinely work stress, lack personal protective equipment and ignoring worker's human rights practices that led poor social performance.

De Neve et al. [13] and Siddiqui et al.[10] highlighted management inexperience and inadequate learning of implementing labor codes and human rights practices. The garment suppliers are often condemned for labor codes and human rights issues related to underpaid wages, inadequate workers' participation in the collective bargaining, inadequate worker's associations, lacks of awareness training [42], [77], [78]. For instance, the workers' unrest for health safety, living wages, and social needs in the global production network have become frequent occurrences.

Several other literatures have highlighted lack of knowledge in managing hazardous chemical and wastes [8], [17], [79], energy performance [16], [80], resource and waste management [81]–[83] as the main *operational challenges/barriers* to developing countries' suppliers. The shortage of skill and inefficient labors, higher resource consumptions, inadequate wastes recovery process, backdated technology and lack of process innovation lead higher operational costs across the garment manufacturing chain [43], [75], [84]. A few literatures have depicted that almost garment suppliers have very limited scopes in terms of technical training, vocational education, knowledge sharing culture and research and development (R&D) resources. The inadequacy of these knowledge resources creates lags between organizational and operational performances.

The textile and fabric (T&F) mills and the garment manufacturers in the global south use large volume of energy, water, and materials resources to manufacture textile fabric. Simultaneously, the T&F generate many NMOs including carbon dioxide (CO_2), hazardous chemicals, solid wastes, wastewater that contain toxic chemicals, colorants, and volatile organic compounds (VOC) [62], [85]. These operational issues have put production workers in danger in terms of the physical, biological, and ergonomic hazards.

2.2.1.2 External issues and pressures

The GGVC was pressured to address priority issues toward TBL practices concerning climate-based risks, quick market flux, and other challenges [49]. The numerous literatures have focused on climate changes [86], [87], market competitions [76], compliance costs [4], [69], stakeholders' pressures [88]–[91], and resource scarcity [92], [93] as external challenges. Besides, the WFCs' noncompliant behavior, poor pricing policy and indirect sourcing model effect suppliers social and environmental compliance practices [4], [6]. Some literatures have pointed out that weak industrial regulations regarding labor codes, health safety policy, and conservations laws motivated manufacturers to ignore the legal aspects [4], [6], [43], [94]. For instance, the garment manufactures of the developing countries have hardly received state supports to manage industrial wastes/emissions.

The WFCs' unethical business practices [6], [69], [76] were promoted the poor work conditions in the production factories. Several literatures criticized the WFCs' fast-fashion[3] business model that put lowest price pressures and strict lead-time to garment suppliers for gaining work-orders [63], [76], [95]. These unethical practices often encouraged suppliers to bypass the minimal social and environmental regulations. Again, the absence of state monitoring and inspection mechanism facilitated suppliers overlooking regulatory safety provisions and social compliance practices in their production factories. It is a significant contemplation for that promote social sustainability [2], [69].

In terms of environmental risks management, workplace safety, and societal issues, the extant literatures suggested workplace regulations, environmental, social, and ethical compliance initiatives, science-based targets, and metrics, to mitigate internal organizaitonal and operational challenges. On the other hand, the state monitoring, self-inspection mchanism, third-party audits, and standardized systems were proposed by many scholars and experts to overcome external barriers.

2.2.2 Capabilities toward achieving bottom-line practices

The supply chain management (SCM) literature have emphasized firm's management capabilities in terms of economic, societal, and environmental bottom-lines [42], [96], [97] which often have referred as TBL of three dimensions of sustianability. Capabilities are needed regarding the regulatory inspections, self-monitoring, and measuring of societal

[3] Fast-fashion – refers a quick response model of production which was designed to reduce inventory and times spent between initial garment design to outlet arrival (Taplin, Ian M. 2014).

costs, environmental impacts, process efficiencies, resource and waste management [42]. The social and environmental issues of a firm's supply chain have drawn increased inquiries and discussions in the multi-disciplinary liturratures [46].

Elkington's [26] have proposed the TBL model as a holistic sustainability program that emphasizes the financial/economic aspect over environmental and social bottom lines. He portrayed the seven dimensions (7-D), or "seven great revolutions," those guide corporate managers for improving TBL performance. These seven TBL dimensions are market, values, transparency, life-cycle technology, partnership, time, and corporate governance which is affected by several driving forces and leads to the rapid transformation in sustaining capitalism.

Although there have been substantial arguments concerning the appropriate TBL measures and metrics, the firm's abilities to specify those metrics and measures have become the key behavior [67] since the begaining of the 21th century. The operation management (OM) literatures have revealed several environmental and social programs by the global garment suppliers to mitigate the operational challenges.

2.2.2.1 Environmental bottom-line capabilities

The manufacturing firm has become more responsible to protect natural capital (nonrenewable and renewable resource) and environmental damages (emissions/pollution/waste, biodiversity loss, 'landfill erosion) from their corporate commitment on environmental issues. Many SCM and OM literatures have suggested environmental regulations and environmental metrics that have developed by transnational organizations and international standardized communities over the decades to make firms responsible for environmental issues. These metrics include scheduled EIAs [39], [98], environmental management system (EMS) [66], [99], carbon emission management [38], [100], cleaner production [39], [101], eco-efficiency and resources management [102], [103], the reducing, recycling, recovering and reusing (4R) paradigm [104], [105] help to achieve environmental capabilities.

Backburn [106, Ch. 2] suggested the corporate environmental performance (CEP) to achieve environmental capabilities by a firms. He addressed five key indicators to develop a CEP that include resource conservation, waste prevention and management, environmental risk control and restorations, reduction of supply chain impacts, and

collaboration with communities to improve the environmental dimension of the sustainability program.

Cleaner production assessment (CPA), life-cycle assessment (LCA), and EMS are industrywide measures and metrics to implement sustainable environmental practices over the years [39]. The EMS are developed by international standardized organization (ISO) under the series of ISO14000 to measures, document and report the negative impacts of production processes including industrial wastes (solid, liquid, and gaseous). A few research have claimed that the adoption of the EMS have improved cost efficiency in fashion and textile industry [99], [107], [108]. The main goal of this EMS measure is to increase the financial performance over the return-on-assets (ROA) and return-on-sales (ROS).

The LCA is a holistic method for thoroughly examining the ecological impacts of a production process to make the right decisions [109]. This tool became globally recognized for conducting the environmental impact assessment (EIA) by the ISO through the ISO14040 series of standards [110]. The LCA is necessary to quantify the EIs employing the energy, emissions, and waste data of each phase of the production process [39], [109]. Many empirical investigations [109], [111]–[113] applied LCA-perspective in the garment manufacturing sector to investigate technical improvements and behavioral change of environmental and social aspects across the garment value chain. The proposed increased service life of garments [111], improving the product lifetime [112], eco-friendly materials [113], and energy efficiency in manufacturing [109] to achieve sustainability benefits.

Many production factories in China and Turkey have implemented the cleaner production assessment (CPA) measures to achieve resources efficiency and waste management in collaboration with Partnership of Cleaner Textile (PaCT) projects, funded by International Finance Corporation (IFC) [38]. The CPA suggests the best available technologies (BAT) to alternate with existing old-fashioned and wasteful processes. In recent studies, many T&C manufacturers integrated the BATs to increase good management practices over water, energy, steam, and chemical optimization-minimization and substitution techniques [101].

Organization of Economic Co-operation Development (OECD) has launched a toolkit of the ‘Sustainable Manufacturing (SM)’ to enable manufacturers in improving the energy and process efficiency across the production processes. The SM is safe for employees,

communities, and consumers and product safety [114], [115, p. 4]. Therefore, the manufacturers are reducing ecological impacts, rapid exploitation of sparse natural capital, and energy consumption by integrating SM strategies. Several literatures have recommend a closed-loop system or circular economy system [39], [116], material efficiency [117], alternative resource [118], renewable energies, and the 7R's techniques [39] to mitigate the environmental impacts, process wastes and financial risks. The efficient use of materials reduces industrial waste generation, resource extraction and energy consumption, and energy demands and carbon emissions [119], [120].

2.2.2.2 Social bottom-line capabilities

The social bottom-line or SOCS agenda is not a new to corporate firm. It is rooted to the promise of social responsibilities, and corporate social performances (CSP) that drawn by early research [45], [121]–[123]. Bowen [121] has imported 'social responsibility' concept since 1953 concerning firm's duties toward its values and objectives of a society. Bowen's idea of 'social responsibility' has rested on two basic grounds. First, business exist to satisfy societal pleasures and its operation methods are set by social guidelines. Second, business acts as moral institution within society [123]. These premises have created academic debated whether the firm's corporate social responsibility (CSR) should be the productions of goods or revenues or a range of broader social goals to achieve by firms [124]. The debate laid foundation the CSR issues in the multi-disciplinary literature and business practitioners toward the nature of firm's social performance.

The influential research by Carroll [45] who introduced a concept of 'CSP' model in 1970 to measure firm's responsibilities on societal issues. This CSP model further was extended in the academic discussion by Wartick and Cochran [123], and Wood [122]. and The 'CSP' concept had been gained popularity across disciplines during 1990s that covered CSR, business responsiveness, and other business activities oriented toward social capabilities [45]. The CSP model have consisted of three facets explicitly the specification of the nature of social responsibilities, social issues, and corporate social responsiveness [45], [123], [124].

Carroll [45] argued that social responsibilities integrated economic activities (produce goods and services that society demands and sell these at a profit); legal (as an entity must follow state laws and regulations), ethical (meet the societal expectation beyond its economic and legal duties), and discretionary (pursue more corporate volunteering and

philanthropic activities). The CSP included several operational issues as social issues: consumerism, environment, discrimination, product safety, occupational safety, shareholders values. Finally, Carroll [45] suggested social responsiveness as corporate firm's responses that ranging from reactive to proactive actions during emergent situation.

The prior study on manufacturing sustainability has focused on the three key areas: society-related, direct employee, and company's employee-related policies toward SOCS of a firm [55]. There are several metrics to implement SOSC; however, they vary based on the firm's management structure, corporate commitment, leadership, and accountability. The GVC literature have suggested that managers should be upgrading corporate volunteering activities, social welfares, and value-creating needs in advance to improve employees' social needs [3], [49]. Moreover, several other literatures have also considered the social upgrading with fewer business impacts on surrounding communities [43], [46], [49]. They have emphasized on mitigating societal and environmental impacts as a requirement of corporate sustainability.

The rise of corporate codes-of-conduct (COC) has formed the basis of ethical standards and business social compliance provisions during 1990s to make firm more responsible and accountable on TBL issues across supply chain activities [3]. Some large companies (including clothing retailers, brands and producers) have created enforceable COCs through their extended efforts over monitoring and auditing to enhance supply chain transparency [70], [125]. This corporate COCs replicates labor conventions, health and safety standards, minimum wage requirements, and a prohibition of child and forced labor [125]. Moreover, the WFCs have consider integrating many ethical and social standards as voluntarily across their value chain activities [43], [75]. Many suppliers of the WFCs voluntarily have embraced international standardized norms and ethical initiatives under the Business Social Compliance Initiative (BSCI) to increase their management capabilities in improving social issues [42], [46].

Concerning CSP, the suppliers of the WFCs have been receiving pressures on workplace regulations, social, ethical, and environmental issues to improve responsive behavior. The public and private governance plans have emerged in 2013 after several industrial disasters to develop supplier's social accountability by reinforcing regulatory/legislative requirements [75], [126]. The WFCs have collaborated and cooperated their suppliers' factory safety, labor practices, social compliance, and other

corporate volunteering activities. Moreover, they have also begun to exert independent factory inspections, monitoring, and third-party audit mechanism to improve supplier's social performance and management capabilities [42], [75].

Finally, the social capabilities of a firm create the socially responsible and responsive companies to eliminating all forms of social issues. The firm's social issues must consider the several dimensional issues: internal workplace issues (discrimination, violence, and harassment, worker's complaint, health safety), social upgrading issues (employee's social needs, skills development, and empowerment), CSR issues (corporate sponsorship and communities volunteering), and social responsiveness (quick response and proactive attitudes). The firm should recognize the social capabilities to implement social dimension of sustainability. by implementing management, welfare standards, and the social up-gradation process. They have been increasingly imposed the corporate COC and mechanisms to increase garment suppliers' legal, ethical, social, and environmental compliance practices.

2.2.2.3 Corporate governance and management capabilities

As abovementioned, the weak governance structure exists in the supplier's factories that often lead many unethical behaviors concerning social and environmental accountability issues [10], [42], [46], [127]. Although many garment firms have gone through environmental and social scrutiny, the inadequate corporate governance measures [6] often distorts transparency over resource withdrawal, waste generation, and societal issues such as workers' healthcare and empowerment.

The prior investigations found the corporate members' absence in the board meeting, ad hoc growth, lack of internal coordination, and insufficient stakeholders dialogue result from these governance gaps [6], [65]. These are considered unsustainable behaviors of garment suppliers. Even suppliers maintain the third-party monitoring and evaluation but often manipulation the external auditors to bring inspection results to favor the factory. For instance, Prentice et al. [70] also talked about the suppliers' technique to convince third-party auditors for sensitive issues such as forced labor, child labor, or excessive overtime.

The GVC literature show, the MNCs have started to participate in multi-stakeholder programs such as Ethical Trading Initiatives (ETI) and Social Accountability International (SAI), collaborating with trade unions and NGOs to improve suppliers' social and

environmental practices [3], [49]. Several prior studies show that many conglomerates have considered corporate governance by integrating supply chain transparency, stakeholder engagement, participatory programs, and reporting practices across their production network [67], [128]. Many garment suppliers have initiated to publish three-pillar sustainability performance through GRI, UNGC, OEKO-TEX, and ISO [67], [129]. The disclosure practices over social and environmental aspects by the firm have increased the traceability to their stakeholders.

2.2.3 Sustainability practices in the Bangladesh RMG sector

The research on sustainability issues or the TBL issues in the Bangladesh RMG sector are very initial stage [2]. The number of studies is insufficient relate to sustainability themes. However, the prior studies have focused on a range of issues that categorize in four major themes, shown in table 2.1. These issues threaten the sector's constant growth to remain competition in export business with its rivals. These issues are required to resolve immediate basis by implementing appropriate measures.

Table 2.1: The RMG sector from a legal, ethical, and social compliance perspective

Themes	**Findings**	**Authors**
Workplace safety and worker's health issues	Unsafe work conditions, routinely work pressures, inadequate break time, and flawed health hygiene system	[68], [70]
	construction safety gaps such as structural, electrical, and fire safety risks,	[69], [130]
	governance gaps and inadequate inspections/audits mechanisms to improve the safe environment, workers' health safety rights, safety committee,	[6]
	substandard labor practices and poor wages	[70], [75]
Social and ethical issues	the marriage, childbearing, school enrollment, and employment decisions of women who gain greater access to garment sector jobs	[59]
	discriminations and ethical obligations toward workers' rights, social compliance,	[75], [131]
	CSR practices in the RMG sector, the importance of socially grounded needs, and responsible practices to improve workers' lives.	[4], [132, Ch. One]
	Social welfare, safety, living wages, toward social sustainability	[2], [4], [43], [69]
	acceptability of compliance provisions to the employed workers	[133]
	Globalization and the global production system promote cheap labor, poor labor codes and unethical practices, worker unrest, etc.	[60], [61]
	western retailer's fast fashion model incentivizes inhuman work conditions, workers' rights violations, unethical trading	[6], [10], [76]
Environmental impacts	RMG sector-led high emissions/pollution to air, water, and noise, resources depletion, and soil erosion	[8] [79]
	Assessment of energy intensity in the RMG sector and consumption lead-carbon emissions,	[16], [71]

	the impact of volume toxic chemicals in wet processing mil, wastewater, and toxicity in local waterbodies	[17], [79]
	environmental quality and it is related to human health*	[18]
Corporate reporting	corporate social reporting practices to examine the perceptions of a diverse set of non-managerial stakeholders. *	[134]
	corporate responsibilities and accountabilities to redress the negative consequences of environmental pollution and degradation	[48], [89]

Note:'*' these studies focused on the Bangladesh RMG sector along with another private sector.

After the post-MFA era, many Bangladeshi lead garment suppliers have increased COCs implementation over workplace safety, occupational healthcare, environmental and social issues. However, the poor governance [6], lack of monitoring and inspection mechanism [14], power asymmetry between employers and employees [127], lack of political wills [10], and inadequate knowledge-based management [135] remained the work condition at stake.

Numerous research advocates that workplace safety programs (WSP) has become enforceable since the 2013 Rana Plaza collapse as a direction toward the social sustainability movement [2], [6], [69]. The corporate norms and values toward improving H&S at the workplace meet social sustainability requirements [2]. The body of literature sheds light on the ILO labor conventions, universal human rights practices, and occupational health safety rights toward improving social obligations (often identified as social contracts) by the RMG sectors. The garments supplier's inadequate labor practices such as prolonged work hours, unhygienic sanitation, poor workroom temperature, inadequate visibility, low air quality, routinely work pressures, underpaid, child labor, forced labor, etc. have identified as governance lags between compliance policy and implementation since the inception [60], [70].

Again, many production factories in Bangladesh had embraced corporate social responsibility (CSR) practices in response to stakeholder relations and corporate accountability. Nasrullah and Rahim [132] revealed that many large RMG enterprises developed the CSR practices from their corporate charitable intents and volunteering commitment to their stakeholders [132]. Therefore, the Bangladeshi RMG sector started implementing the regulatory and voluntary labor codes, human rights conventions, and CSR initiatives improving the social capabilities.

The sustainability issues are practically delicate in implementing to the Bangladesh RMG sector environmental bottom line. Because the sector is always excepted to increase

double growth at one hand, and again the garment-production processes want to control the use of natural resources and industrial wastes on the other [16]–[18], [136]. The natural resources, including energy and waters exploitation and increased industrial wastes/emissions severely affect the local environment, workplace health, communities' livelihood, and wellbeing. However, there are a few state laws act as binding regulations concerning environmental conservation and facilities' environmental clearance. However, the lack of enforceable implementation and regulatory monitoring often fail to restrict resource exploitations, wastes/emissions, air, water, and the landfill pollution. Therefore, several early studies have suggested that suppliers' environmental governance and corporate accountability [89], [137] are key to reduce the resource consumption and waste/emission streams.

Meanwhile, the governance practice over social and workplace safety of the Bangladesh RMG sector was questioned after the deadly workplace accidents [4], [6]. The poor governance and inadequate standardized management systems often influence the corporate accountability and 'transparency' issues [7]. However, very few lead suppliers have published the governance information in the annual reports to secure acceptability and meet the stakeholder's expectations[7], [134]. Expect few, almost garment suppliers do not disclose their social and environmental reporting practices. Therefore, the social, ethical, environmental issues, stakeholders' engagement, and workers' participation have remained invisible throughout garment manufacturing chain.

Drawing conclusion from above summaries, we find that almost empirical investigations have emphasized the most important factors including factories' construction safety (including structural, electrical, and fire), workers' health safety, environmental regulation, labor codes and human rights issues as responsible business practice. Besides, several other studies concentrate on supplier's social responsibilities (worker's social needs, and corporate volunteering), worker's empowerment (training, forms of associations, and worker's participation), and environmental performance (EMS, EIAs and LCA), stakeholder engagement (increasing accountability), corporate reporting practices (information transparency), etc.

2.3 Theories in the 'Sustainability' research

The study finds a few empirical studies that have employed theory on sustainability research. Lozano et al. [138] highlighted proposed a new theory of 'Sustainability-oriented theory of firm' combining some popular theories of the firm. Almost research in the supply chain sustainability (SCS) have employed stakeholder theory [23], [45], [65], [88], [134], [139], [140]. Moreover, the few more theories including resource-based view [97], [141], [142], transection cost economic [2], institutional theory [43], [88], [143], [144], contingency theory [143] have found in SCS research. However, the dominant management theory like knowledge-based view (KBV) [135], [145] has employed only in a few supply chain research but no direct implication in sustainability from the GGVC perspective.

The study examines the study findings through the KBV lens for understanding the influence knowledge management of a firm to make strategic decisions. In addition, three other theories including Resource-Based View (RBV) [53], new institution theory [146], and the Stakeholder approach [147] also employ to interpret the findings because of intensely linked to the phenomena of sustainability implementation in the RMG sector. In the following, the brief discussions of all four theories are depicted from sustainability programs perspectives.

2.3.1 Knowledge-based view

First, we discuss the KBV view of a firm and why it is a matter for implementing a sustainability program. The KBV highlights the intellectual capital of a firm to implement its strategy. It considers the employee's knowledge and experiences that can be input as an intellectual resource to make a competitive strategy. The knowledge resource stands on its human' interactions, dynamism (continuous changing), and social process (societal issues). The managers (human) continuously interact with internal and external actors to implement strategies by creating and sharing experiences. Nonaka and Takeuchi [148] emphasized the employees' individual abilities to improve intellectual capital and convert these to the firm's assets. The firm managers interact among them continuously and create and share knowledge in the dynamic environment and changing social processes. Therefore, their roles are crucial in addressing the TBL risks of a firm and taking mitigation strategies to implement sustainability programs.

The employees gain skills and experiences in an organization setting over times, that embodied as 'tacit knowledge' mentioned by Nonaka and Takeuchi [148] and can convert these into valuable assets or products. They drew the knowledge creation and sharing

(KCS) process of an organization called SECI (Socialization, Externalization, Combination, and Integration) spiral based on employees' constant interactions between tacit and explicit knowledge. The verbalized or expressed, or formalized knowledge is referred to as explicit that derived from tacit knowing. Again, the tacit knowledge is difficult to express because of highly personal (such as experience). The organization usually faces barrier to seize and transfer employee's experiences (tacit knowledge) because of its highly personal and complicated to express in the formal pattern [149].

2.3.2 Resource-based view of firm

Second, the RBV of a firm to create resource position and its efficient utilization as the driver to develop sustainability program. Wernerfelt [53] coined the RBV idea to analyze a firm's performance based on the resource position barriers and growth-share matrices. A firm's resources are broadly classified as tangible and intangible assets that should be valuable and costly to copy the resources and capabilities of competitors. The firm heavily relies on capital, skilled workers, machinery as tangible resources to operate economic activities on the one hand. Again, its brand names, in-house technology, trade contracts are the intangible resources to continue the quality growth on the other. Barney [150] pointed out four elements: valuable, rareness, inimitability, and replaceability of the resources that help drive competitive strategy. Firms can achieve a competitive position over rivals by increasing valuable and alternative resources that competitors cannot easily reachable and reproducibly.

The resource is the basic unit of analysis that could be physical assets and financial capital, and employee's skills and social processes [151]. The RBV of a firm is further extended by several management experts interlinked with TBL practices. Hart [151] extended RBV as the natural-resource-based view (NRBV) concerning the firm's keen relationship to the natural environment. The NRBV argued the three strategies: pollution prevention, product stewardship, and sustainable development to implement environmental protection by a firm. Again, the social-resource-based view (SRBV) is proposed by Tate and Bals [141], focusing on the social capabilities of social entrepreneurship to solve social issues. The firm's capabilities result from bundles of resources converted to value-added processes such as production design, quality, just-in-time delivery, and so on [141]. Again, the bundle of resources triggers some specific capabilities of the R&D and technologies to increase further the resource efficiency at production processes. However, all forms of the

RBV of a firm suggest that firms employ and develop capabilities and resources (tangible and intangible) to achieve a sustained competitive advantage. Finally, the fact is that firms envision achieving the resource position as the ultimate economic goal; therefore, the environmental and social concerns over resource management might be the means to attain it.

2.3.3 New-institutional theory of firm

Third, the NIT influences to regulate firm operations in implementing social compliance and environmental regulation. The firm exists as an independent unit, and its legal foundation relies on the binding laws and regulations concerning its formation and boundaries. The state regulations and international standardized practices constantly reinforce the institutional pressures over the economic activities, which are significant concerns of the NIT suggested by Powell and DiMaggio [152]. The NIT stands on three institutional factors: regulative, normative, and cultural-cognitive that defines a firm's behavior as a responsible and accountable institution. The literature [2], [69], [88] has shown that the sustainability program of a firm requires to adopt the state regulations, industry-wide business norms, and other voluntary COP. Because it is a member of society responsible for implementing the regulatory, normative, and cultural values as COP over environmental and social dimensions to continue economic activities.

The study supports NIT because the execution processes the workplace safety, social compliance, and environmental conservation are influenced by many state laws, international norms, and other universal beliefs systems. Several other studies on workplace safety and social sustainability implementation of the RMG sector have examined the external regulations and cultural issues through the lens of NIT [69], [88]. Akbar & Ahsan [69] found the NIT to influence apparel firm's behavior toward its regulation, environmental, social, and cultural aspects. Carlson and Bitsch [88] proposed the institutional analysis and development framework suitable to promote social sustainability in the global garment sector.

2.3.4 Stakeholder theory

Lastly, the 'Stakeholder Perspective' is suitable for defining the 'relationship' of the corporate interest groups that provide feedback and suggestions toward sustainability programs. The corporate governance of modern firms always concerns the interest groups at 'stake' by the firm's economic operations. That groups play critical roles toward firm's sustainability performances, was covered in the many literature [23], [65]. Freeman [147]

titled these interest groups as ‘Stakeholders’ who helped managers take the ‘shared value creation’ to attain TBL practices. The ‘stakeholders’ are a range of interest groups/individuals such as the employees, customers, suppliers, stockholders, financial institutions, activists, government, and other pressure groups as ‘stakeholders’ of a modern firm [147]. Dyllick [23] viewed that a sustainability program could be implementable by meeting the firm’s direct and indirect stakeholders’ needs without compromising the ability to meet the needs of future stakeholders.

The prior literature revealed numerous stakeholders divided mainly into primary and secondary, and social and non-social categories shown in figure 2.5 [138], [153], [154]. The primary-social groups have a more direct influence on the firm or are more influenced by the firm than the secondary ones. However, a firm need not leave out any individual or interest group who can influence or influence organizational purpose. If it does, a firm’s success might affect by any group or individual [155].

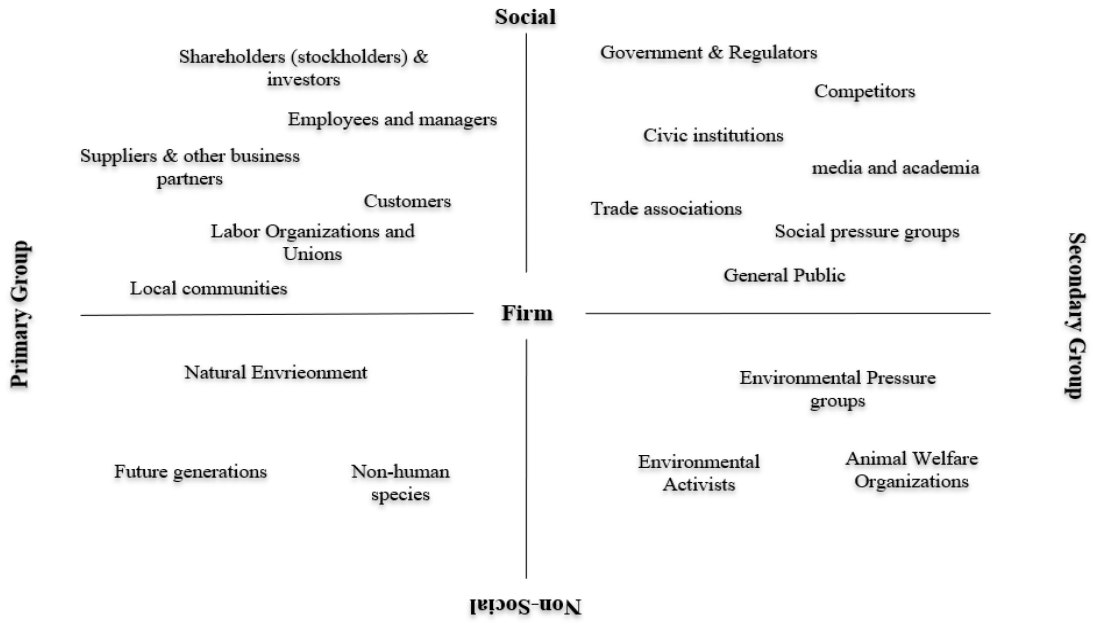


Figure 2.3: Firm’s multi-layered stakeholders within ST theory context. source: Adapted from [65], [138], [154], [156]

The stakeholders of the GGS play the chief role to make WFCs and their suppliers accountable for environmental and social legitimacy. De Brito et al. [65] identified suppliers, manufacturers, retailers, post-consumer actors, service providers, and independent experts as stakeholders who played critical roles in the T&C industry value chain. Lozano et al. [138] focus on stakeholder intervention for controlling and

harmonizing the firm's contracts with social and non-social partners. The external stakeholders' intervention and continuous pressures affect a firm's social and environmental legitimacy toward sustainability performance [42], [91], [134]. Again, the external stakeholders corporate and collaborate with firms to develop cleaner assessment, life-cycle technologies, technical and soft-skills training to lessen environmental and social risks. Therefore, the modern firm welcomes stakeholder relationships by building more comprehensive partnerships- so that their stakeholders obtain a sense of ownership in the sustainability program [26, pp. 219–241]. The partnership between companies and other knowledge partners has been increasing based on co-petition and collaboration to work for the same environmental risk management or social justice objectives.

Concluding the above theories, the study argued that the sustainability program is driven by four factors: 'human knowledge, resources, system (rules/standards), and relationship. These factors are correlated with environmental, social, and economic pillars to implement sustainability. The corporate board members should address sustainability programs as board activities [26]. They can emphasize achieving capabilities (protecting human capital, resources efficiency, emission management, and social up-gradation) and managing the organizational drivers to implement sustainability programs.

2.4 Summaries of the reviewed literature

The above literatures shed light on several barriers, drivers, and capabilities toward stepping to a sustainability program for the garment sector. However, the global garment production network has encountered internal organizational and operational challenges and external pressures from direct and indirect stakeholders. Literature shows that internal organizational issues: inadequate corporate commitment, governance gaps, weak management policies and lack of participatory management result in unsafe work conditions. Moreover, the skill shortage, worker's inefficiency, higher consumptions, inadequate wastes recovery process lead higher operational costs across the garment manufacturing chain.

Again, the external challenges such as the global warming, pollution, resources and materials crises, technological disruptions, market shifts, and quick changes in regulatory and ethical issues put producers' continuous pressures on manufacturing activities. Both internal and external factors have facilitated the garment suppliers to search for new

business policies, methods, and models to develop capabilities to remain competitive at world export markets. Many WFCs like Walmart, H&M, Nike, M&S, and Inditex and their leading garment producers have recognized those challenges to overcome. They have set the goal of sustainability to secure their brand value and reduce the reputational risks in the global market.

The study finds the sustainability programs of a firm encompass to develop the triple bottom lines' capabilities. The specifications of TBL capabilities include many measures and metrics to improve safe and healthy workplace, social and ethical standards, environmental impacts assessment, and footprint management, resource efficiency, waste recovery, product innovation, productivity, stakeholder's engagement, partnership, etc. These capabilities drive a firm to create key performance indicators and corporate reports on the TBL practice.

Organizing framework to implement Sustainability Programs (SPs). Drawing the summaries of the previous studies, we have organized a conceptual framework of the sustainability program shown in figure 2.5. The framework includes the three elements: addressing the barriers, achieving the capabilities, and improving and disclosing bottom lines initiatives toward sustainability practices. The framework is developed by combining sustainability literature, supply chian, and theories of firm to verify its constructs and mediating factors. The theories of firm suggest that a firm's success is strongly tied to balancing three bottom-lines: products (economy), people (social) and planet (environmental).

The firm's primary concerns are to identify the internal and external barriers before taking the correct measures of all bottom-line practices. Therefore, almost all prior literatures have stressed double ends (internal and external) challenges over environmental, social, and economic dimensions toward achieving sustainability programs. Many management theories and frameworks have shown that the integration between internal coordination and external collaboration motivates firms to achieve organizational capabilities toward competitive advantage. These motivating factors are identifed as the drivers of firm's sustainability strategy.

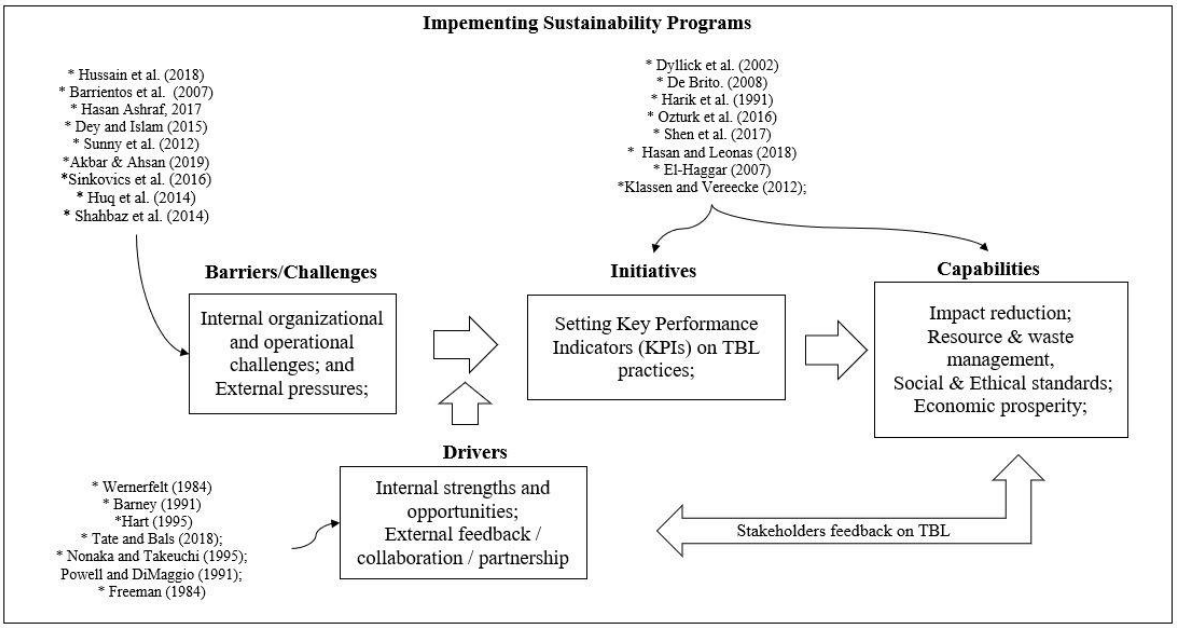


Figure 2.4 A conceptual framework on 'Implementing Sustainability Programs'

The literature have identified several metrics and standardized practices such as the environmental impact assessment, life-cycle assessment, footprint management, and cleaner production assessment and technologies. These metrics are required to monitor and scale environmental impacts generating from the manufacturing processes. The firm can achieve environmental capabilities (ENV-CAP) by reducing the negative impacts including wastewaters intensity, carbon emissions, pollutions, and solid wastes. The Env-Caps are required to protecting the surrounding ecosystem. The social capabilities (SOC-CAP) integrate health safety, workplace compliance, equity, skills, and economic development (structure, consumptions, and production patterns). However, the bottom lines' capabilities of the firm must practice and publish to direct and indirect stakeholders for evaluating and improving the cycle of practices.

CHAPTER THREE: RESEARCH METHODOLOGY

3. Introduction

Social research follows a step-by-step process to obtain reliable study findings that answer the research questions. A systematic process in research is crucial to blueprinting the internal and external validity of the findings from the obtained data. This section shows how the research progressed from problem identification to data collection and analyzed to interpret the results.

3.1. Research Setting: A brief introduction to Bangladesh RMG Sector

The study found that the sector recognized sustainability in recent years. Therefore, it is interesting to examine the background of sectors from legal compliance to sustainability implementation perspective. We chose the Bangladeshi RMG sector as the research setting for this empirical study due to its importance as a catalyst of economic success and the increased pressures for workplace compliances and other social and environmental bottom-line practices. The brief story of the RMG sector is summarized below including its journey to sustainability program through the five critical phases.

Background. The apparel or garment has become the primary export product during the 1980s. The clothing manufacturing industry is widely recognized as the readymade garments (RMG) industry which is a catalyst of the Bangladesh economic development. For nearly four decades, the industry has served significant growth in the world export market. The industry has experienced many ups and downs at the different phases. The sustainability concept has rooted to the RMG sector legitimately since the workplace safety program in 2013 by the public and private regulators. But the sector has been experiencing the full wave of sustainability movements following the inauguration of the RMG Sustainability Council in 2019.

3.1.1 The early phase (1978 – 1994)

The history says that a visionary businessman, late Nurool Quader Khan, started the garment export business by founding the 'Desh Garment' in Bangladesh in 1978. During the 1990s, a few financiers without any knowledge in the export business stepped into investment in the Bangladesh garment sector, following NQ Khan [60], [157]. To BGMEA (2019), the Bond Garments, Reaz Garments, Paris Garments, and Azim Group were

established as the first garment factories in Bangladesh. Since then, the Bangladeshi RMG sector has earned a niche in the world market and continued to show robust performance.

3.1.2 The MFA-quota phase (1995 – 2004)

The predecessors of the RMG enterprises propelled the flagship of garment export based on hardworking mindsets. Their efforts motivated other entrepreneurs to join the garment manufacturing business. However, the Bangladeshi RMG exports rapidly increased due to the privilege the country obtained in the Multi-fiber Agreement (MFA) Quota Phase in 1995. The quota system expanded the wings of new market entry. The US and European clothing industries relocated their production network to developing countries like Bangladesh because of the low assembling costs and large production base [157]. The numerous literature indicated that the MFA quota phase stimulated the advancement of the RMG sector [60], [61], [158]. The prior literatures suggested that the production capacities, cheap labor, product quality, massive workforces, flexible import tax, and duty facility (especially GSP -Generalized Standard Preferential) helped to propel the sector's numeric growth [60], [61].

3.1.3 The MFA quota phase-out (2004 -2012)

Although the export quota system expired and ended in 2004, the new era brought another story of success to the RMG sector. The sector size and export growth had been constantly increasing even after the MFA quota phase-out. The sector started with 380 factories in the 1980s and grew to 5400 factories in 2011-12 according to the BGMEA member list [159]. Labowitz & Baumann-Pauly [6] identified the number of factories of the RMG sector as around 7000 in 2015 , in which 3500 suppliers delivered garment products direct to the Western fashion brands. The rapid growth of this sector resulted in holding an 80 percent share of the country's total exports after 2010. While the export revenue was only USD 1 million in 1978, it soared to more than USD 21 billion in 2011-12 [160]. However, the sector's exports predominantly relied on the five basic garment items to the five major markets in the world, namely, Europe, America, Canada, Australia, and Japan.

3.1.4 The darkest phase (2012-2013)

The global stakeholders and media have blamed the Bangladesh RMG sector for many inhumane practices. For instance, the child labor, poor labor practices, poor work conditions, and poor health hygiene practices became common issues in the RMG sector

during the 1990s [6], [70]. The two deadliest accidents, the Tazreen factory fire and the Rana Plaza collapse, occurred in the consecutive years of 2012 and 2013. These accidents caused massive fatalities estimated above 1200, and nearly 3200 more people were injured [9]. The 2013 factory collapse has strongly stimulated the industry stakeholders including global buyers, retailers, trade unions, NGOs, and state authorities to reconsider the workplace health safety regulations for the Bangladeshi RMG sector [161].

3.1.5 The workplace safety program phase (2014-2018)

After the accidents, the three governance programs, including Accord on fire and building safety (Accord) by European clothing retailers, Alliance for Bangladesh Worker Safety (Alliance) by the North American fashion companies, and the National Tripartite Plan of Action (NTPA) by the GOB, emerged as the independent regulatory bodies in the end of 2013 [6]. These public and private governance programs led structural, electrical, and fire (SEF) safety inspections around 3900 factories. Furthermore, they provided corrective action plans (CAPs) to remedy SEF safety defects and confirmed the repair work by the follow-up inspections. [162]. The BGMEA, industry association, created the Fair Factory Clearinghouse (FFC) database for monitoring transparent and credible safety progresses of the member factories. Till May 2019, less than 900 factories had completed above 80 percent of SEF corrections and fewer than 2% of factories had been closed because of failed to meet acceptable work condition [162]. At present, the number of garment factories is approximately 4621 after terminating disqualified factories [163].

3.1.6 The Sustainability Phase (since 2019)

After Accord/Alliance binding contracts, the BGMEA has formed the RMG Sustainability Council (RSC), a tripartite agreement with GOB and Accord/Alliance. The RSC has acted as regulator to force garment suppliers completing the mandatory factory remediations based on CAPs [163]. Besides these governance programs, the GOB has amended the national health and hygiene provisions and minimum wages following Bangladesh Labor Acts 2006 and the National Wage Board (NGB) respectively. Moreover, the BGMEA has collaborated with the ILO, International Finance Corporation (IFC), and several other international non-government organizations (INGOs) to empower workers' technical and soft skills.

The partnership projects with INGOs and IFC have enabled BGMEA to expand several sustainability programs across the member factories. The projects include the

cleaner production assessment (CPA), life-cycle assessment (LCA), green factory development (GFD), environmental footprint management, and the GHGs protocol of the life-cycle accounting to improve energy, water, and emission management performance [163]. Many RMG factories have joined various sustainability programs in collaboration with the Partnership of Cleaner Production (PaCT) and the US Green Building Council (USGBC) projects to reduce negative impacts throughout production processes. The numbers of manufacturers have developed the efficient technologies and skills to improve energy, water, and carbon emission reduction performance under the PaCT and USGBC projects. Almost 500 lead suppliers have accredited for Leadership in Energy and Environmental-led Design (LEED) standards for their achievement in industry-wide environmental footprint performance under USGBC [164]. According to BGMEA, more than 300 factories have already initiated the GFD project under the LEED standards.

3.2. Research design

The focal point of this research, 'Sustainability', seldom appears in the context of RMG. Therefore, we have emphasized the exploratory case study (ECS) design under qualitative method to find logical evidences [165], [166]. The qualitative data from case organizations help researchers provide thick descriptions of the contexts [166], [167]. Moreover, the thick descriptions offer the real scenarios of research purposes in the natural setting. This ECS explores the respondents' perceptions, deep meanings, and experiences in implementing sustainability initiatives in the garment manufacturing setting [166]. We applied a multi-case study approach to discover the facts and differences among the three case companies of the Bangladesh RMG sector in terms of their sustainability programs. The research produced the qualitative data based on interpretivism approaches to uncover the social meanings and multiple realities in apparel manufacturing contexts.

3.2.1. Case study: the main instrument of QRD

The early stages of sustainability research called for an exploratory case study with qualitative data [2], [166]. The case study design is suitable for discovering unknown facts [165]. Here, we attempted to explore and interpret the garment suppliers' approaches toward organization's bottom-line practices in the competitive edges. The case study provided the detailed exploration of the case firms [166, pp. 45–78], the in-depth inquiry into sustainability program [165], the dynamics of the sustainability practice [168], and the

understanding of the context [169]. The exploratory case study has also been chosen as a primary method in many previous studies of workplace compliance, workers' health, social and environmental issues in developing country's perspectives [2], [4], [75].

As mentioned above, we employed a multi-case strategy [165] to identify the three garment suppliers as cases of this study. This strategy offered greater visibility, and replicability among the cases due to the novelty of its study content. It could increase the external validity and defend against partiality [165], [167]. We endeavored to provide a broader exploration of the research questions and theoretical explanations by using the multi-case strategy [168]. In addition, the multi-case study ensured the external validity and generality on sustainability practices by selecting similar case organizations.

3.2.1.1. Case selection

The study carefully selected three case companies from the Bangladeshi RMG sector considering elaboration and replication. We took several precautionary measures to ensure minor differences that allowed us to reach the depth of reality.

- ✧ First, as a lead supplier of the Western clothing brands, all three firms must be listed by Accord[4], the private regulator, workplace safety program (WSP). The list contained more than 1863 garment suppliers and manufacturers those export garments directly and indirectly. In selecting our cases from this list, we employed three conditions: remediation status (on track), remediation progress (above 90 percent), and safety training program (training completion). Finally, we found that only 47 factories out of 1863 met all requirements.
- ✧ Second, they must be composite knitwear suppliers possessing similar products and processes. They must have inhouse textile mills, garment assembling facilities and other supporting manufacturing units such as printing, embroidery, and laundry. Concerning these all facilities, we found only 18 out 47 factories.
- ✧ Third, all case manufacturers must be accredited by either social compliance or ethical compliance standards and should embrace at least one Sustainability Management Standard. Following these conditions, we found only 12 out of 18 factories to communicate.

Initially, we contacted those 12 suppliers by emails by attaching an official invitation letter prepared on the research institution's letterhead. The researchers requested all

[4] https://bangladeshaccord.org/factories The website shows the RMG factories inspected by the Accord.

manufacturers to join as a ‘voluntary case’ for the academic research. The letter explained the research purposes, strategy, and data collection and analysis protocols throughout the research projects. In this regard, all email communications and invitation letters were sent to the persons representing the human resource section of each case garment manufacturers in Bangladesh. Only 5 manufacturers accepted the researcher’s request. They cooperated to access the sites with several restrictions based on case firms’ corporate policy.

- ✧ First. An official agreement between the researcher and case organizations.
- ✧ Second, the researchers must contact responsible person before entering facilities.
- ✧ Third, all respondents would be contacted via the responsible persons.
- ✧ Fourth, all interviews of the non-management employees must take in front of the responsible person.
- ✧ Fifth, the person always accompanies the researchers during the visit to all facilities.
- ✧ Sixth, the interview schedules must be informed in advance by email or phone to avoid hampering respondent's assigned jobs.
- ✧ Finally, the interviews could be recorded with participants' consent, and the research results must protect company’s privacy.

However, we had to removed two more case firms because of the fourth and fifth conditions. Therefore, three manufacturers were selected as case organizations based on all criteria shown in table 3.1.

Table 3.1: Case Selection Criteria

Case Organizations	Type of process	Accord Membership	Compliance Standards	Sustainability Management Standards
Firm A	vertically integrated	Approved	Ranked B	OEKO-TEX STeP
Firm B	Do	Approved	Ranked ‘A’	Higgs’s FEM
Firm C	Do	Approved	Ranked ‘A’	LEED

Note: Composite Knitwear Manufacturing possess all in-house facilities, which are also called vertically integrated production facilities.

The researchers further communicated with three case firms’ human resource (HR) managers to schedule facility visits. The contact persons of firms guided the researcher to access production facilities, conducting observations, meeting with the management and non-management employees. We then developed a Memorandum of Understanding (MoU) between the principal researcher and case firms. Some specific duties of the principal investigator (PI), research assistants (RAs), and case companies were described during the research process in the MoU. The study clearly stated the tentative data collection

timeframe. Therefore, the PI and RAs could easily access manufacturing facilities until the end of the research project.

3.2.1.2. Research Respondents

The researchers determined the purposive sampling technique, one type of non-probability sampling [166], using subjective judgment as it is the most practical in the exploratory stages. We endeavored to answer the research queries undertaking an in-depth study that relied on a small number of respondents of the case organizations. Management employees at the similar level were selected in terms of holding sufficient knowledge shown in table 3.2 and interest in the key sustainability concept. As we know, the similarities among research respondents helped us explore greater depth on the research key contents and themes of the subject matter [169].

Table 3.2: The details of Research Respondents

	Categories of Respondents		
Res. Code	Designation and Job Category	Year of Exp.	Highest Education
RS.1_A	Director, Technical & Maintenance	20	Dip. in Eng.
RS.2_A	Senior Manager, Compliance	12	M.Com.
RS.3_A	Senior Manager, Marketing & Merchandising	15	M.Com.
RS.4_A	Deputy General Manager, Production (Fabric)	20	BSc. In Eng.
RS.5_A	Director, Production (Garment)	11	BSc. In Eng.
RS.6_A	Chief Operating Officer, Factory Operation	16	BSc. In Eng.
RS.7_A	Supervisor, Production (Fabric)	7	Dip. Prod. Tech.
RS.8_A	Cutting Operator (Garment)	5	Primary School
RS.9_B	Executive Director, Marketing (Fabric & Garment)	26	BSc. In Eng.
RS.10_B	Chief Operating Officer, Factory Operation	20	M.Com.
RS.11_B	Senior Manager, Marketing & Merchandising	13	MBA
RS.12_B	General Manager, HR, Compliance, and Sustainability	11	MBA
RS.13_B	Senior Manager, Production (Printing)	12	Dip. Prod. Tech.
RS.14_B	Senior Operator, Production (Fabric)	8	Primary School
RS.15_B	Line Chief, Production (Garment)	11	Secondary School
RS.16_C	Director (Fabric)	24	BA
RS.17_C	Manager, Marketing & Merchandising	16	M.Com.
RS.18_C	Sr. Manager, Sustainability	12	M.Com.
RS.19_C	Doctor, Medical Center	10	MBBS
RS.20_C	Senior Manager, Compliance and Welfare	15	MBA
RS.21_C	Operator, Production (Garment)	4	Primary School
RS.22_C	Line Chief, Production (Garment)	11	Secondary School

Note: Dip. in Eng. – Diploma in Engineering, BA. - Bachelor of Arts BSc. in Eng. – Bachelor of Science in Engineering, M.Com. - Master is in Commerce, MBA- Master of Business Administration,

Before contacting respondents, we identified the key resources persons such as divisional heads or senior managers who engaged in making sustainability-related decisions. Therefore, before fixing the respondents' list, we requested targeted respondents' details and contact numbers (including mail and cell phone number) from the case organizations' HR managers and Compliance managers. Only two case companies (Case A and Case C) provided the researcher the respondents' details for making interview schedules. Although the other case (Case B) did not share the employee's personal contact details with the researchers, they cooperated with researchers to access the relevant departments for respondents' interviews based on their availability.

The researchers made a few changes to the primary respondents' list after cross-checking with respondents. Although we managed 30 research respondents, we did not consider all for several unavoidable reasons. Finally, we have considered a total of 22 respondents shown in table 3.2. As the homogenous purposive sampling, the qualitative interview research on sample size 4-12 is acceptable for internal validity [169, p. 297]. Therefore, the study sample size 22 is entirely appropriate to ensure validity and reliability concerning case study research.

Table 3.3 Demographic Profile of Research Participants

	%		%
1. Experiences in Years		**4. Designation**	
<5 or 5	9.1	Owner / Managing Director / Director	13.6
6-10	13.6	CEO / COO	9.1
11 - 15	50	GM / AGM	13.6
16 - 20	18.2	Manager / Senior Managers	36.4
>20	9.1	Line Chief/Supervisor	18.2
2. Job status		Operator	9.1
Management	72.8	**5. Education**	
Non-management	27.2	Bachelor	22.7
3. Work Category		Master	36.4
Factory Operation / Prod.	31.8	Diploma	13.6
Admin./ Compliance/Sustainability	22.7	MBBS	4.5
Marketing and Merchandising	18.2	Secondary School	9.1
Fabric Mil	13.6	Primary School	13.6
Maintenance	4.5	**6. Specialization**	
Medical Center	4.5	Engineering & Technical	31.8
Prod. Dev. & Sample	4.5	Health expert	4.5
		General Education	63.6

Note: A total of 22 participants from three case organizations (Source: Fieldwork 2018-2019)

However, the respondents represent the diversity in education background, experiences, positions, job duties, and specialization, as shown in the demographic profile table 3.3. The interviewees from diverse backgrounds helped the researcher maintain data quality. Almost 50 percent of participants held over 11 to 15 years of work experiences in the garment sector, and more than 25 percent above 16+ years of experience. The study considered the management and non-management employees as respondents that represented 72.8 percent and 27.2 percent respectively. Concerning work category, almost one-third, 31.8 percent belong to factory operation and production division. On the other hand, participants from general affairs department (sustainability, Compliance, and Administration) represents 22.7 percent and 18.2 percent participant from marketing and merchandising categories.

In this study, we emphasized middle management and top management respondents who possess initiatives and take part in company's policymaking. In both categories, we interviewed almost 50 percent and 22.7 percent, respectively. In the educational background, most of the participants are above bachelor's degree (63.6 percent). However, they completed bachelor's or master's degrees in the fields of general education.

3.3.3 Phases of data collection

The study employed triangulation [170, pp. 777–781] method to gather data considering different times, places, and persons, shown in figure 3.2. In the first phase, the principal investigator (PI) conducted interviews with 6 respondents of the top management of all three case firms. The first stage of data collection was carried out during *Sept-October in 2018* by the PI. The first phase of data collection helped PI determine the boundary of the research content questionnaires and analysis procedures throughout the research process.

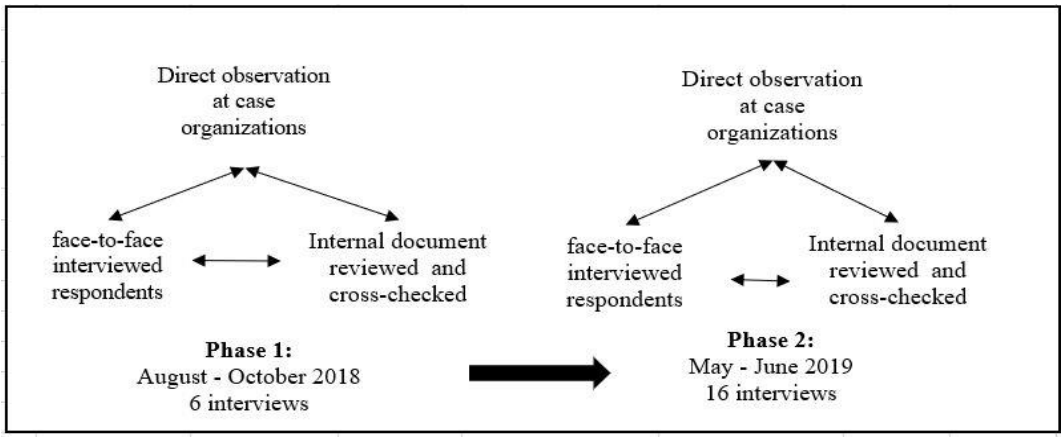


Figure 3.1: Data triangulation method to gather data from research setting.

In the second phase, the data were collected during *May – June 2019* by two research assistances. Both RAs were graduate students from of local university. They were selected through the formal recruitment procedure. The RAs interviewed almost 22 research respondents using the interview guidelines. We considered the 16 interviews suitable based on consistency and completeness. Besides the interview, they gathered data through internal documents and a series of direct observations.

3.3.4 Measurement of Data collection

The researchers gathered data from three sources: observation, documents, and interviews (see figure 3.2), which is called the 'triangulation' method considering theoretical stance. The 'triangulation method' can increase the credibility of the internal quality research and external validity [170, p. 779]. We focused on methodological triangulation to accumulate qualitative data from the interview, direct observation, and document review [170, p. 780]. The case study research becomes rich and high quality once its results are revealed in all dimensions. Therefore, we employed great caution in selecting target respondents, observing rights activities, and reviewing correct documents of all three case firms throughout the research process.

As mentioned, the subjective stances from various respondents are very crucial for the case study. Therefore, we preferred in-depth discussions through semi-structured interview measurements. The interviews covered diverse respondents' backgrounds (see table 3.2), which helped us reach the diverse information in various dimensions. Following interview measurement, we also concentrated on onsite observation and internal document review to verify our perceptions.

3.3.4.1. Interview Instrument

We prepared the interview contents following a semi-structured design to maintain their coherence with the research aim and questions. The interview questions were simple enough for all the respondents to comprehend. Bryman [166] suggests using a list of content questions that somewhat covers the specific research topics. It is often referred to as an interview guide. However, in this research, before the fieldwork, the contents of questionnaire had been checked by the supervisor and peers during weekly seminars.

Moreover, the study followed a three-step in-depth or semi-structured interview to improve data quality issues.

First, we have developed communication for the interview schedule. The researchers contacted respondents through mail or voice calls before interviews. We sent study purpose, content questions, and research protocol to the case firms before interviewing respondents. After the management confirmation, the HR manager provided the interviewees' details of the respective departments. The principal investigators (PI) and the researcher assistants visited all case companies and met all respondents to introduce themselves and shared the purpose and importance of the research.

Second, we have prepared interview arrangements. The researchers sent an interview guide to respondents that included three parts: interview manners, protocol, and some research contents based on respondents' categories. Following the interviewee's manners and protocol, we described several relevant queries to let interviewees know about the duties of researchers and respondents during the data collection and analysis process.

Third, we have cross-checked the interview's correctness. During the face-to-face interviews, the researchers also provided the printed copies of the interview guide and a consent form to the respondents. The interview guide and consent form helped participants to decide their voluntary participation. Again, the consent form also clarified risks and discomfort, the advantage of the research, personal information, and data privacy issues. In the end, we put the researchers' contact details with the affiliated institute address in the consent form as if the respondents could contact if any doubt.

The researchers gathered interviews from respondents using a content questionnaire (see Appendix A: table A1). Through semi-structured technique, we have gathered 30 interviews. With consent, we audiotaped almost 20 interviews in front of the respondents. The complete interview of each management respondent took an average of 60-75 minutes and each interview of non-management employees lasted almost 40-50 minutes. The interview clips of each interviewee were played randomly to reconfirm the voice quality and clarity to avoid any doubt regarding some concepts.

However, we finally considered only 22 interviews (Table 3.2) because of the completeness and consistency related to the content questionnaire. Except one, all 21 participants are from local with similar cultural origin. Almost in-depth interviews are

made one-to-one in the factories' premises. However, we were flexible to take interviews during the available time requested by respondents, such as the early morning or late evening or even on weekends via voice calls or face-to-face meetings at restaurants.

In the study, we encountered several hurdles concerning data collection from management and non-management employees. First, although the case companies agreed to allow researchers for random access to their factories during data collection phases, the top management would often restrict frequent access to facilities. Second, management respondents were in a rush almost times, so it was challenging to cover the whole interview without interruption. Third, the respondents from non-management were not always accessible, and they also often felt shy and afraid of sharing information freely. However, to cope with these challenges, the researchers prepared flexible interview schedules considering time and location.

3.3.4.2. Onsite Observation

The study also emphasized direct observation alongside the interview method. Observing the research setting often helps to be familiarized with participants in the studied locations. The study considered a structured observation [166], [167] to gather data through the step-by-steps viewing of the suppliers activities concerning sustainability practices. First, we observed the people actions of what they were practicing and their interaction among co-workers. In this regard, we endeavored to address on how the managers would cooperate and collaborate with their subordinates to make the jobs done. Second, we participated as an observer as weekly meetings, Safety committees, and Participatory committees' meetings. The work floor visits helped researcher to observe workers' response systems during hazards assessment.

During filed work on September - October 2018, the observation was conducted mainly by principal investigator while visiting case firms' production facilities: the office buildings, garment production floors, inventories, fabric processing units, water treatment facilities, and power generation areas. However, the RA also visited the same facilities to cross-check the previous observation records and gathered some new filed notes. The researchers also emphasized informal conversations with the witnesses (especially workers, supervisors, and floor managers) about the events that were studied. The direct viewing allowed researchers to get insights about management functions, the relationship between

inter and intra-departments activities, and organizational practices concerning the firm's bottom-line issues.

We took field notes (observation memos) while visiting suppliers' manufacturing facilities. A research notebook (sometime digital notebook or paper notepad) used to record the observation events concerning employees' activities at the. The observation notes were arranged through general heading and specific events. The general heading contains three labels factory name, date, and observer's name. On the other hand, the specific events include the process names, description of facilities, the detailed of activities that have been observed, and employee's positions and roles to whom we clarified our understanding.

3.3.4.3. Document Review

In the triangulation methods, the document review is another supportive method to verify the researchers' understanding on the qualitative data obtained from interview and observation methods. In this regard, we focused to gather several internal documents regarding firms' corporate profiles, factory safety inspection reports, social and environmental compliance reports from various departments. The suppliers maintained the explicit data by official documents that could provide the rich information [167]. These internal documents analysis helped to access the authentic information toward business practices on organizations' economic, social, and environmental bottom lines. We critically examined these documents to reveal the meaning of their actions toward corporate sustainability practices.

Moreover, the study gathered the external documents related to Accord's inspection reports and Corrective Action Plans (CAPs), BSCI audits reports, worker's complaints records, and recognition letters. We extracted all numeric and text data regarding firms' financial information, resources consumption rate, waste streams, employees' labor and human rights practices, absenteeism, migration rates, and workers' grievances. These documents review allowed the researcher to verify with respondents' feedback regarding firms' financial, social, and environmental dimensions.

3.3.5 Data Analysis

As a nature of case study research, we have followed the multiple units of analysis including case organizations and key respondents' analyses. Here, the researcher was focused on data analysis procedures with rigor and sturdiness of fieldwork data collected

via interviews, observation, and document reviews. Therefore, we emphasized analyzing all three sources of data by maintaining consistency and coherence. For internal validity, these relationships among three sources are crucial, and the output of the data analyses give the reliability and replicability in generating the finding for future studies.

3.3.5.1 The internal documents and observation analysis

The qualitative data of the three case firms are not statistically representative. In line with Patton (2015), we argue that the statistical-driven analysis can only quantify the thought or hypothesized and operationalized results in advance. However, we gathered many internal documents and took observation memos and numerical information from respondents of all three organizations. We conducted step-by-steps analysis of all three sources.

As mentioned above, all observation notes are maintained organized orders that helped us write summaries for each case firm. Then we read these summaries repeatedly and checked with organizations' business profiles and other internal documents if any mismatch. Further, we write observation summaries for each case presents in the result analysis chapter (see Chapter 4). For document review and analysis is another data presentation step to summarize with any numeric data.

We collected many internal data from several departments of the case firms that contain a lot of numeric data about their business practices including facility compliance audits, inventory, production, and financial data. These data help to understand the business flow concerning workplace, social and environmental practices. We analyzed these numeric data using descriptive techniques and presented in tables and figures with textual interpretation (see Chapter 4). In line with Saunders et al. [169], the study used descriptive analysis to get insights on sustainability practices by evaluating the numeric data from the internal documents. Again, the respondents' numeric data is verified with firms' internal documents and direct observations. The numbers and figures we used here are taken from the firm's business profile, production reports, utility reports, internal and external audit reports, and other public sources.

3.3.5.2 Interview data analysis

The researchers have analyzed interview data through the thematic content analysis (TCA) techniques. Thematic analysis is a 'foundations method for qualitative data analysis

[169, pp. 579–580]. It is organized for the data cross cases and coding is employed as basic analytical strategy. The study searches codes and themes across the data sets toward theory development [172]. Following TCA, the study has employed steps of coding and categorizing (SCAC) techniques to create codes, categories, and core categories for developing stories and new theories from data. The overall data analyses process of the interview data has been following several steps, shown in figure 3.3.

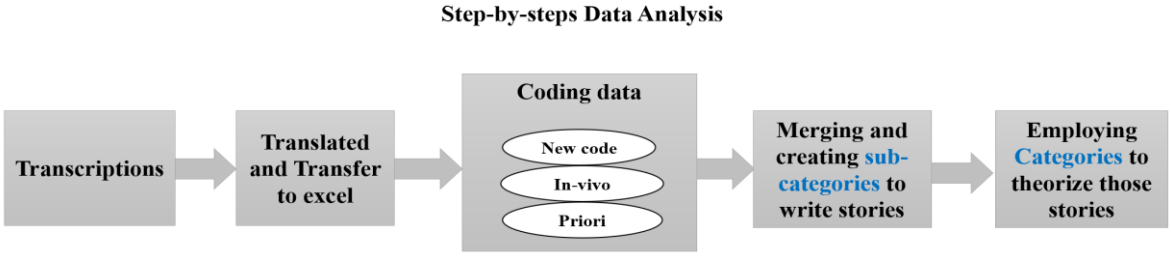


Figure 3.2: The steps of data analysis

Transcriptions. We transcribed all interview audiotapes and wrote in the local language on A4 size papers. The research assistances (RAs) helped the principal investigator (PI) transcribing all audio tapes after each interview. At the very first of the transcription phase, the principal investigator together with RAs transcribed one full interview via virtual meeting. The first transcription, we carefully listened the whole audio clips twice and identified some conversations or talks that are irrelevant to our queries.

Translated and transferred to excel. We transcribed 19 interviews to the handwritten texts through local language and the three interviews already have gathered in English language. The total transcriptions took around three hundred pages on A4 size paper. All handwritten interviews are double checked by RAs and the PI to ensure the accuracy and clarity. Especially, the PI found a lots of unclear terms or incomplete sentences on the manual transcriptions. There were a few reasons behind these situations. First, the RAs were unable to write in correct spelling of those terms. Second, they could not complete some sentences because of the unfamiliar terms. However, the PI met numerous virtual meetings to solve these issues as he was familiar on those technical terms.

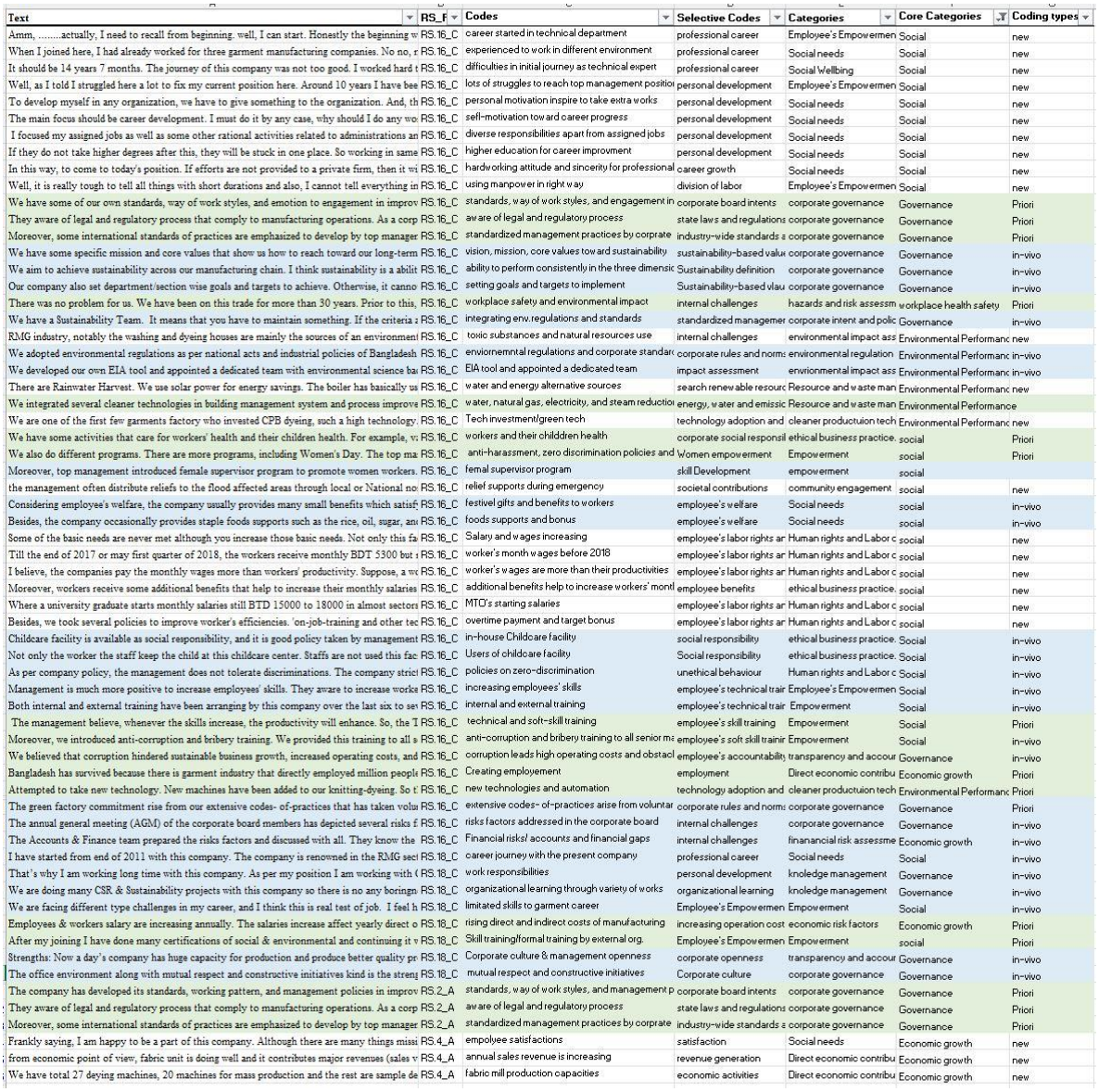
After the confirming the transcriptions, we started to translate into English. Our both RAs were also selected based on their previous education background and experiences on translation services in several academic research. Moreover, both RAs cross-checked each other translations. The PI also checked one-by-one all translations to understand all

nineteen interviews. The interviewees mentioned almost terms, concepts, and processes' names in English language. Therefore, the PI easily grasp the objective meaning of the translations. However, for more clarification the RAs sent all written interviews to the respondents to reconfirm our understanding. The interview texts according to respondents' codes are organized in the rows and columns of a spreadsheet, shown in figure 3.3.

Steps of coding and categorizing (SCAC). As abovementioned, we employed the SCAC to analyze qualitative data. In these steps, we developed the codes, selective codes, sub-categories, and categories from fieldwork data. The 'code' was defined as a unit of text, or phrases, or words that best describes the sentences or paragraphs of the transcribed data [169], [172], [173]. We have labeled mainly two kinds of codes: 'data-driven' and 'theory-driven' codes on each code line [172]. The data set contained almost 944 sentences under 371 paragraphs. The analysis was generated almost three-hundreds seventy-two (371) code lines. Figure 3.3 has shown the SAC process using the spread sheet.

Here the data-driven codes were derived from textual data (raw information). These were again separated as 'new codes' and 'in-vivo' codes that derived from the whole data set. We created the 'new codes' to brief the meaning of the unit of data or sentences, or paragraphs. We were careful to create the 'new code' as if it would provide the best possible meaning of the raw information. Besides, many words or phrases were directly highlighted as codes from the sentences or paragraphs that called 'in-vivo' codes [166]. On the other hand, the study employed theory-driven codes that sourced from previous literature and theories to link the units of data, often called as 'priori' code [166], [172].

After initial coding, we paraphrased all codes to extend the meaning of the unit of text. We matched and linked all three types of codes into several parent codes based on the best possible relationship. These analyses processes often identified as selective or focused coding [173] that linked the similar subcodes with the parent codes. The study further searched and merged the selective / focused codes based on close relationship to develop patterns and themes. The patterns and themes were searched from whole data set under subcategories.



Text	RS_F	Codes	Selective Codes	Categories	Core Categories	Coding types
Amm, ...actually, I need to recall from beginning. well, I can start. Honestly the beginning w	RS.16_C	career started in technical department	professional career	Employee's Empowermen	Social	new
When I joined here, I had already worked for three garment manufacturing companies. No no, r	RS.16_C	experienced to work in different environment	professional career	Social needs	Social	new
It should be 14 years 7 months. The journey of this company was not too good. I worked hard t	RS.16_C	difficulties in initial journey as technical expert	professional career	Social Wellbing	Social	new
Well, as I told I struggled here a lot to fix my current position here. Around 10 years I have bee	RS.16_C	lots of struggles to reach top management positio	personal development	Employee's Empowermen	Social	new
To develop myself in any organization, we have to give something to the organization. And, th	RS.16_C	personal motivation inspire to take extra works	personal development	Social needs	Social	new
The main focus should be career development. I must do it by any case, why should I do any wo	RS.16_C	self-motivation toward career progress	personal development	Social needs	Social	new
I focused my assigned jobs as well as some other rational activities related to administrations an	RS.16_C	diverse responsibilities apart from assigned jobs	personal development	Social needs	Social	new
If they do not take higher degrees after this, they will be stuck in one place. So working in same	RS.16_C	higher education for career improvment	personal development	Social needs	Social	new
In this way, to come to today's position. If efforts are not provided to a private firm, then it wi	RS.16_C	hardworking attitude and sincerity for professional	career growth	Social needs	Social	new
Well, it is really tough to tell all things with short durations and also, I cannot tell everything in	RS.16_C	using manpower in right way	division of labor	Employee's Empowermen	Social	new
We have some of our own standards, way of work styles, and emotion to engagement in improv	RS.16_C	standards, way of work styles, and engagement in	corporate board intents	corporate governance	Governance	Priori
They aware of legal and regulatory process that comply to manufacturing operations. As a corp	RS.16_C	aware of legal and regulatory process	state laws and regulations	corporate governance	Governance	Priori
Moreover, some international standards of practices are emphasized to develop by top manager	RS.16_C	standardized management practices by corprate	industry-wide standards a	corporate governance	Governance	Priori
We have some specific mission and core values that show us how to reach toward our long-term	RS.16_C	vision, mission, core values toward sustainability	sustainability-based valu	corporate governance	Governance	in-vivo
We aim to achieve sustainability across our manufacturing chain. I think sustainability is a abilit	RS.16_C	ability to perform consistently in the three dimensic	Sustainability definition	corporate governance	Governance	in-vivo
Our company also set department/section wise goals and targets to achieve. Otherwise, it canno	RS.16_C	setting goals and targets to implement	Sustainability-based vlau	corporate governance	Governance	in-vivo
There was no problem for us. We have been on this trade for more than 30 years. Prior to this,	RS.16_C	workplace safety and environmental impact	internal challenges	hazards and risk assessm	workplace health safety	Priori
We have a Sustainability Team. It means that you have to maintain something. If the criteria a	RS.16_C	integrating env.regulations and standards	standardized managemer	corporate intent and polic	Governance	in-vivo
RMG industry, notably the washing and dyeing houses are mainly the sources of an environmen	RS.16_C	toxic substances and natural resources use	internal challenges	environmental impact ass	Environmental Performanc	new
We adopted environmental regulations as per national acts and industrial policies of Bangladesh	RS.16_C	enviornemntal regulations and corporate standar	corporate rules and norms	environmental regulation	Environmental Performanc	in-vivo
We developed our own EIA tool and appointed a dedicated team with environmental science ba	RS.16_C	EIA tool and appointed a dedicated team	impact assessment	envrionmental impact ass	Environmental Performanc	in-vivo
There are Rainwater Harvest. We use solar power for energy savings. The boiler has basically us	RS.16_C	water and energy alternative sources	search renewable resourc	Resource and waste man	Environmental Performanc	new
We integrated several cleaner technologies in building management system and process improve	RS.16_C	water, natural gas, electricity, and steam reductio	energy, water and emissic	Resource and waste man	Environmental Performance	
We are one of the first few garments factory who invested CPB dyeing, such a high technology	RS.16_C	Tech investment/green tech	technology adoption and	cleaner productuion tech	Environmental Performanc	new
We have some activities that care for workers' health and their children health. For example, w	RS.16_C	workers and their childdren health	corporate social responsil	ethical business practice.	social	Priori
We also do different programs. There are more programs, including Women's Day. The top ma	RS.16_C	anti-harassment, zero discrimination policies and	Women empowerment	Empowerment	social	Priori
Moreover, top management introduced female supervisor program to promote women workers.	RS.16_C	femal supervisor program	skill Development	empowerment	social	
the management often distribute reliefs to the flood affected areas through local or National no	RS.16_C	relief supports during emergency	societal contributions	community engagement	social	new
Considering employee's welfare, the company usually provides many small benefits which satisf	RS.16_C	festivel gifts and benefits to workers	employee's welfare	Social needs	social	in-vivo
Besides, the company occasionally provides staple foods supports such as the rice, oil, sugar, an	RS.16_C	foods supports and bonus	employee's welfare	Social needs	social	in-vivo
Some of the basic needs are never met although you increase those basic needs. Not only this fa	RS.16_C	Salary and wages increasing	employee's labor rights ar	Human rights and Labor c	social	new
Till the end of 2017 or may first quarter of 2018, the workers receive monthly BDT 5300 but t	RS.16_C	worker's month wages before 2018	employee's labor rights ar	Human rights and Labor c	social	new
I believe, the companies pay the monthly wages more than workers' productivity. Suppose, a wo	RS.16_C	worker's wages are more than their productivities	employee's labor rights ar	Human rights and Labor c	social	new
Moreover, workers receive some additional benefits that help to increase their monthly salaries	RS.16_C	additional benefits help to increase workers' monti	employee benefits	ethical business practice.	social	new
Where a university graduate starts monthly salaries still BTD 15000 to 18000 in almost sectors	RS.16_C	MTO's starting salaries	employee's labor rights ar	Human rights and Labor c	social	new
Besides, we took several policies to improve worker's efficiencies. 'on-job-training and other tec	RS.16_C	overtime payment and target bonus	employee's labor rights ar	Human rights and Labor c	social	new
Childcare facility is available as social responsibility, and it is good policy taken by management	RS.16_C	in-house Childcare facility	social responsibility	ethical business practice.	Social	in-vivo
Not only the worker the staff keep the child at this childcare center. Staffs are not used this fac	RS.16_C	Users of childcare facility	Social responsibility	ethical business practice.	Social	in-vivo
As per company policy, the management does not tolerate discriminations. The company strict	RS.16_C	policies on zero-discrimination	unethical behaviour	Human rights and Labor c	Social	in-vivo
Management is much more positive to increase employees' skills. They aware to increase worke	RS.16_C	increasing employees' skills	employee's technical trair	Employee's Empowermen	Social	in-vivo
Both internal and external training have been arranging by this company over the last six to sev	RS.16_C	internal and external training	employee's technical trair	Empowerment	Social	in-vivo
The management believe, whenever the skills increase, the productivity will enhance. So, the T	RS.16_C	technical and soft-skill training	employee's skill training	Empowerment	Social	Priori
Moreover, we introduced anti-corruption and bribery training. We provided this training to all s	RS.16_C	anti-corruption and bribery training to all senior ma	employee's soft skill trainir	Empowerment	Social	in-vivo
We believed that corruption hindered sustainable business growth, increased operating costs, and	RS.16_C	corruption leads high operating costs and obstacl	employee's accountability	transparency and accour	Governance	in-vivo
Bangladesh has survived because there is garment industry that directly employed million peopl	RS.16_C	Creating employement	employment	Direct economic contribu	Economic growth	Priori
Attempted to take new technology. New machines have been added to our knitting-dyeing. So t	RS.16_C	new technologies and automation	technology adoption and	cleaner productuion tech	Environmental Performanc	Priori
The green factory commitment rise from our extensive codes- of-practices that has taken volu	RS.16_C	extensive codes- of-practices arise from voluntar	corporate rules and norms	corporate governance	Governance	Priori
The annual general meeting (AGM) of the corporate board members has depicted several risks f	RS.16_C	risks factors addressed in the corporate board	internal challenges	corporate governance	Governance	in-vivo
The Accounts & Finance team prepared the risks factors and discussed with all. They know the	RS.16_C	Financial risks/ accounts and financial gaps	internal challenges	finanancial risk assessme	Economic growth	in-vivo
I have started from end of 2011 with this company. The company is renowned in the RMG sect	RS.18_C	career journey with the present company	professional career	Social needs	Social	in-vivo
That's why I am working long time with this company. As per my position I am working with (	RS.18_C	work responsibilities	personal development	knoledge management	Governance	in-vivo
We are doing many CSR & Sustainability projects with this company so there is no any boringn	RS.18_C	organizational learning through variety of works	organizational learning	knoledge management	Governance	in-vivo
We are facing different type challenges in my career, and I think this is real test of job. I feel h	RS.18_C	limitated skills to garment career	Employee's Empowermen	Empowerment	Social	in-vivo
Employees & workers salary are increasing annually. The salaries increase affect yearly direct o	RS.18_C	rising direct and indirect costs of manufacturing	increasing operation cost	economic risk factors	Economic growth	Priori
After my joining I have done many certifications of social & environmental and continuing it v	RS.18_C	Skill training/formal training by external org.	Employee's Empowermen	Empowerment	social	Priori
Strengths: Now a day's company has huge capacity for production and produce better quality pr	RS.18_C	Corporate culture & management openness	corporate openness	transparency and accour	Governance	in-vivo
The office environment along with mutual respect and constructive initiatives kind is the streng	RS.18_C	mutual respect and constructive initiatives	Corporate culture	corporate governance	Governance	in-vivo
The company has developed its standards, working pattern, and management policies in improv	RS.2_A	standards, way of work styles, and management p	corporate board intents	corporate governance	Governance	Priori
They aware of legal and regulatory process that comply to manufacturing operations. As a corp	RS.2_A	aware of legal and regulatory process	state laws and regulations	corporate governance	Governance	Priori
Moreover, some international standards of practices are emphasized to develop by top manager	RS.2_A	standardized management practices by corprate	industry-wide standards a	corporate governance	Governance	Priori
Frankly saying, I am happy to be a part of this company. Although there are many things missi	RS.4_A	empolyee satisfactions	satisfaction	Social needs	Economic growth	new
from economic point of view, fabric unit is doing well and it contributes major revenues (sales v	RS.4_A	annual sales revenue is increasing	revenue generation	Direct economic contribu	Economic growth	new
We have total 27 deying machines, 20 machines for mass production and the rest are sample de	RS.4_A	fabric mill production capacities	economic activities	Direct economic contribu	Economic growth	new

Figure 3.3: SCAC process using spreadsheet

We described all subcategories by creating stories by linking the patterns and themes. However, some subcategories changed because of vague meaning and labeled as new names. Again, some were merged and removed because of similar meaning over time by verifying with prior literature and. The study developed a total of twenty-three subcategories where fifteen subcategories based on prior literatures and the eights were 'new'. In the final step, we further clustered the subcategories into several major themes of subject-matter that labelled as five categories in this study. The study theorized all five categories by linking and merging the stories of subcategories. These five categories, in this study, are the main pillars or dimensions of sustainability initiatives, and the sub-categories represent the key performance indicators of sustainability of the Bangladesh RMG sector.

3.3. Challenges during data collection and analyses stages

We encountered several obstacles during data collection from management and non-management employees. These issues made the researcher challenging to complete one interview without any interruption.

- ✧ First, although we had an agreement, sometimes top management would restrict random access to facilities and visit production floors.
- ✧ Second, they often restrict researchers from asking any query workers and floor managers during onsite observation. Moreover, the workers also felt shy or afraid to respond to researchers' queries.
- ✧ Third, management respondents were in a hurry and challenging to cover the interview without interruption.
- ✧ Fourth, the non-management participants want to avoid some questions because of fear of sharing.

However, to cope with these challenges, the researchers prepared flexible interview schedules considering time and location.

Moreover, we also faced several difficulties during the data analysis process. These areas below,

- ✧ Researchers were struggling to transcribe verbatim data because some interviews contained unnecessary talks, such as phone conversations and discussions with co-workers.
- ✧ Researchers did not identify several unfamiliar terms, unclear pronunciations, and sometimes low voices.

However, the principal investigator has arranged virtual meetings and listened to a couple of interviews with RA and guided them to avoid these issues. Besides, the researchers contacted respondents to clarify some concepts whenever necessary.

CHAPTER FOUR: RESULTS FROM DATA ANALYSIS

4. Introduction

This chapter mainly contains the data analysis that is presented in the three subsections. First, the brief introduction of each case firms. Second, we highlight the cross-case summaries. Finally, we have presented the respondent analysis through summarizing and interpretating using categories. Here, we interpreted all observations and interview data in the text format. However, a few descriptive analyses have used for presenting numeric data of the document review. Here, the data analysis has outlined the case organization's economic activities, corporate governance, and social and environmental bottom-line practice.

4.1 Case Introduction

4.1.1 Firm A

Background. The firm has formed as private limited company under the Company Act (Bangladesh), 1994. The company has become a group of companies over the year and has developed four sister-concerns: two garment factories, one fabric mill, and one design and development company. The headquarter is in the Mawna, Gazipur, Bangladesh. Almost all production facilities are accommodated within the HQ location.

Corporate Structure. The owner of firm A is a Managing Director (MD) and the board of directors (BODs) chief. His wife act as a chairman and a member of BODs. Besides, two more directors are from the owner's family members and only a member from the management employee. Therefore, the five people on the corporate board of firm A represent corporate governance. The owner of firm A makes all corporate decisions regarding financial, social, and environmental governance. The organization hierarchies stand on a vertical relationship in the corporate management. The owner as a Managing Director was the chief of firm's corporate governance the Technical Director and COO/CFO were followed by him. The complete organogram follows Managing Director →Technical Director →Chief Operating Officer / Chief Financial Officer →Divisions or Department Heads→ Managers→ Executives→ Non-management staff.

Corporate Statement and management intents. The corporate boards have aimed to be a valuable and reliable name as a garment supplier cum manufacturer. They have focused to

continuous improvement concerning product's quality, production services, and innovativeness. In their corporate profile, they highlighted three core values: customer trust, empowerment, and sustainability. They have determined to achieve customers' trust by supplying quality products, process innovation, on-time delivery, social compliance, and information transparency.

Another commitment was to be respectful for neighboring communities and careful about employees' and communities' livelihood. From such a pledge, they have been pursuing to increase business growth with creating employment, corporate volunteering, and environmental conservation. The top management have desired to attaining sustainable growth by improving resources efficiency, skilled workforces, and waste/emission management. Very recently, the firm has perceived reducing, recycling, recovering, and reusing nonrenewable resources toward achieving sustainable development goals.

4.1.2 Firm B

Background. This firm is also a group of companies, and it starts as a sole proprietorship. Over the decades, it has transformed into a private limited company. It locates at a special industrial zone at Fatullah, Narayanganj, 15 kilometers away from the capital. The group consists of two sister concerns: knit composite manufacturing (KCM) and woven garment assembly (WGA) business units. The KCM comprises five divisions, including fabric mil, Laundry, Printing, Embroidery, Design and Sampling, and Cut & Sew. All production units, offices, and design studios are located within the headquarter location. Besides, the company collaborated with two independent European Design teams to manage their European customers' seasonal collections and trends.

Corporate structure. The owner of firm B also acts as MD, and his wife, two sons, and one daughter perform as members of the corporate board. Besides family members, the Executive Director (ED) from management employees are also valuable members of BODs. The elder son holds the Deputy Managing Director (DMD) position, and the younger son works as Assistant Deputy Director. The company follows a hybrid management structure. Contrast to firm A, an individual director assigned as chief of the Group Accounts and Finance, HR, Compliance, and Sustainability department. The executive director (ED) and Chief Operating Officers (COO) mainly engaged to manage all business activities. The Corporate HR, Sustainability Admin & Compliance, merchandising in-charges, and other managers and executives helped ED and COO. The top management

of these two firms usually approves groups' policies, rules, and COPs. Besides, senior management like the General manager (GM) and Deputy General Manager (DGM) refer to the divisions/departments' heads and participate in the monthly business meeting.

Corporate vision, missions, and values. Firm B also envisions one of the best garment makers globally and one of the top 3 in Bangladesh. They designed the missions and business values to achieve this tailored vision. The missions include enhancing people competencies through empowerment, creating opportunities for skilled development, exceeding quality standards, promoting product and process innovation, increasing stakeholders' relationships, and integrating information and communication technology to make the process faster and improve efficiencies. The firm aims to deliver five core values, including being passionate about customer's desires, caring for customers, employees, and societal needs, innovating a new way of work, being courageous to the firm's vision and mission, and being accountable for every action.

4.1.3 Firm C

Background. It became a group of companies in 2018 and set a vision to diversify the business operations. The company started its journey as a private limited company in textile and readymade garment sector since 1987. After a decade, they established a knitwear factory in 2000 that was the first footstep in knit garment business. In the following years, the company founded a vertical-integrated knitwear garment factory in 2002 that included fabric processing, laundry, screen printing unit, embroidery, and Cut & Sew units. Besides, the group also established a printing company in 2005, and environmental-friendly packaging company in 2011. At present, the group comprises one textile mill, a composite knitwear factory, a woven wear assembling factory, a print shop, and a packaging factory. The headquarter (HQ) is in Tongi industrial zone, Gazipur, next to Dhaka's capital city. The Except textile mill, all factories housed in the HQ premises and next to it. The company incorporated with the Registrar and Joint Stock Company in 2011 as a public limited company.

Corporate structure. The firm has a hybrid structure in the corporate governance and management practice. After the founding owner departed, his five children took the ownership roles all five independent business units. The elder son acted as MD, and CEO of the knitwear business unit. The other two brothers and two sisters also act as Chairmen and MD respectively on the other four business units. All family members and two more

directors from factory operations acted as board of directors (BODs). As a public limited company, the firm appointed an independent director from outside organizations. All BODs are university graduated and participate the board meetings as per public limited company acts. Only two women represent out of eight members in the corporate board.

The firm has a two-layer management system including corporate management and factory management. The BODs are chief of both management systems. The corporate management employees look after the group's general affairs: Administration, Accounts and Finance, Human Resource, Compliance, and Sustainability departments. The firm has assigned Chief Operating Officers (COO) as a chief for each factory's operation. Besides, each factory has its HR, Admin, Compliance, Merchandising, Production, Quality, and other related departments to manage business activities independently. The corporate team usually create the groups' policies, laws/rules, and COCs and the factory management execute the corporate practices. Besides, the firm has created senior management position like the General manager (GM) and Deputy General Manager (DGM) to act as the departments' heads and participate in the monthly business meeting.

Corporate vision, missions, and values. As a group of companies, firm C intended to be a preferable name to its customers, employees, stockholders, and other indirect stakeholders. They focused on four missions: exceed the customers' expectations delivering the quality products and services; empower the workforce and convert them into the best human resources; contribute to local communities by enrichment of society and fewer emissions and maximize stakeholders/shareholders' values.

The company wanted to embed 'integrity, people first, technology, and sustainability as core values throughout its operational activities and management functions. They determined to be loyal to their customers by sharing corporate policies, open access and reporting practice across all business activities. The firm considered its people as a storyteller of company's success and customers as source of business inspirations. Therefore, it had been promoting people-oriented values and beliefs to lead their legacy of success.

4.2 Cross-case summaries

4.2.1 The overview of case firms' economic activities and business impacts

The corporate profiles of all three firms are tabulated in table 4.1 that extracted from the document review and observation memos. The selected case firms are vertically integrated because they manage the key production components such as textile fabrics, other subcontracting services of printing, embroidery, laundry, and accessories from their production network shown in table 4.1. These corporate data have helped us to know the organizational strengths of these firms that promoted to drive for the sustainability practices.

Table 4.1 Case Firm's Corporate Profiles

Features	**Firm A**	**Firm B**	**Firm C**
Establishment	2007	1998	1987
Ownership structure	Private Ltd. Company	Private Ltd. Company	Public Ltd. Company
Employee size	5503 (Female -2044)	10903 (Female- 3610)	5900 (Female- 3280)
Business Units /factories	Textile fabric mill, Printing, All Over Printing, and Cut & Sew factory	Textile fabric mill, and Cut & Sew and woven wear factories	Textile fabric mill, Cut & Sew, woven wear, packaging factories
Assembling lines *	100	140	72
Major markets	Europe and Asia	Europe and US	European
Product Categories	Basic tees/polo, blouse, sportswear, etc.	Basic knitwear/woven wear for all aged group	Basic, casual, sportswear, and fancy knitwear
Major resources in production	IE and GE, NG & GW	IE and GE, NG, Diesel, & GW	IE & GE, Solar, NG, GW, rainwater
Production defect rates	5 %	4%	5%
Compliance Status *	BSCI Rating B	BSCI Rating A	BSCI Rating A
Accord's WSP status	above 95% remediated	Fully remediated	above 95 % remediated
Credit Report.	No	No	Credit Rating Report
Sustainability Reporting	No	No	GRI and UNGC COP

Note: '*' = data are variable, COP = Communication on Progress, IE= Internal Electricity, GE= Grid Electricity, NG=Natural Gas, GW= Groundwater || Source: Fieldwork 2018-2019

Concerning business strengths, the three firms chiefly export the finished garment. They usually take complete garment workorders with an FOB[5] price and they manage raw

[5] FOB – Free on board or freight on board is commonly used when shipping goods to indicate who pays loading and transportation costs, and/or the point at which the responsibility of the goods transfers from shipper to buyer.

materials to fabric production, garment stitching and handover finished goods to sea/air forwarders at port. Besides exports, they also produce and sell textile fabric to local garment factories. The firms have inhouse fabric mills which consists of knitting, washing, dyeing, and finishing processes. All firms are the labor-intensive companies considering *employment size* and fall in the large manufacturing industry category[6]. Both firms A & B have above 60 percent male and in contrast firm C has above 55 percent female employees, shown in table 4.1. The average female workers of RMG sector is above 65 percent which is more higher than the case companies [159].

In terms of *production capacity strength*, the three firms produce the mass quantities with an average of 75000 to 140000pcs by 80 to 120 garment assembling lines. The firms' garment assembling lines consist of modular assembly lines[7] and lean manufacturing lines[8]. Both firms A and C set up the lean lines in 2015, and nowadays they possess above 40 percent. On the other hand, the firm B replaced more than 80 percent of modular lines with lean lines. The new method helped suppliers to reduce the additional labor (such as man vs. machine ratio 1:1) from garment sewing processes, decrease the crowd from sewing floors and reduce labor costs.

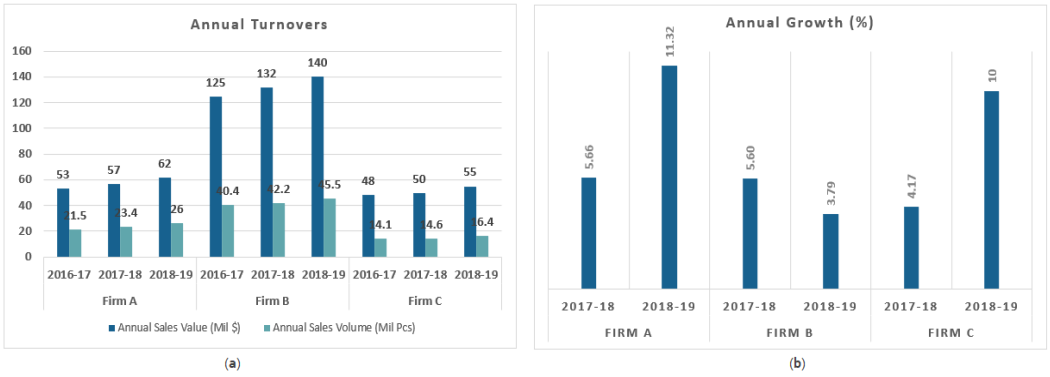


Figure 4.1 (a) The annual turnovers in sales volume and values; (b) The annual growth rates in sales value.

[6] According to the Ministry of Industry of Bangladesh, the labor size is more than 1000 will fall into the large industry category.

[7] modular assembly line or classic assembly line – the series of individual operations are designed in a liner line to produce the final product. In this system, the garment sewing production requires 1.5 times labors than machines.

[8] Lean manufacturing line- has become very popular method in automotive industry that introduced by Toyota. In this system, the labor and machine ratio are equal. it is a systematic approach for achieving the shortest possible cycle time by eliminating the process waste

The *annual revenues* of all three firms gradually increased from 2016 to 2019, shown in Figure 4.1a. But the average price of all three firms gradually decreased in FY 2018-19 than in the past years. The growth rates of firms A and C shown in Figure 4.1b, were almost double in FY2018-19 than the previous year. However, firm B experienced a slight decrease during the same period. Although the daily garment-making capacity of case B is twice that of the other two firms (see table 4.1), the process loss is less low in both firms A and C.

Concerning the *garment components sourcing*, the main production input of all three firms is undyed yarns because almost 70 to 80 percent of the garment is made from cotton yarn and the rest are mixed quality yarns. The firms supply garments to western buyers based on three cotton qualities: inorganic cotton (cotton grown with pesticide), organic cotton (naturally grown), and Better Cotton Initiative (alternative cotton yarns that use no harmful pesticides). Besides yarns, another critical material is the chemicals that use it to color the fabric. The chemical inventory report of firm C shows, above two hundred, the reactive and pigment dyes and fixers required in fabric production. The other raw materials, such as sewing and trims, packaging accessories usually manage primarily local and very few from overseas vendors by firms.

The *source of energy resources*, all three firms used significant amount of energy (natural gas, fossil fuel, &electricity) and water in textile and garment production processes. The data found, the natural gas (NG) is the primary energy resource of all firms and usually purchases 100 percent from national grids. The major portion of NG uses in the internal power generation system (PGS). Moreover, the NG use directly to operate heavy textile machines and steam boilers. The PGS of firms A and C supply almost 60 percent electricity to run factories. In contrast, firm B supplies nearly 75 percent of power to all facilities from PGS. The rest of the electric power is purchases from the national girds. Only firm C has a 50kwh solar power system to supply renewable energy.

The *water resource* is another valuable production input for all firms. They all heavily rely on freshwater use in fabric processing unit, laundry, and yarn dyeing unit. They withdraw volumes of water from underground to support 24 hours fabric production processes specifically washing, dyeing, and finishing (WDF) processes. In addition, firm C has the rainwater harvesting system (a method to hold rain waters on the rooftop) and uses an average of 5 to 8 percent water of the total requirement. However, all three firms have an

Effluent Treatment Plant[9] (ETP) that can recover only 10 -15 percent of treated water for reuse in general purposes such as watering the garden, cleaning, and sanitation.

Considering *energy and water resource intensity*, firm B found efficiently manage all three main resources: electricity, NG, and water (see table 4.2). The company consumed NG and water resources less than 50 percent compared to the other two firms for producing every 12 pieces of garment in the fiscal year 2018-19. However, the electric power consumption of all firms was almost similar.

Regarding the *negative manufacturing outputs (NMOs),* the waste/emission intensities differentiated among these firms according to manufacturing capacities, resource utilization policies and technologies application. These intensities have shown in Table 4.2. We found that the firms' fabric production and laundry units generated high negative outputs. The firms addressed wastewaters, carbon emissions, and hazardous and non-hazardous solid wastes as negative outputs.

Table 4.2: The resource and waste intensity of three firms in 2018-2019

Resource intensity	**Firm A**	**Firm B**	**Firm C**
Electricity (kwh/per dozen)	6.44	6.12	6.85
NG (m3/per dozen)	5.69	2.26	6.00
Fresh Water (litter/dozen)	681.15	481.15	528.50
Negative manufacturing outputs (NMOs)			
Solid waste (kg/per dozen)	0.72	0.96	0.5
Wastewaters	603.00	413.28	456.28
Steam (kg/dozen)	61.56	35.52	54.17
Carbon emission (kg/Dozen)	7.06	5.28	6.33

Note: the data is variable based on several factors; (source: Fieldwork 2018-2019)

Table 4.2 shows that firm A released the highest wastewater (approximately 80 percent of the total) per 12pcs garment production in the year 2018-19. The wastewater was discharged to local water bodies through ETP outlets that contain lots of chemical compounds. Considering the emission, three firms sunk tons of carbon dioxide (CO2) annually and estimated an average of 5.5 to 7kg per 12pcs garment production. Concerning solid waste, firm C efficiently handled the solid waste compared to the other two firms.

[9] A water treatment plant that processes waste waters to reduce the chemical toxicities before discharge to local waterbodies.

Firms A and B yielded an average of 0.7 to 0.9 kilograms of solid waste generated in 2018-19 for every 12 garment production pieces that seem high waste concerning the industry benchmark.

4.2.2. Case firm's corporate policies and programs

The corporate management of the case organizations adopted numerous corporate policies regarding factory compliance, human rights and labor codes, ethical business, and environmental dimensions, shown in table 4.3. They adopted construction safety, health and safety, safety training and monitoring, emergency response policies under factory compliance policies. All firms focused on resource management and recovery policy through a cleaner production. In addition, firms B and C developed the green factory policy to increase the efficient management in energy, water, and emission since 2016. Concerning policy communication, firm A hanged up all corporate policies in the policy-board and the other two assigned respective corporate teams to disseminate across all production units.

Table 4.3 Case firms' corporate policies

	Status of Implementation		
Corporate Policies	*Firm A*	*Firm B*	*Firm C*
Labor codes and Human Rights policies			
Forced Labor and Child labor Prohibition	√	√	√
Anti-Harassment and Anti-Discrimination	√	√	√
Disciplinary Action and Penalty	√	x	x
Freedom of Association and Collective Bargaining	√	√	√
Factory Compliance Policies			
Health and Safety	√	√	√
Workplace Safety Training and Monitoring Policy	√	√	√
Emergency Response and Action	√	x	x
Complaint Mechanism	√	√	√
Maternity Leave and Benefit	√	√	√
Ethical Business Policies			
Wage and Benefit	√	√	√
Recruitment, Selection, and Discontinuation	√	√	√
Holidays and Leave Policy	√	√	√
Sub-contracting and Suppliers' management	√	√	x
Anti-Corruption and bribery	x	x	√
Corporate training and education policy	x	√	√
Environmental Policies			
Resource management and recovery policy	√	√	√
Green Factory Policy	x	√	√
Cleaner Production Assessment	√	√	x
Chemical Policy	√	√	√

Environmental Management system	x	√	√

Note: '√' = Action has taken, 'x' = No action, '△' = Unidentified || Source: Fieldwork 2018-19

Considering employees development, all three firms emphasized training and education policy. The policy helped firms in increasing corporate awareness and build knowledge toward firms' workplace, social and environmental compliance. Moreover, only firm C has implemented anti-corruption and bribery policy since 2017 following the UN Global Compact principle. This firm stressed employees' fairness and honesty in business transactions. As a result, the anti-corruption and bribery policy encouraged employees to refrain from illegal transactions and briberies with their business partners. The other two firms have internal audit control to monitor employees' unauthorized actions concerning different contracts' approval and transactions. The respondents (RS.9, and RS.16) believed that corruption increased operating costs, posed severe legal and reputational risks. They said, their firms were serious about this matter since the joining of the UN Global Compact standards. Therefore, our top management focused on employees' accountability toward their actions.

4.2.2.1 Workplace safety compliance (WSC) programs

The case companies took all legal approvals on building and fire safety constructions under Bangladesh National Building Council 2006 and Bangladesh Civil Defense Act. The three companies joined Accord's WSC program to inspect their structural, electrical, and fire (SEF) safety matters after the 2013 Rana Plaza collapse. The inspection results depicted numerous safety faults of these firms that created internal and external pressures to solve these immediately. They remediated all SEF issues compiled by Accord inspectors, shown in table 4.4. In addition, they adopted the health and hygiene provisions, boiler safety operation, and factory labor codes under Bangladesh Labor Act 2006 and Labor Regulation 2015. All three suppliers completed above 95 percent SEF issues respecting the national building codes of BNBC 2006 shown in table 4.1.

Table 4.4: Factories' safety corrections

Dimensions	Remediation Completed
Structural Safety	Firm A and B ensured occupying the floor under the approved load-plan
	All firms revised drawings to reflect the as-built structure
	all production buildings of firm A are reviewed and corrected adequacy of columns for supporting loads
	All three factories reviewed the capacity of the large brick wall panels,

	columns, and beams to resist the wind and lateral loads
	Three firms prepared schedule maintenance plans, and they recorded all safety hazards observed and remediations steps for improving building durability
	All three firms agreed to conduct the DEA every five years
	Firm A removed additional structural constructions that were mismatched with arch. drawing and corrected others respecting the national building codes
	Firms removed temporary constructions which were not included in drawings
Electrical Safety	All firms have initiated testing and recording the Thermographic scanning (TGS) after Accord suggestions
	All firms replaced the cable support boards and protection system
	Firm B and C have installed the lightning protection system (LPS)
	All firms used combustible materials to cover the Cable trench
	Firm B has installed the new circuit breakers (CB)
	Firms are advised to do regular maintenance on electrical equipment to clean hazardous dust & lint. And improving earthing equipment
Fire Safety	Firm C installed new fire detection & alarm system and developed a fire suppression system
	All firms replaced the lockable collapsible gates with fire coated doors
	Firm A & C have increased egress lighting as per NFA standards
	All firms constructed the fire-coated fence to separate the hazardous areas
	Firm C have increased the means of egress and the areas of the exit stair openings as per CAPs

Note: BNBC - Bangladesh National Building Codes 2006, NFPA- National Fire Protection Act

4.2.2.2 Social and ethical programs (SEPs)

All three firms developed several initiatives under SEPs to improve corporate social performance summarized in table 4.5. These initiatives included primary healthcare, worker physical and mental health safety, work injury compensations, occupational diseases prevention. These initiatives associated national labor laws BLA 2006, occupational health safety provisions, and international standardized management systems (ISMS) such as BSCI, SEDEX, ISO9001[10], ISO14001[11] and ISO45001[12]. These state regulations and ISMS promote social equity, health hazards, and health and hygiene practices to prevent unintended incidents. All three firms have confirmed these social compliance issues by third-party BSCI/Sedex audits. Table 4.5 shows many similar initiatives in onsite medical

[10] ISO9001 – the total quality management system that ensure the plant's overall quality of production component, and processes to ensure customers health.

[11] ISO14001 – the environmental management system that provides guidelines the plant to measure, prepare and document all negative impacts generated from manufacturing plant.

[12] ISO45001 – the occupational health and safety standard that guides plant to address, measure, and document all OHS issues in workplace and develop integrated management system to reduce the accident rate.

centers, occupational nurses, full-time Physicians, and indoor childcare centers to meet workers' healthcare and societal needs.

Table 4.5 Ethical compliance and social needs creation by case firms

Social & Ethical Initiatives			
Enabling Initiatives	Firm A	Firm B	Firm C
On-site Medical Center, Occupational Nurses, Fulltime Physician, and free medicine	√	√	√
Outdoor medical visit/ Medicine bill*	x	x	√
Firefighters, activated fire equipment, adequate first aid box, Ambulance service, and safety complaint box	√	√	√
Childcare center, free vaccines, child meals, playground, and caregivers	√	√	√
Annual Health Checkup, Medical Camp, adult healthcare consultations, and women healthcare	√	√	√
Annual Eyecare camp	x	x	√
Mental health and stress awareness camps	x	√	x
Liability Insurance, and worker's health insurance	√	√	√
Overtime work, holiday duties, festival bonus and target incentives	√	√	√
Production incentives, and performance bonus	x	x	√
Orientation training, on-job-training, technical and soft skill training	√	√	√
Forms of associations, collective bargaining, labor-management based committees	√	√	√
Female supervisor program, and women participation in corporate management	x	√	√

Note: '√' -Action has taken. 'x'- No action has taken.

4.2.2.3 Environmental footprint management (EFM) program

The case organizations obtained an Environmental Clearance Certificate (ECC) under Bangladesh Environmental Conservation Acts (BECA)' 1995 and the environmental conservation rules (BECR)' 1997. These legal approvals certified that the firms maintained the standard practices in manufacturing operations concerning environmental footprint management (EFM). Therefore, they submitted an annual environmental impact assessment (EIA) to state authority before expiring the ECC. All three firms incorporated several standardized systems: OEKO-TEX STeP standards (case A), Higg's FEM standards (firm B), Environmental management system (firm B &C) and green factory standards (firm B & C) for improving EFM. The study summarized firms' industrywide practices toward environmental dimensions, shown in table 4.6.

Table 4.6 EFM performances developed by case firms

Initiatives	Firm A	Firm B	Firm C
Written compliant policies	the firm developed environmental policy following the state regulation, ISO 9001, and Oeko-Tex STeP	A comprehensive policy is developed following ISO 14001, ISO 45001, and ISO 9001	Has policy respecting state regulation, and audit system of ISO14001, ISO 9001, and the USGBC's LEED standards
EIA of the Industrial wastes	assess the internal air, wastewater, carbon emission, sound pollution to ensure the fresh air circulation at the workplace	Measure the impacts on air quality, hazardous dyes, wastewater, & sound pollution	Assess Internal air quality, emission, and wastewater quality before releasing to the environment
Site management	integrated pest mgt., erosion control, access to the site by walk & bicycle, light pollution reduction	Easy access to the site, use fuel-efficient vehicles, maintain the green landscape across premises	alternative transportation, integrated pest mgt., erosion control, landscape mgmt. Plan;
Energy efficiency	Optimize energy use by reducing process loss, daylight, system-level metering, and energy-efficient machinery	Optimize energy perf. by improving energy audits, refrigerant management, energy-efficient lighting & motors	reduce energy usage through energy-efficient structures, system-level metering, air circulation via cooling pads; emission reduction reporting
Water efficiency	Reduce water usage in fabric processing, analyze water performance, recycle wastewater,	Water use reduction through integrating modern dyeing machines, recycle and reuse wastewater,	Reduce ground water use through increasing rain waters use, advanced dyeing machines, and recycle wastewaters
Materials and resource management	Recyclable construction mat.; Increase Organic cont. Use the third-party solid waste mgt., Reduce fabric & mat. Cons.	Increased use of recycled yarns, organic contents; Develop solid waste mgt., Reuse leftover fabric & materials	Promoting green procurement; increased Organic & Recycled materials use, waste monitoring, waste to energy conversion via husk boilers
Chemical Waste management	reduce hazardous chemicals following ZDHC MRSL and chemical wastes handover to local recycle companies	Following state regulations, the MSRL by ZDHC & buyer's COCs to assess chemical wastes.	following national regulation, RSL guidelines, and brand's COCs to handle chemical safety across production processes

Note: these above initiatives are summarized from internal documents and direct research observation

The green factory standards recognized as the Leadership in Energy and Environmental Design. Case firm C was awarded a LEED certificate in the Gold Category in 2016 for establishing a green factory building (GFB). The OEKO-TEX STeP and Higg's Facility Environment Module (FEM) are also industry-wide environmental practices to

reduce emissions and wastes from facilities' operations. Besides, firms A and B invested sizable amounts for Cleaner Production Assessment (CPA) and Cleaner Production Technology (CPT) to achieve efficient resource management and waste/emission control. Figure 4.2 (a & b) has shown the water and energy performance outcomes for per kilogram fabric production of all three firms after CPA&T and LEED implementation.

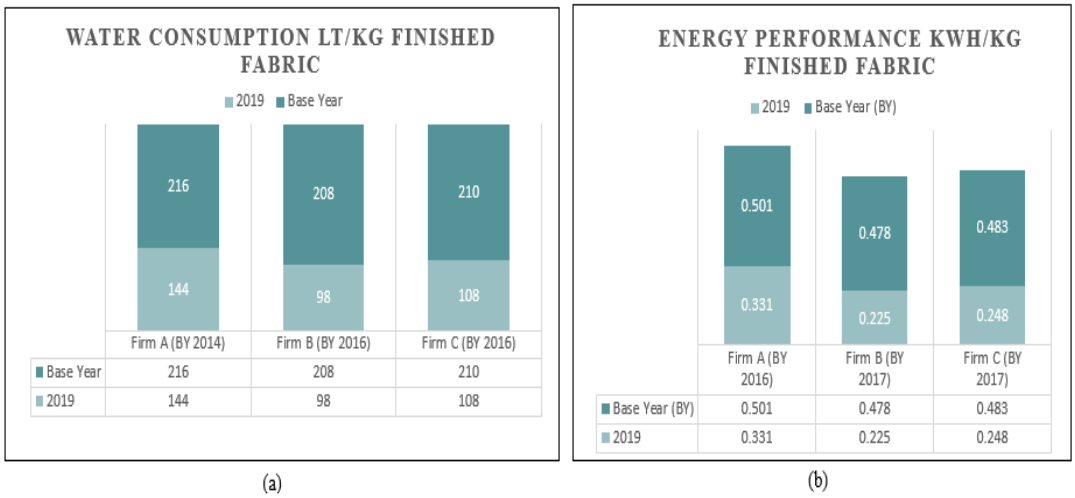


Figure 4.2 Firms water and energy performance after implementing CPA&T

4.2.2.4 Corporate governance program

Over the years, the firms faced constant challenges to reduce the gaps between internal organizations and external parties. They emphasized improving customers' trust and the partners' credibility through transparent communication and contract management. Firms B and C took anti-corruption policies, subcontract policies, and firm A ethical business policies to tackle these challenges. Besides, all three firms assigned respective managers to support customers, vendors, and other stakeholders through close interactions, frequent meetings, and gathering feedback. They arranged weekly and monthly follow-up meetings with customers, vendors, regulators, and development organizations (NGOs). These meetings helped case firms collect new information, experiences, and knowledge related to bottom-line practices. On the other hand, the team managers usually contact customers and vendors for maintaining production-related services through employing executives and officers.

Over the years, the three firms increased their close interactions with customers, public regulators, and stockholders/shareholders. They identified as direct stakeholders. On the other hand, they considered local communities, trade unions, government organizations,

industry associations, media, and NGO indirect stakeholders. As we found, firm C believes its stakeholders as knowledge partners and external well-wishers. They thought their direct and indirect stakeholders' values increased corporate social performance. In contrast, firm B collaborated with several partnership projects to improve social and environmental performance. Again, firm A joined several stakeholders' programs to create shared values to overcome internal organizations issues. Firms A and B shared their internal disclosure with investors, customers, employees, and other stakeholders. In contrast, firm C has internal and external reporting practices following GRI and the UN guiding principles.

Moreover, all three firms engaged direct stakeholders since 2014, joining Accord/Alliance WSP program. They joined with different international voluntary organizations like BSR, SNV-Netherland, Palladium, Sustainable Apparel Coalition (SAC), ZDHC, and UGSBC to enhance employees' knowledge and skills in workplace safety, occupational health, social and environmental risks. Through NGOs' insights and collaboration, firms implemented workers' sexual and reproductive maternity healthcare practices and child immunization. These collaborations help manufacturers uphold the workers' social needs that create long-term business value and scale impact.

4.3 Respondent analyses

We conducted interviews employing two different sets of the content questionnaire (see Appendix A: appendix table A1 and A2) because of two other groups of respondents. The data analyses progressed following hybrid techniques, including software and manual analyses. Almost all management respondents were educated and highly experienced in their areas (see the demographic profile of table 3.3). They possessed different perceptions of sustainability issues and practices from their company contexts.

4.3.1 Respondents' perception of Sustainability and its necessities

The respondents describe their perceptions of sustainability from their firm's context (see Appendix B: appendix table B1). The firm's respondent (RS.1) viewed sustainability as a business vision and set for long-term goals. Another respondent (RS.6) perceived it is as a 'strategy of the firm to tackle its business barriers for future growth. He stated, "By perceiving this goal, we want to be a best-regarded company among the garment exporters of Bangladesh." The executive director (RS.9) of firm B thought the concept of 'sustainability' is difficult to describe in a garment manufacturing setting. He mentioned

‘sustainability’ as a philosophy that cannot achieve by doing certain actions or within certain deadlines. The COO (RS.12) considered sustainability as a corporate vision. “We aim to achieve our ability to adjust in every action considering uncertainties and future climate challenges,” he emphasized. For case firm C, the respondents (RS.18 and RS.20) defined sustainability as a principle or standard that must incorporate corporate vision. The Compliance and Sustainability Manager (RS.20) expressed, “many of our customers already talk about sustainability standards, so we must consider this with our business practices as a proactive company.”

The above perceptions of respondents have clearly stated that the firms’ sustainability programs have developed based on their corporate visions, business needs, and challenges in sustaining the global market. The top management of all three firms understood sustainability as a critical requirement to overcome business barriers. Although the respondents possessed different perceptions about sustainability, they agreed that the SPs helped them tackle firm bottom-line obstacles. The SPs become a business requirement when case manufacturers face continuous challenges and forecast more uncertainties.

The respondents (RS.1, RS.3, & RS.5) of firm A have highlighted structural retrofitting and renovation costs, lack of skilled workforces, customer low priced strategy, raw material, and energy price hikes are significant obstacles to remain business growth. Another respondent (RS.3_A) added few more issues such as continuous production changeovers, cancellation and discount policies, and management unwillingness in social issues concerning their business barriers. Both respondents agreed that the firm would search for a permanent solution.

For firm B, the respondents (RS.9, RS.10, and RS.13) pointed out that a variety of customers’ COCs, excessive compliance pressures, unskilled workforce, high process wastes, limited versions of products, worker’s delay responses, customer’s pricing policy, lack of material diversity, market knowledge constraint, Etc. as key business issues to them. The respondent (RS.9) highlighted several other challenges concerning external issues: market instability, rapid flux in international trade policies, customer consciousness, and nongovernmental organizational pressures, which led them to rethink business policymaking. One respondent (RS.10) mentioned that ETP sludge management was another big internal issue that affected workers’ health. The respondents said that a variety of inside and outside matters stimulated them to rethink the conventional practices.

On the other hand, firm C respondents (RS.16, RS.18. RS.20) mentioned several internal challenges and external issues that were common for all firms. However, they highlighted a few new challenges, including various industry-wide norms, regulations, price decline, increased nonrenewable material and energy resource costs, limited source of renewable resources, inadequate experts in waste management systems, lack of SDGs knowledge, and stakeholder's collaboration. These are essential barriers for their company to address and adopt initiatives to overcome for long-term financial growth. The firm's director (RS.16) emphasized renewable resources and a waste recovery system that could reduce nonrenewable resources pressures and reduce air/water pollution and carbon emissions. The Compliance and Sustainability Manager (Rs.20) considered employee's safety, safe work conditions, worker's social needs, and synchronization between middle and top management employees toward overcoming bottom-line barriers.

4.3.2 Governance dimension

Corporate policies and programs Almost all respondents have emphasized a written corporate statement as the first step toward their companies' sustainability program. The values and missions clearly state the firms' sustainability visions. They think the company can transform institutional factors into actions through written policies and objectives. The respondent (RS.20_C) of firm C argued, "the policies are the source of the company's codes of practice. The corporate policies such as risks management, environmental management, social compliance policy incorporated the institutional laws/rules and global standardized systems. We adopted ISO 14001, the USGBC's LEED standard, and national conservation laws from institutional perspectives." Besides, the worker's health safety and social security policy are critical institutional factors, was emphasized by another respondent (RS.18_C) of firm C. To him, "the company should improve the policy for ensuring social security for the employees. End of the day, the employees are empty when they take retirement from the company of this sector."

The respondent (RS.2_A) of firm A stated that the firm set policies as plans of action or code-of-practices and assigned responsible persons to execute. "All policies are prepared using the state laws/rules as reference. These are accessible by all employees, as we hang these in front of all production buildings, factory HR and Compliance office". Another respondent (RS10_B) of firm B mentioned that firm's sustainability initiatives included workers' safety, social & ethical norms, anti-corruption, environmental regulations, and

protection. He phrased, “the HR, Compliance and Sustainability department initially prepare the draft of the policies and submit to the BODs meeting for approval.” The respondents emphasized the management policies as action plans or COP that drive the firm’s sustainability objectives. They combined the national regulations with the global standardized systems to create corporate policies and standard work procedures (SOP) to implement the three-pillar sustainability practices.

Corporate leadership. The respondents talked about the corporate board members’ essential roles in initiating a sustainability program. The board of directors (BODs) should have the intent to understand the realities of social and environmental circumstances that facilitate financial growth. The BODs are critical initiators of the company. They decide to implement the state regulations and standardized practices to promote workplace, social and environmental governance. The respondent (RS.2_A) shared, “the MD engages in business operations and compliance issues. He cares about the workers’ grievances, sits with labor-management-based committees (PC & SC), and technical matter concerning product safety, health, and environmental risks to resolve as a priority. The respondents of firm A praised the corporate leaders’ changing approach toward external networking through social and environmental projects.

From the respondents’ point of view, the firm's corporate leaders must be responsible and flexible to consider the bottom lines of stakeholders’ collaboration, information transparency, and accountability practices. One respondent (RS.12_B) of firm B mentioned that the BODs are agile to accept the changes and integrate corporate sustainability programs nowadays. He further said, “the top management physically the business activities and makes quick decisions with middle-management. The DMD and ED often visit customers’ offices, participate in customer meetings, and take feedback from customers and other business clients. Another director of the management involves worker's grievance management.”

Firm’s Knowledge and information management. Firms’ visions and policies differ because the BODs and managers possess different views and experiences toward sustainable development. Again, the company became more open because of its corporate leaders’ flexibility, knowledge, and attitudes. The interviewee (RS.1_A) of firm A shared the initial information and knowledge on SDGs from external stakeholders such as governmental campaigns, BGMEA’s commitment, and several NGO initiatives. As a

garment manufacturer cum supplier, the information related to new products, processes, or service flows from top to middle and then lower management. Another respondent (RS.3_A) clarified that fashion brands share continuous product knowledge and COCs to develop supply chain transparency over the suppliers' factories. Constant interactions occur between the brands and factories regarding products, processes, and facility compliance status.

The respondent (RS.12) of firm B pointed out that brands create and share explicit information through product manuals, specifications, and COCs. The factory team analyzes and captures knowledge from direct sources, and they share the technical information with the brands. Another respondent (RS.10_B) mentioned that the top management has both new generation (DMD) and old generations (MD and ED) people. The DMD is a second-generation management, is an overseas MBA graduate. He possesses different views than his father (owner) and other executive management. He introduced the new trends to improve internal organizations combining the international standardized systems. The firm has introduced Management Trainee Officer (MTO) programs by hiring fresh graduates. Over the years, the firm adopted the job induction program, provisional training, on-job-training and soft-skill training to educate new and existing employees capturing and sharing manufacturing knowledge.

All three firms took employee development programs (EDP) by integrating training, work evaluation meeting, and vocational education. The respondent said the management believes continuous engagement with employees helps to improve their human resources. Table 4.7 summarizes the knowledge creating and sharing process within the organization. Another respondent (RS.12_B) shared that many conflicts have occurred at the beginning to adjust with new management approaches. He also added, "the top management recently focused on implementing many standardized management systems, new technologies like automation, smart dyeing machines (automated operations), and ERP software, and training to enhance workers' skills and technical knowledge. However, the main goal is to increase productivity and workers' efficiencies through organizational learning such as formal training, technical meeting, and external training."

Again, firm C created an extensive training and development plan for workers to provide technical education about production processes. Expert trainers and the technical team provide the training. The training method is learning by doing, and trainers verbally

and physically show the process during the training sessions. They recently increased the soft skills training for all workers in collaboration with Accord and other NGOs. The respondent (RS.18_C) said that the top management considered workers' efforts a great asset to the company's success. Therefore, the workers are engaged in a personal development program to improve awareness over workplace hazards, machine hazards, location hazards, and health safety issues. The workers further share their learning with co-workers and family members to make their lives and workplace safe.

Table 4.7: Organizational knowledge management through training & development programs

	Firm A	**Firm B**	**Firm C**
Employee Induction Program	a day long EIP for management staff	2 days EIP for management staff	a day long EIP for all employees
Employee Probationary Period (EPP)	Staff - 6 month and Workers - 3 mon.	Staff - 12 months and Workers - 3 months	same as case firm A
Department Orientation training (DOT)	Existing employees receive training on safety and health policies adopted by company	H&S policies, workplace hazards and risks; personal protection system, use of safety manual	company companion system, health safety policies and objectives;
On-job training (OJT)	all employees must go through a week OJT under line manager	OJT vary on employee's experiences and job duties and training supervise by co-worker or supervisor	OJT is mandatory for all. Firm has SOP, JD, and reporting system for all staffs.
Soft skills training (SST)	mostly internal training on employee's responsiveness toward compliance issues. Training is organized by corporate HR and Compliance.	A training and development (T&D) team usually design, plan and execute internal and external employee's awareness trainings.	The firm has also T&D team and they design and develop training schedules and assign instructors based on the contents with prior approval.
Workshops and Drills (W&D)	arrange fire drills twice in a year. The drill covers fire control, emergency rescue, and evacuation demonstration through sharing knowledge about fire safety issue, prevention measures and feedback system during accidents	firm arrange 3 fire drills in collaboration with local fire defense service. Fire control, emergency rescue, and evacuation demonstration are performed to provide practical knowledge about fire safety issue.	same as they also conduct fire drills and safety demonstration twice in a year.
daily and weekly meeting (DWM)	daily meeting held at morning or afternoon and weekly meetings with line manager held at every	the team members update daily job status to team leader. And weekly meeting held with	team members participate a short morning meeting with line managers. Besides,

	Saturday morning. Before meeting, the staffs update weekly job status	department in-charge and top management every Saturday noon.	every week all employees update their order/production status to department head
Interdepartmental meeting (IDM)	The IMD occurs once a week among production, quality, merchandising, and planning department. All department/division in-charges or team leaders join the meeting with top management. However, this meeting often occurs within short notice based on emergent issues or some urgent production requirement.		
Appraisal interview meeting (AIM)	appraisal meeting occurs once in every year to evaluate employee's work performance, based on job duties, failures, and achievement for more effective work approach	appraisal meeting occurs once in every December for measuring employee's performance based on major job objectives and key performance indicators (MO-KPI)	appraisal meeting occurs twice in every year to evaluate employee's performance following the integrated HR assessment system. Employees' bonus and incentives rely on both assessment results

Corporate report sharing and Stakeholder's engagement. The respondent (RS.20_C) of firm C has argued they consider transparent and accountable measures for firm's business activities and information sharing with customers, shareholders, industry associations, and other indirect stakeholders as a limited company. He said, "the BODs with senior managers take business decisions. All BODs are executive members, and they are vastly experienced, educated and knowledgeable in manufacturing and export business more than two decades". The top management is responsible for making corporate governance policies and setting performance indicators during the board meeting. Another respondent (RS.16_C) of firm C shared, "We welcome stakeholders' feedback and collaboration to improve overall business practices. The firm spent sizable costs for social and environmental partnership projects to increase human resource and natural resource management with NGOs, BGMEA, and BKMEA".

According to respondents, the garment manufacturing firms must update their facilities' health safety status to the labor inspector of the Department of Inspection Factory Establishment (DIFE) and other monitoring mechanisms by the RMG sustainability Council (RGS). Besides, these companies perform several voluntary audits over social compliance and natural resource conservation. The reports share with customers, the government, and other stakeholders. The respondent (RS.18_C) of firm C shared, "we share annual reports on the CSR, Workplace Safety and Financial audits to stakeholders. These reports are also public. Any stakeholder can check the Corporate Reports of Sustainability' 2018 and the Communication on Progress' 2016 from our official webpage. This action

shows our leadership toward information transparency and accountable behavior as corporate citizens."

The respondents (RS.1, RS.6, RS.9, RS.11, RS.18, RS.20) of all firms believed that the sustainability programs are robust, and they alone could solve all issues by internal arrangement. The ED of firm B stated that the garment MSC included diverse business clients, and all would not possess similar intentions to mitigate any issue in real-time. Therefore, the customers and regulators must create pressure overall MSC through corporate dialogue and feedback systems. The technical director (RS.1) of firm A said that the corporate dialogue and third-party monitoring could reduce governance gaps. The COO of firm A phrased that the customers' audits and third-party feedback led suppliers to cope with new challenges. The respondent (RS.11) stated that we could engage our customers and development organizations (such as NGOs) through several partnership projects. Firm B took occupational health, workers' rights awareness, and female supervisor programs in collaboration with Better Work Bangladesh (BWB) and SNV Netherland. Our firm also participated cleaner production project with the PaCT programs, and we provided adult and maternal healthcare with BKMEA, stated a respondent (RS.1).

4.3.3 Social dimension

The respondents of all three firms illustrate these social issues. They talked about several programs, including workplace safety compliance (WSC), human rights and labor codes, workers' empowerment programs, worker social needs, ethical business programs, and community engagement to improve social bottom-line capabilities. Almost all respondents argued that firms considered social bottom-line problems a priority after the 2013 Rana Plaza. Significantly, the WHSC became special attention since 2013 after many public and private regulators' enforcement emerged. The garment sector of Bangladesh has transitioned to a safe and healthy workplace in the last decade.

WSC programs. The respondents described the WSC issues from many aspects summarized in Appendix B (Appendix B: appendix 0table B2). The regulator enforced firms inspect and remediate all factories' constructions, including structural, electrical, and fire (SEF), to increase occupational safety. All three firms conducted the SEF initial inspections by Accord. Further, they received the CAPs from the regulator as guidelines where the remediations are needed. The respondents of firm A explained that the factory redesigned work floor layouts, egress, rooftop and floor capacities, and power generation

areas as per Accord's CAPs. One respondent (RS.20_C) of firm C confirmed that Accord's follow-up inspections verified the SEF safety corrections. However, some respondents also criticized a few decisions of Accord that compelled them to do some unnecessary replacements with costly safety equipment. Although some criticisms of Accord's CAPs, almost all respondents believed that the Accord helped them increase safe workplace conditions.

Besides, the three firms integrated the standard management practices on the hazard and risks management issues, health and hygiene, and primary healthcare issues as mentioned by the respondents (see Appendix C: appendix table C1). Firms evolved primary healthcare practices to increase healthcare benefits and protect workers from occupational diseases. The company created a clean work environment with enough visibility, ventilation, and temperature control. The respondent (RS.7_A) emphasized the occupational health HRA practices that they learned from Accord's training. The workers can identify the hazardous elements that endanger the work environment. Another respondent (RS.4) of firm A said that the workers could prevent the common physical, chemical, machine, and biological hazards by correctly using the PPE, safety manual, and personal carelessness.

However, many healthcare practices described by respondents are also found in their corporate profiles and internal policy documents. For example, the companies established the primary healthcare benefits, including diagnosis, medicines, and hospitalization benefits, to protect workers from ill-health conditions. Moreover, the pregnant workers of all three firms can access exceptional care by providing separate clothes and shortening working hours with several breaks. They receive minimum four months of maternity leaves with basic salaries. However, the regulation does not mandate these benefits concerning primary healthcare; firms have developed those benefits voluntarily as corporate COPs as lead suppliers.

Human rights and labor codes practice. The respondents described that the corporate policies incorporated the national labor laws/regulations and ILO core conventions to comply with workers' human rights and labor codes practices. Many respondents depicted, their companies' key policies on the HRLC are to control workplace violence, harassment, discrimination, child labor, and forced labor issues from corporate practices. The respondent (RS.2_A) of firm A pointed out that the national labor code of BLA 2006 is

adequate to eradicate the unethical practices concerning HRLC. Several others have focused the forms of association, collective bargaining, and labor-management-based committees toward HRLC practices. The respondents of firms B and C highlighted rigid policies and labor-management-based committees to resolve workers' claims over HRLC issues. The respondents mentioned that their policies also included the structure of implementation and disciplinary actions if any noncompliance issue or rules violation. One respondent (RS.2_A) of firm A stated, "if we find any complaint on the violation, first the respective departments investigate, and notify the compliant team. After an investigation by an independent team, the top management will take actions as per the company's code-of-practice."

Ethical business practices. Concerning EBP, almost all interviewees stressed that workers' wages, benefits, adequate break time, holidays, leaves, overtime duties, maternity leaves, and payments are the critical factors to evolve EBP. They mentioned that their firms settled the worker's wages/salaries as per the national wage board of the Bangladesh RMG worker. The respondent (RS.9_B) of firm B stated that they have two workers considering piece rate and monthly salaries. The piece-rate workers are more accessible than salaried workers, and their monthly wages vary according to the number of the batch production. Another respondent (RS.18_C) of firm C also indicated that the timely wages, overtime payments, and leave encashments are the ethical rights for workers. Still, many factories often fail to address these ethical issues. The workers seem happy for their timely salary, leave encashment, annual picnic, and tours, employee appreciation culture by management.

Empowerment. Empowerment is another key factor in developing social sustainability practices which several interviewees replicate. The respondents stated that only regulatory practices are limited improving employees' motivations. Incredibly, many of them mentioned the training and education programs to enhance workers' functional and personal skills. However, one respondent (RS12_B) of firm B expressed that only skill development or an in-house training center is insufficient to improve workers' efficiency. In many forms, the company is attempting to increase worker empowerment. Many respondents (RS.1, RS.6, RS.9, RS.10, RS.12, RS.16, & RS.20) argued that the productivity of garment workers is quite low, and their factories utilize less than 60 percent of their total production capacities since the beginning. That is why employee's personal motivation with technical training is a critical factor in increasing productivity. These firms

took EDP to attain multi-tasking skills, technical know-how, and personal management. The respondent (RS18_C) emphasized that the soft skills with technical competencies can improve workers' duties. He said, "our company offers Photography and Video editing courses through Pathsala (the partnered institution), a formal education program for uneducated workers, a Cyber security campaign, Lean, 5S, and Productivity improvement courses for management employees."

Social lives. Empowerment also provides workers to enjoy dignity in their social lives. The workers of these factories come from remote villages across Bangladesh, and they belong to the marginalized groups concerning the economic class. The respondents highlighted that their companies provide many employments to those people with a fixed income every month. They added several other initiatives that their companies contribute to increasing workers' contribution to the national economy. This way, the manufacturers gave their workers to enjoy their social lives and social identities. The respondent of firm A mentioned the training program, education sponsorships, corporate benefits, and social contributions that increased the company's presence and employees' professional lives. Therefore, the employees can create their social identity as representatives of the company. Another respondent (RS.9_B) illustrated that besides the fair price shops, we arrange cultural shows, fashion shows, and annual picnics to refresh our workers and management staff. Again, one respondent (RS.16_C) of firm C believes that sufficient breaks and holidays help employees to energize that reflect in work performance.

4.3.4 Environment dimension

Environmental impacts assessment. The negative environmental outcomes became critical challenge for the garment manufacturing and supplying business. The respondents mentioned several environmental issues and practices that firms continuously struggle to cope with (see Appendix C: Appendix table C2). They emphasized environmental regulations, impact assessment, environmental footprint management, hazardous wastes management, and lifecycle or cleaner technologies to tackle external and internal environmental issues. The respondent (RS.1_A) said that an environmental clearance certificate (ECC) is the first step to set up heavy industrial projects, and his company got this approval from the GOB. Another respondent (RS.10_B) highlighted the diverse issues that affect environmental performance, and EIA is one of them. He also highlighted the cleaner production and carbon footprint assessment. However, almost all respondents

emphasized the wet processing activities (fabric washing, dyeing, printing, and finishing) generate high impacts, including GHGs emissions, air and sound pollution, chemical and biological wastes, wastewaters, and solid wastes. The production wastes and emissions are very harmful. Still, the factories are struggling to maintain accurate inventory data. Many respondents claimed that their firms had adopted digital technologies to grasp the lifecycle and cleaner assessment data to increase the reliable EIA.

Carbon emissions. Firms took some strategies to reduce carbon emissions to protect internal and external ecological footprint. They initiated carbon footprint management (CFM) to offset carbon emissions and pollutions across the manufacturing chain. Firms took strategies over energy, steam, and material efficiencies that are almost similar as mentioned by the respondents (see Appendix C: Appendix table C2). The respondent (RS.1_A) of firm A explained that energy is a critical resource for manufacturing and the best selection of energy sources is important to reduce carbon intensity. Another respondent (RS.10_B) also shared almost similar opinions about reducing energy and material use to control carbon emissions. The respondents of C emphasized energy efficiency throughout the production processes and utility areas. Firm C has started to save non-renewable energy resources with renewable solar energy. Although it is still limited capacities (50kwh), the effort on alternative energy reduces the use of the grid electricity. Moreover, they implemented retrofitting and introduced the best available technologies such as waste heat recovery boilers for reusing steam to save NG consumption.

Resource efficiency. All three firms emphasized resource efficiency by applying the reduce, reuse, and recycle techniques to improve environmental practices. The interviewee (RS.6_A) shared that the company retrofitted the production constructions to minimize resource consumption and recover waste resources. Besides, they bought new machines in the dyeing and sewing section that minimize power consumption, resources loss, and solid wastes. Again, the respondent of firm B added, they are endeavoring to recover the waste heat and vapors by installing steam condensers. The company has already integrated digital sensors and metering to measure real-time utility consumption and process loss. All respondents said their firms are continuously reduce groundwater use by developing water recycling and reusing hot waters in the fabric production processes. The respondent of firm C confirmed that, currently, the company reuses 10 to 15 percent of water from ETP. Besides, they reclaim the rain waters to utilize in the facility. The respondents argued that

efficient resource management progress the reduction of wastes. Again, the wastes can convert as input if these could be adequately treated. The respondent of firm C shared that 70 percent of the total solid wastes are disposed of by burning in the Jhut boiler, and the remaining 30% is given to third parties who can dispose of it.

Chemical waste management. All respondents agreed that their company developed a chemical policy respecting the national and international chemical regulation and international chemical management standards. The respondents stated that firms avoided using restricted chemicals substances in the fabric dyeing, washing, and printing processes. The respondent (RS.18_C) mentioned that we follow the REACH regulation to buy, use, and dispose of chemicals because high-quality chemicals reduce health hazards. The respondents agreed that the production processes create immense pressures on the surrounding ecosystem through wastewaters, carbon emissions, sound, and air pollutions. Over the years, they have been striving to improve resource efficiencies and waste management in fabric production. The firms are interested in optimizing resources to remain competitive by integrating two new approaches. First, they installed several new energy-efficient machineries, and most of the latest technologies were procured from Germany, Japan, Greece, and Taiwan. Secondly, they emphasized process innovation by integrating cleaner production assessment (CPA) since 2019.

The respondent (RS.4_A) of firm A mentioned that they adopted the Cleaner Production Assessment (CPA) in collaboration with PaCT Bangladesh, financed by IFC. This program helped the firm to develop the SOP on resource management. Following the SOP, the company has reduced the process losses from production and utility. Another respondent emphasized that the CPA maximizes efficiencies over energy, waters, steams, and reduces the hazardous output (emissions, pollution, and wastewaters). Moreover, the respondent (RS.9_B) of firm B said the CPA reveals the water consumption for one-kilogram fabric is higher than the industry average. Following a recommendation from experts, the firm implemented a computerized greenfield dye house, waste heat recovery boiler, new dyeing machines, thermal oil heater, hot water module, and auto-dispensing system to reduce the resources use and recover resources from wastes.

In contrast, firm C developed a CPA initiative with the USGBC and installed advanced technologies such as Cold-Pad batch dying, husk Boiler, servo motors, steam condensers, and waste heat recovery boilers as cleaner technologies to reduce energy, water, and

emissions. Several respondents also pointed out that the initial investments would seem a burden for the factory. However, the return will be in a quick time. The cleaner technologies, advanced engineering tools such as skeletal system and total quality management, and global audit standards (such as ISO, Oeko-tex, LEED & GRI) helped factories achieve environmental management by reducing negative impacts from the production process.

4.3.5 Economic dimension

Economic risks management. The business focuses primarily on gaining economic stability by reducing internal and external risks. The respondents of all firms emphasized the economic growth and profit stability are critical elements to become more sustainable in the social and environmental bottom lines. To them, firms must be solvent economically to lead positive changes toward better sustainable practices. They talked about financial risks management, economic contribution, market presence, diversification, product and process innovation, and sustainable investment to achieve the sound management of economic sustainability, shown in Appendix B: appendix table B4.

The respondents mentioned the several financial risks that firms are struggling to overcome. They emphasized addressing these risks and identifying measures for overcoming the economic challenges of a manufacturing firm. However, the internal assessment of financial risks may differ from firm to firm. However, the respondents of all three firms agreed that the future challenges should consider in advance in terms of the company's business activities, market, and economic stability. The respondents (RS.9_B and RS.16) of firms B and C highlighted that the corporate board members of both companies are concerned about FRM to direct the future business. Firm C is a public listed company, and they must be accountable to address economic risks concerning the country's fiscal policy, stock market, and customers' financial policies.

Economic contributions. The respondents (RS.1, RS.4, RS.10, RS.11, RS.18) described that their companies are primarily export-oriented manufacturers. However, they can also sell components such as finished fabrics and trims & accessories to local garment manufacturers. The respondents (RS.2, RS.9 and RS.20) stated that firms contribute to the national economy in two directions. The garment supply firms directly share to national export earnings that propel economic development on the one hand. Furthermore, they create huge employment for marginalized people of the remote villages on the other.

Several respondents (RS.4, RS.6 RS.9, RS.13, and RS.17) also mentioned that their firms promote women's empowerment by engaging in economic functions and paying a standard compensation with some inclusive overtime benefits, two festival bonuses, target bonuses, leave encashment, and maternity pays.

*Market presence***.** Firms increased their market share through corporate branding, industry association memberships, corporate partnership, and collaboration with their corporate clients, valued suppliers, NGOs, and consultant companies. The respondents of firms A and B shared that they became members with BGMEA and BKMEA since their inception. All three firms have increased their market presence by expanding their business activities and creating continuous jobs for nations. The respondent (RS.16_C) of firm C stated that their company had been started in the RMG business more than three decades ago. It increased its market presence through economic contributions, education and health sectors improvement, and local community development. For instance, apart from employment generation, we also established primary school and junior high school for community education, set up a hospital with modern treatment facilities in the northern part of Bangladesh, and an NGO for local community development.

Product and process innovation (PPI). These firms have been considering PPI recently due to competing with rivals in the market. Almost all respondents said their factory setup, production lines, and people mindsets mainly concentrate on basic garment stitching, and they often avoid the critical product constructions. However, in recent decades, garment exporters have realized that production and process innovation could solve these gaps to set new markets. The respondent (RS.11_B) of firm B remarked that although our manufacturing philosophy had been rooted for large batch production, we understood it was not enough to stick to the same production policy in the recent decade.

The improvement of the product development team, skilled laborers, design studio, and logistics management became essential for this company to restructure the conventional supply model. Another respondent (RS.3_A) remarked that the R&D team developed new trends and product extensions for creating new markets. They are closely working with overseas designers and constantly creating products, processes, and markets-related knowledge. In contrast, the respondent (RS.17_C) of firm C mentioned that their firm had been continuously focusing on PPI integrating automation, alternative raw material policy,

product development budgets, and training to product developers, industrial designers, sample makers, and production people.

Sustainable Investment policy. The respondents considered another essential initiative was the sustainable investment policy and its management. They described that their firms contributed investments in several aspects of economic growth, environmental security, and social wellbeing. They argued that these investments brought measurable changes in all three bottom-lines. The respondent (RS.1_A) stated that the firm improved energy, water, emissions, and social well-being through sizable capital investment. Firm B also highlighted increasing its capital investments on such business projects that create fewer impacts and retrofitting to control utility process loss. Moreover, the respondent (RS.9_B) added the budgets also spent on evolving management systems, audit and monitoring systems, skills development that increase corporate leadership. The director (RS.16_C) of firm C phrased that the company increased its capital budgets to implement green facilities, building management systems, cleaner technologies such CPB dyeing, social well-being projects (schools, and hospitals), and corporate volunteering activities.

CHAPTER FIVE: RESULTS DISCUSSIONS

5. Introduction

The chapter presents the results discussions derived from the data analyses. The study results are interpreted into three subsections: case organizations' approaches to sustainability programs, key performance indicators to improve sustainability, and factors that lead to implementing sustainability programs. The first subsection includes the respondents' perceptions of the sustainability agenda to describe the case firms' sustainability approach. The KPIs on bottom lines practices are described, developed by the case firms, and finally, how does workplace safety program facilitate sustainability practices.

5.1. The definition and necessities of 'Sustainability' from garment supply firm's context

The meaning of sustainability has two directions: first, how do the respondents define sustainability; and second, why it is necessary to integrate across business practices from their firm context. The study has interpreted the sustainability meaning from these two viewpoints summarizing respondents' perceptions of their firms' sustainability programs. The data analysis has shown, almost all respondents have homogenous perceptions and a few differences in defining sustainability. The differences have yielded with regard their knowledge, experiences, category of works and positions.

The respondents' views of sustainability can be grouped into four different themes or perceptions (see Appendix B: appendix table B1). Most of them interpreted sustainability as a 'Strategy' of corporate management. Several others are perceived as a 'Standard' to maintain in the factory operations. A few remained it a 'Business vision' of the future growth. A few top management employees believe that it is a 'Philosophy' of corporate practices, and it cannot achieve within certain times or some specific measures. All three firms have exhibited their vision and values differently, but the key goal is to be the most regarded company concerning sustainable growth. To achieve these visions, they adopted many corporate policies and programs on workplace safety, social, and environmental aspects (see table 4.3). The firms' policies act as governance measures that have developed associated with the state laws/regulations, international conventions, and standardized management systems.

Second, the case firms recognized the necessity of SPs to negotiate the challenges of the financial, market flux, workplace safety, social compliance issues, and environmental uncertainties. The BODs of the case firms emphasized these internal and external challenges as a priority to overcome for sustaining the export market. Almost all respondents of the case firms highlighted several workplaces, social, environmental and governance barriers that influenced their firms to drive for SPs. They reckoned several environmental issues including resources scarcities, high wastes and emissions generations, inadequate environmental quality management, and carbon emission reductions across the production chain as internal barriers. These issues put suppliers' pressures to manage the operating model efficiently. External issues such as quick production demands, customer's poor pricing, quick changeover, increased component costs, market volatility, regulatory changes, a variety of COCs, and stakeholder pressures put case firms' pressures on switching business practices.

The garment export markets are unstable because of continuous changes occurring in international trade policies, regulations, intergovernmental relationships, consumer awareness, customer sourcing and pricing, labor union and nongovernmental organizations pressures. Many respondents argued that the SPs would mitigate these internal and external business issues. They agreed that it is complex process to practice sustainability on a regular basis. Therefore, the lead firms incorporated many COPs to replace the CBP. They thought that the sustainability strategy or standard would help them to eliminate social and environmental costs and occupational accidents expanses. Many respondents also believed, the safe, healthy, and green environmental practices increase the opportunities for appealing to high-valued and high-priced customers, production quality, worker's efficiency, and delivery management.

The firms gradually increased social and environmental accountability by contributing responsible business practices and sustainable investments in green projects, efficient management, and cleaner and digital technologies. The corporate vision and core values of firm A set sustainability as core standards of economic prosperity concerning social and environmental issues. They adopted the sustainability vision to mitigate financial risk factors that heavily influenced the organization's bottom-lines challenges. Still, they have been focusing on financial performance by integrating tangible and intangible resources

such as R&D and design studio, process innovation, workplace safety renovation, social responsibilities, and environmental standards.

Again, firm B prioritized its sustainability program focusing on customer's demand (product), employee care (people), and environmental stewardship (planet). Therefore, they concerned about internal and external environmental issues and the subsequent impacts from each business action. The firm C considered SPs as corporate standards to integrate with every business actions. Only this firm adopted corporate sustainability measures through GRI and UN global compact (UNGC) reporting standards. They integrated standardized management practices to develop corporate governance, and employees' knowledge to achieve workplace, social, environmental, and economic capabilities. Again, they combined the tenth principle of the UNGC is to improve corporate reputation on workers' human rights, labor practices, anti-corruptions as sustainability practices. The proponent of the UNGC principles argued, the tenth principle worked as an engine for the social performance of the MNCs by increasing human rights and labor practices voluntarily [46], [65].

5.2 Case Organizations' initiatives toward bottom lines practices

The data analyses show that the manufacturers concern two more dimensions with the conventional three-pillar sustainability. These are workplace health safety compliance (WHSC) and Corporate Governance and leadership (CGL) as separate dimensions. Therefore, these firms usually implement sustainability programs in the five dimensions: workplace, environment, social, economic, and governance. More precisely, they have practiced in the 23 specific areas that we have name the key performance indicators (KPIs) under those five dimensions. The following table 5.1 summarizes the KPIs practiced by the case organizations.

Table 5.1 Key performance indicators for sustainability programs by case firms

Core categories	Categories	Factors support by Literature
Workplace Health Safety Compliance (WHSC)	Factories' Buildings, Electrical and Fire Safety	[4], [15], [130], [174]
	Efficient Safety management	[15], [72]
	Hazards and risks assessment	[72], [130]
	Health and Hygiene measures	○
	Workplace Healthcare management	○
Environmental	Environmental impact assessment	[175], [176]

Performance management (EPM)	Carbon footprint management	[16], [71], [177]
	Resource and Waste Management	[17], [79]
	Chemical Waste Management	○
	Cleaner Production Assessment & Technology	○
Social and Ethical Compliance Standards (SECS)	Human rights and Labor codes	[10], [13], [70]
	Ethical business practices	[12], [43], [70]
	Worker's empowerment	○
	Employee's social need	[3], [4]
	Community engagement programs	○
Corporate Governance and Leadership (CGL)	Accountability and transparency	[7], [48]
	Disclose Sustainability Practices	[48], [89]
	Devising Knowledge Management	○
	Stakeholder Engagement	[2], [67], [88], [134]
Economic Growth and Prosperity (EGP)	Direct and indirect economic Contributions	[75], [178], [179]
	Product and Process innovation	○
	Enhancing Market Presence	[26], [55]
	Sustainable Investment	○

Note: '○' = 'new' || These five categories may vary according to manufacturing sectors.

5.2.1 Workplace health safety compliance (WHSC)

The data analyses reveal that firms' WHSC program emphasizes the five major actions to develop. These include factory's Structural, Electrical, and Fire (SEF) safety, Efficient Safety management (ESM), Hazards and Risks Assessment (HRA), Health and Hygiene measures (HHM); and Workplace Healthcare Management (WHM). Many of the prior studies highlighted that improving the construction's safety inspection and remediation, workplace healthcare, and OHS rights are primary performance as workplace compliance by garment manufacturers [4], [180], [181]. However, the study found that all three factories have also engaged in improving hazard and risks assessment and efficient safety management to enable the WHSC practices.

Factory structural, electrical, and fire (SEF) safety. Under Accord's program, the case firms emphasized conducting SEF inspection throughout all production buildings, warehouse constructions, office buildings, several other extensions. According to document data, firm C joined the Accord's workplace safety program (WSP) in May 2013 and the other two firms in the following year. The inspection reports of the three firms have shown the large governance gaps related to constructions safety throughout the factories' production buildings. All three firms completed step-by-step renovating and solved the SEF safety gaps following Accord Corrective Action Plan (see table 4.4). The remediations were slowly progressed over 4 to 6 years. Both case firms A and C completed 95 percent

retrofitting tasks, and the other completed 100 percent as of May 2019 (see table 4.1). They upgraded SEF safety protection systems to save workers' lives from workplace accidents and prevent occupational injuries. However, the boiler safety assessments under Accord's supervision were excluded from Accord's program. The case firms started the boiler safety inspections by internal experts who obtained 2nd class operator certificates.

Efficient Safety management. The data analysis shows that the three firms have activated several workplace safeties measures. The study summarized that three firms created a total of nine specific actions in their facilities for ESM (see Appendix C: appendix table C1). The respondents mentioned, their firms have installed numerous FPE, communication tools, first-aid boxes, and safety complaint boxes across factory buildings to tackle the probable fire risks. Besides equipment, they assigned safety workforces (SWF) for monitoring and contacting workers to identify fire or electrical hazards. The PPE is provided to workers who work comparatively in risky jobs. As the respondent said, most PPE was used by the fabric cutting, sewing, dyeing, and printing workers. Moreover, workers are also responsible for caring for their coworkers from physical and machine hazards while working.

Firms have welcomed all employees to notify safety threats through 'safety complaint boxes.' The firm kept a first aid box on each working floor for primary treatment concerning physical injury of cut, burn, or other damages. Three firms improved the safety communication system through announcement devices (dong-bell and warning signs), visual maps, and illuminated signs. Moreover, all firms also increased the emergency exits for an easy escape from factories' buildings as per Accord's program. Proper safety training, education, and drills empower SWF and safety personnel (SP). The SWF consists of firefighters, rescuers, and a first-aid team. The size of these teams varies according to the total number of employees.

Hazards and Risks assessment. The three firms devised the different HRA measures in preventing the sources of hazards and probable risks at work locations (see Appendix C: appendix table C1). As the respondents mentioned, all incidents and harmful actions always are recorded by the SWF of each department for further root causes analysis. The workers are taught to respond to physical hazards and prevent themselves by using safety instructions and PPE. Firms are encouraging workers' self-reporting and frequent communication to superiors regarding potential dangers. The SC of these firms conducts

physical visits, reviews, and sets priorities to take corrective measures to detect any safety fault. If the issues are critical, then immediate contact with the safety engineering team to fix them. As the respondents of Firm B shared, their company follows the Plan, Do, Check, and Action (PDCA) cycle to conduct a risk assessment. The other two firms apply the checklists for addressing and recording the sources of hazardous agents (harm to health) throughout factory premises.

Health and Hygiene measures Three firms develop a total of nine specific actions to improve H&H performance (see Appendix C: appendix table C1). The firms identified fabric dust, debris, chemical dirt, and hazardous fume are the most common health hazards that would occur at fabric processing, printing, and laundry sections due to wet and slippery floors. They comply with preventive measures such as daily housekeeping to clean the production floors, staircases, shared spaces, restrooms, and canteen areas. The increased ventilation, daylights, exhausted fans, cooling pads, and LED lights for improving visibility, air quality, and cool temperature. All firms have internal audits on the durable materials and waste streams under solid waste management programs. Regarding rights to access pure drinking water, all three firms arrange freshwater across factory premises and the water quality assessment conducted by ICDDRB (an international NGO) in the random inspection. Again, three firms placed numerous portable dustbins and sand-filled buckets to keep the workroom and common spaces maintain a neat environment. Moreover, firm B circulated numbers of colored posters requesting workers to follow the etiquette to avoid throwing spits and dirt here and there.

Healthcare Management (HCM) Initiatives. The case firms introduced several voluntary benefits that meet workers' healthcare demands. All three firms provide primary healthcare (PHC) by the internal medical center (MC), professional physicians and nurses, free medicines, and vaccines for pregnant workers and children (see table 4.5). All firms also developed an independent childcare unit to promote female workers. The PHC chiefly covers health surveillance through essential diagnosis, treatment, and counseling support for work-related injuries and non-occupational diseases (general sickness and non-communicable illness). All three firms engaged in various healthcare programs to extend reproductive health and maternal health supports for female workers in cooperation with BKMEA and local NGOs. They initiated mental health counseling, child healthcare, reproductive healthcare, eye care, and healthcare awareness against menstruation taboos,

collaborating with the external medical team. Moreover, in-house health professionals keep recording all cases of work-related injuries, general sicknesses, and infectious diseases.

5.2.2 Environmental Performance Management (EPM)

The study results show that the case firms have been increasing concerns about the external environmental and resource management issues over the year, which are replicated in previous investigations [16], [18]. The study shows that the firms have created several KPIs to enhance environmental bottom-line practices. These include environmental impact assessment, carbon footprint management, solid waste, wastewater management, chemical waste management, and cleaner production assessment and technology to improve environmental performance.

Environmental Impact Assessment (EIA). The firms assess the impacts to identify the GHGs intensity in air pollution and the volatile organic compounds (VOCs) in wastewaters because these industrial wastes affect the local ecosystem, biological elements, and socio-economic condition of the surrounding communities [17], [18], [86]. The companies are committed to addressing the negative impacts of the business practices that harm employees' health and communities' livelihood. Therefore, firms B and C have adopted the EMS of ISO 14001, and case A developed OEKO-TEX STeP standards with environmental regulation. However, they are still unable to perform the acute remediation concerning negative impacts. Many respondents shared that their factories strive to gather accurate data for correct EIAs. Case firm A emphasized that the experts hiring or special training to the internal team may overcome these governance gaps. In contrast, firms B and C have recruited dedicated environmental engineers to maintain quality data over ecological aspects.

Carbon footprint management (CFM). Three firms' CFM relies on the heavy use of energy, steam, and material management. They incorporated energy audits, steam condenser, waste heat recovery, alternative energy resources and recycle contents to control emissions/wastes. The data show that all three firms focused on using the NG as significant energy resources, and they replaced almost all fuel generators with gas generators. Again, firm C also uses solar energy as a renewable resource. The other two firms have no renewable sources of electricity, but they attempted to avoid using fossil fuels and grid electricity as much as possible. The previous studies also argued that diesel-based

electricity creates high emissions, and grid electricity estimates high process loss because of the poor supply management [16], [182].

Besides the energy sources, they also concentrated on fixing the energy-efficient LED lights to control light pollution in the utility areas. In addition, they replaced power supply motors of the heavy machinery with fewer energy consumptions. The prior study shows that the energy-efficient lighting systems are cost-effective concerning long-term benefits and help firms reduce carbon emissions [16]. Steam management is another way to reduce carbon emissions. For instance, firms B and C replaced the exhaust boilers that recovered the excessive heat from the fabric finishing processes. Further, it reuses the dyeing machines to hot the waters and finishing process to produce steam. Through this technology, they also reduce carbon emissions.

Resource and Waste Management (RWM). The firms' garment and textile processing, by nature, use the massive volume of resources that created products and NMOs (see table 4.2). These wastes usually return to environmental sinks such as landfills, air, and water bodies. The prior research shows that industrial wastes significantly impact the natural water bodies, workers' health, and communities' livelihoods, such as health problems and freshwater crisis [17], [18]. Manufacturers have struggled to manage alternative water sources and control chemical compounds from wastewater of the fabric processing units. However, they endeavored to implement several measures such as metering regular water consumption, improving dyeing technologies, water recycling, and alternative source of groundwater to reduce water intensity.

Only firm C developed rainwater harvesting as an alternative source to reduce the pressure of groundwater, shown in table 4.6. The other two firms still struggle to create alternative sources of water. All three firms have an ETP facility that reduces the toxicity from wastewaters before discharge to local drainage or waterbodies. Till now, these firms have been able to recover only 10 to 15 percent of waters from ETP. However, ETP helped to manage wastewater better, the big challenge to manage ETP sludge is averse to health and the surrounding environment. Currently, manufacturers sell the sludges to local brickfields or government-nominated waste collectors. The sludges contain many hazardous gases that cause air pollution while using as a fuel source in the brickfields. The respondent data show the proper ETP wastes management requires a comprehensive management system through the engagement of government, experts, factories, and waste

collectors. Moreover, all three firms emphasized advancing the dyeing technologies and high-quality chemicals to reduce wastewater. Firm C invested a sizeable amount in installing the latest dyeing machines, which improve water performance almost twice that of old facilities. However, the other two firms also invested in cleaner technologies to improve water efficiencies. Besides, it is an excellent emitter through discharging the GHGs, and heat (from hot water steam, boiler, and machinery) to the surrounding ecosystem that is adverse to local communities, and social life, wildlife, species in the aquifer, and microbes.

Chemical Waste Management (CWM). The data show that textile processing is chemical-intensive, discharging hazardous substances like lead and toxic substances into water bodies. All case firms referred to the chemical preparation and application often exposure to human health that causes skin irritation and injuries. The garment suppliers develop two critical practices for chemical safety management. First, the regulatory guidelines prevent hazards throughout the production processes, such as inventory, laboratory testing, usage, and disposal. Second, they formed Standard Operating Procedures (SOP) to reduce chemical use and dispose of the following chemical regulations, such as Restricted Substance Lists (RSL) or Manufacturing Restricted Substance Lists (MRSL). Moreover, all firms comply with European Chemical Regulations such as REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals) test to export garments in the European region.

Case A follows the guidelines of the OEKO-TEX MRSL. In contrast, the other two firms develop the ZDHC MRSL. Following SOP, three firms maintain similar practices, such as frequent bleaching and antibacterial cleaning in the fabric processing unit to avoid chemical hazards. Moreover, they comply with material safety data sheets, usage of safety wear, goggles, face shields, and gloves as personal protective equipment (PPE) during chemical handling. However, the SOP varies based on the manufacturers' aim and objectives to practice international standards. Firm A devised the global management standards (OEKO-TEX 100) to improve chemical inventory, usage, and waste management. In partnership with the ZDHC MRSL program, firms B and C maintain careful assessments, test the hazardous parameter, Material Safety Data (MSD) sheet, and on-job training during using and disposing of chemicals. The firm focuses on using green chemicals concerning environmental damage and health safety for workers, customers, and

local communities. The respondent asserted collaborative actions by the public and private partnership to manage the industrial wastes.

Cleaner Production Assessment, Green building, and technologies. Firms A and B have invested a sizeable amount in implementing the CPA throughout WDPF processes through the PaCT programs. In contrast, firm C spent big budgets on LEED standards under the green factory project to improve the efficient structure, water, and energy efficiencies from production and utilities. For instance, all three firms set a five-year target to efficiently achieve resource and emission/waste management through cleaner and green technologies. Firm A took a resource conservation project from 2016 – 2020, considering 2014 as the base year[183].

On the other hand, firm B & C took 2017-2021 to increase energy, water, and emissions management efficiencies. All three firms successfully reduced the natural resources (energy and water) consumption, steam, and carbon emissions intensity from the WDPF processes. The internal data has shown that the water efficiency was achieved above 45 percent by firm A and above 55 percent by firm B in the WDPF processes concerning the base years 2014 (firm A) and 2016 (firm B and C). At the same time, firm A & B reduced energy use estimated 15 percent and steam by an average of 15 percent. However, they only offset 15 to 18 percent carbon emission from all processes. In contrast, firm C finds a significant impact in energy (25 percent), waters (above 40 percent), steam (25 percent), and carbon emissions (approx.39 percent) after enabling LEED standards.

5.2.3 Social and Ethical Compliance Standards (SECS)

In the social dimension, all three firms developed several KPIs to improve Social and Ethical Compliance Standards (see Appendix C: appendix table C3). These KPIs are summarized and interpreted in following sections.

Human rights and Labor codes. All three firms took several crucial measures over HRLC practices to uphold workers' rights practices (see Appendix C: appendix table C3). The workers' awareness of their rights helped them refuse work in harmful conditions. Firm A took the disciplinary measures and penalty system such as show-cause, fine, demotion, hold a promotion, and terminations to prevent non-compliant practices (ILO convention #111). One representative from the top management of firm C directly controls workers' grievances concerning harassment and prioritizes the issues. They ensured

transparent and impartial management to settle all objections immediately after workers' written complaints. The other firms, A and B, created the Anti-Harassment Committee (AHC) to resolve physical, sexual, or oral harassment issues following the corporate code of practices. Both firms advised employees notifying verbal or written objections to line managers or committee members. The workers of firm B have direct access via email to the head of human resources or compliance manager if necessary. Moreover, all three companies A, B, and C, put several complaint boxes throughout the factory so that workers can report work-related issues or problems to top management, hiding their identity.

Three firms endeavor to eliminate workplace violence such as slapping, pushing, fighting, pulling off clothes, or being robbed at worksites. Firm A has introduced surveillance measures by engaging security personnel and installing security cameras to monitor employees' actions and wrongdoing that adverse work environment security. Again, firm B launched behavioral training and strict punishment measures to prevent workplace violence. Like firm A, case company C also developed administrative controls and punishments to avoid violence and abuse by coworkers or line managers. All three firms adopted anti-force labor and anti-discrimination policies to promote workers' human rights practices in the corporate business norms and procedures. As per policy, all three firms discouraged discrimination among workers. They also ensured zero discrimination concerning salaries, bonuses, and other benefits. However, firm C recruited some physically challenged people in clerical positions with equal wages and benefits. Like case C, firm B is also determined to hire from their social commitment.

Ethical business practices. Firms developed a set of ethical business policies (see Table 4.4) following the BSCI standards. As a BSCI listed firm, each firm maintains the standard working hours, overtime hours, adequate break-time, paid leaves (both sick and annual), maternity rights, and employer liability insurance. However, target bonuses, pension schemes, workers' recreational programs and outdoor health insurance coverage include the discretionary requirements that depend on firms' policies. All three firms maintained the adequate breaks and holidays to reduce probable ergonomic hazards, overtime works. According to respondents of firm B and C, the companies shrunk OT works over the years that impact workers' earning. They replaced many manuals works by investing in automation and advanced industrial engineering tools. They believed that mechanizing would increase productivity but reduce assistance, excessive working hours,

and risky jobs. In contrast, Firm A still relies on manual and semi-auto sewing machines. However, only automation is implemented in cutting and printing sections.

All three firms adopted the maternity rights and were provisioned to pay 16-weeks of maternity leave with a lump sum amount during childbirth. Moreover, all three firms allow yearly 14-day paid sick leave and 18-day annual leaves for all employees. One interviewee (RS.7_A) of firm A criticized the formal procedures of granting sick leave. Besides that, all three firms adopted the employer liability insurance policy but the health insurance policies only for management employees. Only firm C provides a subsidy to workers for outdoor treatments in cooperation with two local hospitals. Firm B lunched pension and gratuity benefits since 2017 but other two firms yet to develop these benefits. The respondent (RS.20) of firm C phrased, we have nothing to take in future life from this job after retirement. Therefore, our future lives are not secure, so this gap should consider by top management.

Concerning recruitment, firms follow a fair strategy for recruiting freshers and experienced employees. Generally, all new workers are hired as assistant operators or helpers based on age, education, and work experiences (if applicable) by the factory human resources (HR) section. In contrast, the fresh graduates are usually recruited as Management Trainee Officers (MTOs) by firms B and C under the corporate HR department. In contrast, the Human Resource (HR) of firm A follow conventional methods to hire new employees as Junior Officers (JOs) by firm A or experienced one through job opening announcement in the national dailies.

Firms train MTOs or Officers through orientation programs. Firms B and C assign their MTOs in the probational programs that vary from three to twelve months of training across all corporate divisions. On the other hand, firm A assigns JOs to the required department after one week-orientation, and they start the on-job training from following week of joining. The MTOs probation periods are a minimum of six months to one year, and they place in the appropriate department after the training period. According to companies' wage and benefits policies, all new MTOs, or JOs avail for equal salaries and other admissible benefits regardless gender, color, education, and cultural background. However, the respondents (RS.18 and RS.20) of firm C stated, top management does not treat all MTOs in terms of wage and benefits. They offer little higher salaries to the MTOs who are public universities' graduates. All companies also have mid-career recruitment

policies based on the candidate's abilities. The remuneration and other benefits of experienced hire vary from candidate to candidate.

Employees' Social Needs. Living wages and salaries are very crucial to upgrade workers' social needs and employees' wellbeing. All three suppliers follow the 5th national wages grade in terms of workers' payment. For all three cases, the salaries of management employees mainly depend on the ability and experiences of an employee but no fixed salary structure by the government. The bonus and incentive rates are fixed as per company policy, and at least workers receive an average of 1.5-time hourly salaries. Firms often require additional hours of production work for some assembly lines based on shipment urgency or critical production processes besides overtime. That is why firms keep production incentives and bonuses systems so that workers do not claim forced laborers. Besides that, firm C shares annual profits with all employees from the company's social commitment. The other two firms A & B, have no such policy. Again, for all firms yet to cover health insurance for workers, the insurance coverage is adopted only for management staff. However, firm C has a plan to include all workers under health insurance coverage.

Besides, both firms B and C have developed several training and development programs to improve employees' functional and personal competencies. All three companies deliver periodic training to workers for improving production skills, safety, and health hygiene awareness. Firms B and C have established an independent training and development center (TDC) under the Human Resource Department to organize scheduled training and educational programs to enhance workers' skills. However, firm A has a technical training center (TTC) for increasing worker production skills. The company has engaged one team of the HR department to organize EDP through internal and external training and drills. All firm arranges internal training for management staff by engaging experienced people from top management.

Another important value creation initiative by all firm B is to introduce the subsidized shop policy or fair price shop that allows workers to buy dry foods, vegetables, and other items at a fair price. As a corporate citizen, the firm believes the shop help workers to meet daily necessities and supply health items to all employees at subsidized prices. Firm A also considered launching the subsidized shop within-firm premises soon.

Worker's empowerment through labor-management committee. Three firms created the participatory committee (PC) and factory safety committee (SC) by engaging both workers

and management employees to uphold the workers' rights regarding social compliance. According to the national labor laws (section 175), the firm must promote workers' union activities and collective bargaining practices. However, they formed labor-management-based PC and SC but discouraged workers from joining the registered trade unions. The workers elect a 12-member PC through voting, but the SC members are appointed by PC and top management selection. The PC mainly facilitates the collective communications that ensure helpful discussions and resolutions on workers' rights-related claims, needs, and benefits.

All three firms formed the SC based on equal participation from both management and workers representatives. Accord and the Ethical Trading Initiative (ETI) cooperated with firms to develop the two-long SC through the selection process. The size of the SC varies among firms' employee sizes. All three firms formed an individual SC according to national labor law. Both firms A and C formed a 12-member SC for each factory, but a total of 16-member SC was found for case B. The SC members developed, implemented, and monitored the factories' property safety and health-related issues. In this regard, they became responsible for supervising the SEF safety inspections, and remediation works hazards, risk assessment, and responding to workers' health issues. Another essential duty of SC is to respond to worker's complaints and suggestions about the work-related hazards and review the workplace accident records on how to prevent them. Firms B and C engaged SC in delivering training to factory firefighting, rescue, health safety, and first aid teams. The structural and fire safety engineers cooperated with SC to design the training.

The job duties of SC members also review and evaluated by corporate governance bodies of the three firms. Accord experts taught SC members to incorporate all issues in a single report and organize review meetings once every three months. The meeting minutes further submit to the top management for their actions wherever necessary and sent to Accord (currently RSC) for some instances. The chief operating officer (COO) and compliance head of case B examine the SC activities and thoroughly check the agendas before any workplace safety management decision-making. In contrast, the owner, HR, and Admin Director of firm A directly supervise and evaluate SC activities over factory safety. Again, case C's sustainability head and welfare manager generally review and evaluate SC meeting minutes and take further actions to resolve the problem.

Community engagement. All three firms relate to the local communities and nations in many ways. Almost all workers of these firms stay closer to their firms; therefore, their employees represent members of the local communities. However, they engaged with various NGOs and government projects to improve workers' skills, communities' health, and educations. For instance, firm B participated in several development projects with NGOs to solve community housing issues, maternity healthcare, local education institutions, religious centers, and relief and support to government funds. Firm C established local hospitals such as eyecare and maternity care centers to support communities' health. Besides, this firm established a vocational college in the northern part of the country to deliver technical education for the betterment of the community. Firm A supports the orphanage education center and connects with several local NGOs to assist the poverty elimination program, workforce development, and women empowerment.

5.2.4 Economic Growth and Prosperity

All three manufacturers have already integrated many initiatives toward economic prosperity and development for sustaining the competitive markets. These initiatives (see in Appendix C: appendix table C4) vary according to firms' vision and values toward sustainability. Moreover, these economic initiatives are not static but changing concerning the environmental and social bottom-line challenges. However, all these initiatives and measures have been adopted by firms to extend their efforts toward saving environmental and social costs by maintaining economic prosperity.

Economic contributions to the national economy. Firms created an excellent scope for the country's fresh graduates and experienced employees to grab jobs with market standard remuneration and other admissible benefits. For instance, firms A hires overseas expert designers for their London-based design office. Firm B also recruited two freelance expert designers to enrich their local design team. In contrast, firm C still recruited all local experts and fresh graduates in the design and innovation team. They devised a production improvement cell to train workers regularly, and industrial engineers improved productivity. However, firms A and B set up Worker Training Center to provide workers with basic training on garment-making processes. Besides workers, firms B and C established training and development (T&D) wings as an essential part of human resource management. Through the T&D, they arrange periodical training on diverse issues covering functional and personal competencies.

Product and Process innovation. Although three firms are doing homogenous business, they constantly seek new market entry through new products and process innovation strategies. Garment trends are in flux, and manufacturers intend to deal with the market quickly for sustaining in the long run. Therefore, firms established the research and development (R&D) and design studio (DS) over a decade ago to attract customers with a wide range of products. Firms' product and process innovation are mainly R&D driven, and DS is the physical space to exhibit finished garments, fabrics quality, patterns, and alternative material.

The manufacturers' R& D activities can be categorized into three primary roles. First, create innovative workmanship and fitting; Second, reduce bottleneck to increase production process efficiencies; and finally, cost-effective materials development and search alternative materials such as recycle contents. The suppliers' R&D teams collaborate with fashion designers, material developers, computer-automated design (CAD) teams, pattern makers, production, and quality people to develop the new products. Still, designers play the dominant roles, and the knowledge of the products or materials is mostly ideated in garment development processes. The study found R&D team of the case firms want to increase the use of leftover materials such as stock fabrics and accessories to develop new combinations of garments as proto samples or quotation sample. It is anticipated that Firm A is spending more on R&D as they recruited many overseas designers. This firm created lots of new trends and arranged fashion exhibitions every season in their London office. Their marketing approach engaging fashion designers help firms to reach customers in advance.

On the other hand, firm B has also been increasing R&D budgets over the years. Their two freelance designers frequently visit customers' locations to introduce new products range according to customers' profiles and gather customers' requirements. Moreover, the firm arranges an annual fashion show once a year, inviting all local representatives of western brands. Items used vary according to their environment and corporate.

Market Presence. These firms have been increasing their market presence in many ways. Significantly, firms started branding their images to create direct and indirect economic impacts. By employing vast numbers of local people and generating exports values, three firms have increased their market presence over the years. Moreover, they have been making strategic CSR investments throughout the country to foster economic

growth and positively impact the local economy. Firm C participated in many corporate volunteering activities, including an eye hospital, maternity care, vocational college, partnering with NGOs projects, and supporting orphanage centers. The other two firms have also been working with NGOs to extend their supports for poverty reduction, community health clinics, and child education.

Sustainable Investment. In the 2013 Rana Plaza aftermath, the three firms have increased sustainable investments in several areas. The investment is often treated as ESG investment, socially responsible investment (SRI), and impact investments. The data shows that the three firms have spent massive budgets integrating several standardized practices to improve environmental management and cleaner technologies. For instance, firm C has invested in constructing the green factory and incorporating green technologies as ESG investing. The other two firms invested sizable amounts of green budgets in installing cleaner production technologies for environmental performance. Moreover, all three firms have increased their socially responsible investments to renovate the infrastructure, work conditions, and healthy environment that enhance worker safety and improve workforce empowerment.

Besides ESG and SRI, firms B and C expand their impact investment through sponsoring child education, orphanage centers, and poverty reduction. Besides, firm C has been increasing financing for community eye hospitals, maternity care centers, and vocational training colleges as a commitment to ensure healthy lives and promote lifelong learning. In addition, they started planting trees throughout factory premises and the northeast part of Bangladesh to compensate for carbon emissions. Firm B often provides donations to charity organizations and government relief funds. Moreover, the firm sponsors workers' children for higher education and local communities for primary education. On the other hand, firm A has a few education sponsorships to workers' families, volunteering projects to local communities, and disaster-prone areas from their relief funds.

5.2.5 Corporate Governance and Leadership (CGL)

Except one, all members of BODs both firms A and B represent owners' families. In contrast, there are five BODs from owner's family out of eight members of firm C (table 4.1). The chief of the BODs of all firms, nowadays, deeply concern about environmental and societal impacts that incessantly increase pressure on garment manufacturing operations. The corporate bodies have addressed several business impacts over other

organizations' bottom-lines such as the health safety risks, environmental pressures, and societal changes. The study found that the firms developed a few KPIs to improve corporate governance and leadership (see Appendix C: appendix table C5). These indicators include accountability and transparency, knowledge-based management practices, corporate disclosure, and stakeholders' engagement. They share all communication regarding environmental and societal impacts with employees through internal meetings and annual reporting.

Corporate policies and programs toward accountability and transparency in management practices. The BODs of the case firms introduced numerous corporate policies and action plans in cooperation with their customers, employees, industry association, and media. The firms' policies included local laws and international norms to increase transparency in managing workplace safety, social compliance, environmental management, corruption, and capital expenditure issues. Nowadays, these firms integrate vertical information flow within departments and divisions. The inside and invisible practices concerning organizations' bottom-lines become more open and accessible. Firms B & C set division-wise targets and assigned management employees to address and report their societal and environmental impact activities. They have improved the communication system through an information system and enterprise software. For firm A, board members still articulated all policies and distributed them to all divisions head to implement according to company targets.

All three firms often face challenges to developing internal culture concerning the environment and societal aspects because of ignorance by employees. They are endeavoring to educate employees toward companies' etiquette, policies, and programs over sustainability issues. The top management is concerned about changes that the firms have experienced over the decades. Therefore, they are flexible to amend their corporate policies and action plans based on ESG challenges. Besides, these companies maintain a closed-loop information flow concerning clients' information or employees' private matter.

Organizational learning and Knowledge management. The management policies and practices vary among case firms because of their corporate leaders' intents, knowledge, and experiences. In line with Takeuchi [184], we find that the firm's business practices vary because of the people who make strategies. The training, meeting and stakeholder's dialogue of these firms are the key approaches of corporate learning and knowledge

management. The KM influences the corporate governance and leadership practices. The respondent analyses found, the firms create and share technical (production, quality, etc.) and soft skill knowledge (workplace complaint, health safety and management) through several formal and informal interactions.

The firms addressed probation period, training, education programs as a formal approach to create, capture, and share organizational knowledge among employees. Again, the internal and external coordination, meeting, and dialogue with stakeholders were identified as an informal approach. Concerning the knowledge management process, all three companies create, capture, and share information and knowledge from internal organizations and external training and education programs. They promote formal and informal learning through induction and provisional training, vocational education and workshops programs, and frequent meetings to increase employees' technical and soft skills, shown in figure 5.1.

Firm A mainly relies on job orientation, daily meetings, on-job training, and formal training by in-house trainers. Through these contexts, the firms create and share information on the management policies and technical knowledge with employees. Again, firm B focused on employees' technical and personal knowledge development through external training, corporate learning, weekly meeting, information sessions. The firm wants to transform labor into human capital through continuously increasing workers' technical competencies, etiquettes, and respective duties. This way, the firm reduces inefficiencies and increases productive hours. However, firm C also develops human resources through informal and formal learning corporate training, workshops, and vocational education. All three firms believe that continuous learning motivates employees' creative efforts and innovativeness.

The manufacturing firms are constantly experiencing new realities through external and internal knowledge sources. The flow of internal knowledge creation and sharing are centering the work floors, especially production/quality, sampling (design studio, and Pattern department), and maintenance areas which Nonaka & Takeuchi [148] identified as '*Ba*' (or space). Because almost all problems or issues are raised from these spaces, all employees, workers, and management interact to solve the daily issues. The external knowledge enters firms through customers, auditors, expert hires, and other indirect stakeholders such as media, NGOs, and international organizations.

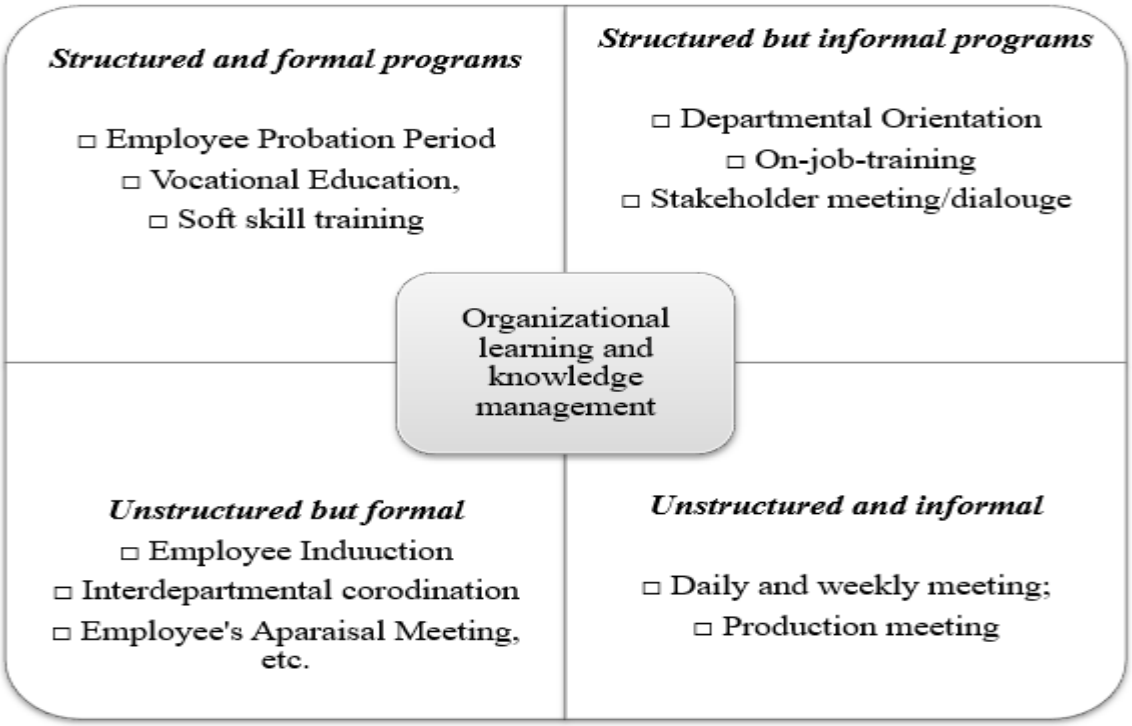


Figure 5.1 Organizational learning and knowledge management matrix

The BODs and top management are the primary sources of corporate knowledge creations through strategies and policymaking. The middle management to management staff, non-management staff, execute management decisions into actionable. For firm, A mostly follow top-down knowledge approaches to disseminate among employees and workers. Firms B and C follow a participatory approach; the BODs allow management to take authority and implement decisions that do not conflict with the company's interest.

All companies have also developed information technology (IT) to manage the soft-skill knowledge of the employees. They integrated Enterprise Resource Planning (ERP), FastReact (demand planning software), Product Life Cycle Management (PLM) Management Information System (MIS), and Human Resource Information System (HRIS) to update and archive the daily business data (sales, procurement, inventory, production), T&D contents, and HR information. Moreover, these digital technologies help employees know and measure business performance in real time. Firm B and C implemented the ERP and FastReact to record all data. Firm A uses the MIS and PLM to track explicit information of orders, inventory, production, commercial, finance, and HR activities. All three firms incorporated IT to store and create daily reports for making the business decisions quickly.

The industrial engineering (IE), R&D, CAD and pattern, production, and quality departments lead the process innovations by sharing and combining their knowledge. These teams work together and share the bottleneck or difficulties of garment production processes through a Pre-production (PP) meeting that mainly focuses on the technical knowledge (know-how) through members' experience sharing. The interaction among the different team members co-creates a new understanding and develops new know-how. The outcome of the meeting often derives from co-creation among them. The PP meeting minutes are written down in the production manual book of each item or garment style to follow in assembling lines.

Corporate Reporting (disclosures) practices. In recent years, disclosure practices have become another focal initiative of corporate governance and leadership practices. Corporate reporting over a firm's social and environmental bottom lines enhances its accountability, credibility, and traceability among the stakeholders [89], [134]. The safety inspection and remediation results and the other audits reports became publicly accessible by all three firms. For example, firms A and B published the workplace safety inspection and remediation status reports on their corporate website. Besides, they also publish third-party inspection reports of chemical audits, wastewater assessment reports, and environmental audit results. In contrast, firm C has disclosed the corporate credit rating report, Annual Corporate Sustainability Report, and The UNGC Communication of Progress report since 2018. The report is shared with the direct stakeholders such as employees and customers for comments and suggestions to increase the appropriateness over the key materiality issues.

Stakeholder Engagement. These days manufacturers welcome stakeholders' participation in improving their corporate governance gaps and management behavior. All three firms include the needs of stakeholders' interests in the corporate statement and policies. Their corporate statement explained the degree of relationship with the direct and indirect stakeholders. The case firms' relationship with its direct stakeholders is dynamic and stands on mutual interests to solve many challenges of the bottom lines. The radical shift in workers' and managers' contributions has emerged since the 2013 factory collapse. Over the years, the external stakeholders' pressures on improving factory safety, workers' rights issues, and physical and psychological health safety became inevitable. Their intensive efforts regulate the garment suppliers toward WHSC performance. The BODs of

firms engaged the dedicated Compliance/Welfare/Sustainability managers and labor-management committees in improving health safety and worker's rights practices toward workplace compliance.

5.3 Workplace Safety Compliance (WSC) program toward Sustainability

The workplace disaster in 2013 was brought customers, unions, NGOs, and media groups together to impose regulatory pressures over garment sector for implementing the workplace safety compliance (WSC) program. The forces resulted in emerging the three regulators: Accord, Alliance and NTPA backed by western customers, governments, unions, and other lobbyists. The Accord and Alliance both were independently 5-year legally binding private governance programs. They supported garment factories to improve factories' constructions and health safety under WSC program during the end of 2013. Therefore, all case organizations had to do the mandatory workplace compliance tasks because of the export markets. The WSC program led the garment suppliers toward social, ethical, and environmental compliance. The study identified three factors of WCP that facilitated manufacturers' sustainability initiatives, shown in figure 5.1.

5.3.1 Address workplace safety issues and set initiatives to remediate them

The data analysis showed, the case firms' sustainable development initiative started over WSC program, and this phase has extended till 2018. The firms started WCS steps by joining Accord's on fire and building safety of Bangladesh (AFBSB) initiatives during 2013-14. They focused the AFBSB initiatives because their major buyers acted as signatory members that initiatives. The firms did initial safety inspections in cooperation with Accord to address the safety faults on the factories' structural, electrical and fire systems. As advised by Accord, all three firms conducted detail engineering assessment (DEA) following national building codes.

After DEA, they have reviewed SEF with Accord's experts and received the Corrective Action Plans (CAPs). The data revealed that all three firms corrected many safety faults (see table 4.4) that threaten to workers' health safety. All safety faults were corrected following Accord's CAPs to overcome factories' safety issues. In line with the previous studies' findings [6], [10], [13], [15], we found that the case firms received cooperation, guidance, and directions from Accord's experts to develop SEF protection and worker's health safety. Those studies also argued, the Accord inspection and remediation program

facilitated to address suppliers' constructions safety gaps and workers' health hazards throughout the production sites.

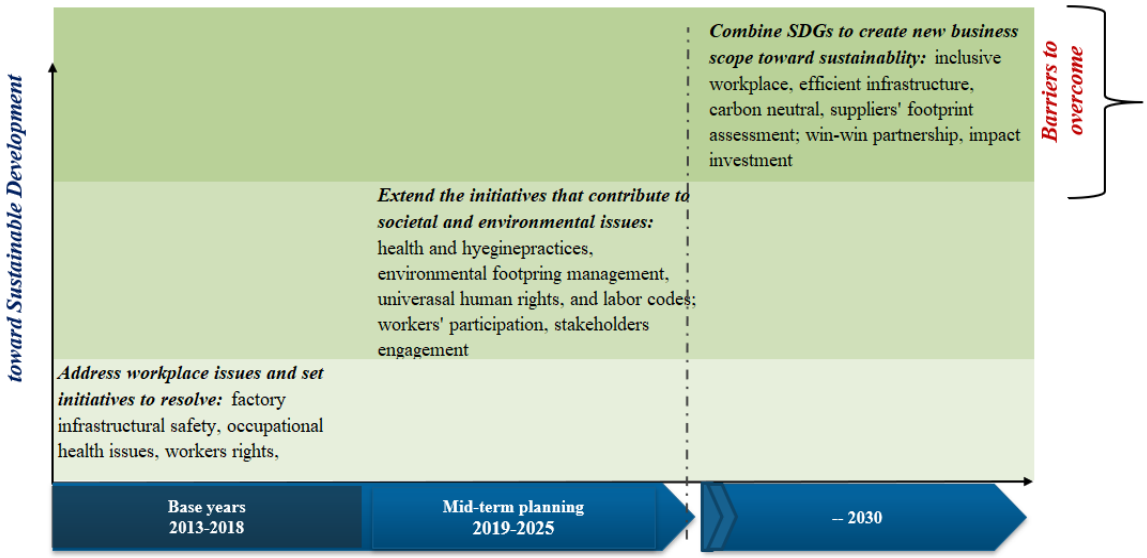


Figure 5.2: Case firms' sustainability program in the bottom-lines' practices

The management respondents (RS.1_A, RS.3_A, RS.9_B, RS.16 & RS.20_C) admired Accord's initiatives and their technical supports to improve internal workplace safety but they criticized Accord because of costly remediations. A few studies [4], [6], [15] also revealed similar results through case investigations over the Accord's workplace program. Sinkovics et al. [4] mentioned, the small-size factories are forced to cost huge investment for expensive fire equipment. The respondent believed, many visible measures on the efficient safety management and hazards and risks assessment systems (Appendix C: appendix table C1) have been improving worker's health safety. They integrated internal safety apparatus, PPE, labor-management based monitoring mechanism, and third-party safety audits. Moreover, firms have prioritized incorporating the needs of occupational health measures, including health and hygiene policies and primary healthcare for all employees. The health professionals and occupational nurses are assigned to design, plan and deliver supports to workers for occupational diseases.

Again, the case firms are forced to fix workers' rights to enhance health safety practices. Prentice et al. [70] argued that the Bangladesh garment sector had completed property safety rather than workers' safety as the worker's rights toward OHS remained unsettled. However, our study results differ from their findings in this matter. As our case firms also developed several human rights policies and labor code ethical and social

compliance, workers' safety committee (SC) toward sustaining the WHSC practices (see Appendix C: appendix table C1). With the Accord supervision, all firms have formed a dedicated SC to coach them to monitor and inspect the probable safety hazards and risks. The safety education and training programs for SC, in collaboration with Accord's Safety Training Program (STP), have been boosting the safe work condition provision. Consistent with [72], the study argued that the training and demonstrations increased the management skills to adequately disseminate the factory safety measures.

5.3.2 Extend the initiatives that contribute to societal and environmental practices

Firms have been extending their SEF safety efforts over time. After Accord's governance program expire in 2019, the firms voluntarily increased responsibilities for maintaining WSC program aligned with their other social and environmental programs. These programs expanded the regulations and the voluntary code of practices (COP) in terms of safe workplace, environmental and socially responsible business practices. Alongside Accord's program, the firms joined several partnership projects in collaboration with Partnership for Cleaner Technology (PaCT), Better Work Bangladesh (BWB), the US Green Building Council (USGBC). For instance, firm A launched cleaner production assessment (CPA) in 2016, and firm B in 2017 under PaCT project for retrofitting and the replacing old processing technologies to increase efficient energy use, water reduction, and emissions management across production processes. In contrast, firm C agreed to retrofit the existing production buildings following the USGBC' leadership in energy and environmental designs (LLED) requirement.

Over the years, all three companies increased the regulatory and normative practices of the universal human rights, CFM, employees' social needs, participatory management, transparency and accountability, stakeholder engagement, and corporate training and learning as socially and environmentally responsible practices. These findings are replicated in the previous studies [2], [4], [70]. Gradually, these firms integrated several international management systems, audit standards, and reporting frameworks to standardize the voluntary COPs. For instance, the study results show that BSCI listed firms are evaluated by BSCI audits once a year. The western buyers mainly relied on the BSCI-listed suppliers as their business partners. Sinkovics et al. [4] criticized the Bangladesh manufacturers because of their overreliance on the BSCI as factories' authorities often manipulated the evaluation system.

Several business practices, including maternity leave policy, employer's liability insurance coverage, worker performance bonus, and salary digitization, are evolved by firms toward social and ethical compliance commitment. The BSCI and SEDEX annual audits evaluate these extensive codes of practice. However, the case firms also support workers to meet their social needs through different offerings. For instance, case A started to provide free sanitary pads to female workers since 2018; firm B gives family planning products and mental healthcare supports to the married workers since 2017, and firm C provides free eyecare treatment since 2017. Moreover, both firm B and C have a fair price shop for all workers. All firms introduced worker participatory committee, safety committee and anti-harassment committee following labor-management participation. corporate volunteering activities and supports to educational institutions also enhance firms' presence as a corporate citizen.

For environmental bottom-line practices, all three cases adopted legal requirements and global norms to accelerate their management practices. For instance, firm A took ethical business and environmental policy in 2017 and OEKO-TEX STeP standards in 2018, firm B integrated environmental management system (EMS) and, occupational health safety policy in 2016, Higg's FEM index, and life-cycle assessment (LCA) in 2018, and firm C adopted EMS in 2015, green factory initiatives (following LEED principles) in 2016 and UN Global Compact principles in 2017. However, these standards guide the EIA, offsetting carbon emissions, chemical wastes management, resource efficiency, and SWWM practices.

5.3.3 Combine SPs to continue the changes for creating new business scope

The study results reveal that these firms have brought many changes on their CBPs over the years. These changes created numerous impacts after combining SPs that briefly summarize in table 5.2 based on each KPI. Although the WHSC appeared as a regulatory requirement after the 2013 Rana Plaza Collapse [15], [73], the case firms focused environmental and social performances, and corporate governance to develop SPs across MSC.

Table 5.2: Changes and impacts after implementation sustainability programs

KPIs	Changes after Implementation	Impacts
	Workplace Health Safety Compliance	

Factories' Buildings, Electrical and Fire Safety	visible improvement in structural layouts, electrical system, and fire equipment	reduced potential occupational risks and safety hazardous
Efficient Safety management	Installed fire protection, safety communication device, engagement of safety committee and other safety workforces	reduce the communication gaps
Hazards and risks assessment (HRA)	workers increase skills to address common hazards and sources of hazards	improve the individual skills to apply in social life
Health and Hygiene measures	increased work floor's visibility, temperature control, air quality and spacious work layout	developed a congenial and healthy work condition
Workplace Healthcare management	inhouse treatment, free medicines, outdoor medical benefits, health insurance, maternity, and childcare benefits	improved workers' family and social lives
	Environmental Performance Management	
Environmental impact assessment	addressed the harmful manufacturing operations and its consequences	developed a system to identify negative environmental outcomes
Carbon footprint management	emphasized energy efficient infrastructure, performed energy audits, and reduced high polluting contents	continuous improvement in carbon reduction
Solid wastes and Wastewater Management	integrated science-based matrices, wastewater treatment plant, and recycling policies to assess and control solid waste, wastewater, and air pollution	improved pollution and erosion control across facilities
Chemical Waste Management	incorporated chemical regulation, restricted substance lists, and zero-discharge hazardous chemical policy	reduced hazardous or harmful chemicals from production process
Cleaner Production Assessment	integrated best available technologies to reduce, recycle, recover, and reuse resources	improved energy, water and material resource performance in production and utility areas
	Social and Ethical Compliance Standards	
Human rights, and Labor codes	Developed anti-harassment, anti-discrimination, anti-forced labor, anti-child labor, freedom of association, and complaint mechanism policies	reduced workers' physical and verbal harassment, and improved impartial complaint management
Ethical business practices	created policies on wage and benefits, target bonuses, maternity leave, adequate breaks, and holidays	reduced work stress, promoted female workers, and improved timely payments
Worker's empowerment	developed workers and management-based participatory committee for worker's rights, health safety	enhanced worker's social protection and collective bargaining
Employee’s social need	introduced skilled training, annual recreations, employees' appreciations, subsidized daily necessities,	improved human resources, increased work efficiency,

Community engagement programs	increased corporate sponsorship and volunteering programs in developing local communities	increased community healthcare, education, and social skills
	Corporate Governance and Leadership (CGL)	
Accountability and transparency	developed corporate policies and governance measure on workplace, social, environmental, and economic issues	improved traceability, information transparency and corporate accountabilities
Discloser practices	increased internal monitoring, independent inspections, and third-party facility audits	started internal and external reporting and sharing with stakeholders
Devising Knowledge Management	started corporate training, drills, vocational education, experience sharing, and collaboration with local and international experts	developed internal organizational learning, knowledge creating and sharing
Stakeholder Engagement	engaged direct and indirect dialogue, and collaboration with customers, regulators, governmental and private organizations, consultants, and NGOs	increased long-term relationship and feedback system from direct and indirect interest groups
	Economic Growth and Prosperity	
Direct and indirect economic Contributions	increasing business activities, employment, and skilled workforce	improving social and economic lives of marginalized people
Creating atmosphere for Product and Process innovation	increased research and development spending, retrofitting, automation, and cleaner technologies	constantly efficiencies in improving material consumption, use of alternative resources and searching new customers and market network
Enhancing Market Presence	introduced Management Trainee program, higher pays, corporate volunteering activities	developed corporate image, or goodwill as a trustworthy supplier
Sustainable Investment	increased socially responsible investment and impact investment	improved corporate social performance and local community compensating carbon emissions

Although many long-term impacts have created by implementing the KPIs, yet the firms confront several challenges to continue improvement. As discussed above, they have some critical issues remain unsettled for continuing sustainability program. The respondents' data shows, the customer’s poor pricing strategy, unethical purchasing behaviors (quick changeover, discounts, air penalties, and cancellations) and diverse pressures from stakeholders create obstacles to remain sustainability program alive. Again, some other uncertainties concerning market shifts, climate changes, technology disruptions, and resources crisis also threat sustainability targets. Therefore, manufacturers’ focuses

have changed based on time and export markers' requirements. They occasionally ignore implementing the predetermined action plans.

The firms have assumed the abovementioned issues to tackle through corporate governance and leadership practices. The top management continuously engage employees, customers, industry associations, government, and nongovernmental organizations for increasing internal and external collaborations toward knowledge and resource management. They have endeavored to improve inclusive workplace including zero-workplace incidents, zero-discrimination, zero-emissions, win-win partnership, and sustainable investment, etc. Therefore, three firms have determined several long-term policies and programs to continue the SP. For example, the firm A drafted another five-year management plans' 2021 in 2019 to change all machineries with energy efficient power supplies, and renewable energy-driven production process. Firm B is halfway through its six-year plans' 2019 that pursue to improve corporate social performances integrating female supervisor, and zero-discrimination projects with BWB. In addition, the firm has started retrofitting and renovating on existing production constructions to make efficient energy and water resources management.

However, firm C approaches the end of the five-year mid-term plans' 2016 in 2021. The company has implemented green building standards almost two-third of production constructions (two sister concerns factories: a garment assembling unit and fabric processing unit) in 2019. As per the commitment of the mid-term plans' 2016, they reduce the carbon emission by around 15-20 percent by 2021 in collaboration with the USGBC. Moreover, they aimed to achieve national SGDs commitment by implement carbon neutral goal and zero-discrimination within 2030. Following this commitment, the firm has already extended the LEED standards across all production units. They intend to achieve capabilities in the eight areas: sustainable site, energy and atmosphere, water efficiency, material and resources, indoor environment quality, innovation practice, and surrounding environment.

5.4 Case firms' Sustainability Programs toward bottom lines performance

The study demonstrates the garment Suppliers' Sustainability Program (SSP) in figure 5.2. The SSP is a set of twenty-three key performance indicators that include hundreds above specific measures for an organization's bottom-line performances. The firms have

developed the SPs, improving organizations' bottom-line capabilities. The bottom-line capabilities are required to cope with changes. The BODs of these case firms endeavored to enhance organizational and operational capabilities by achieving a safe workplace, social need creation, efficient resource and wastes management, human capital utilization, corporate governance, innovation, and economic risks management.

The firms face many operating barriers, including internal and external barriers. The study results show that the firms have two major internal issues, including organizational and operational. The challenges: inadequate policies, unethical practices, inadequate workers' participation influence internal coordination. On the other hand, the unskilled labor, sizable compliance costs, higher consumptions, high process costs, lower productivities create operational problems. Besides internal issues, three firms always consider many external pressures, including environmental degradation, climate change, resource crisis and prices, increased material and labor costs, customer unethical buying practices (poor pricing, air penalties, discounts, and cancellations), and costly costs technologies. These internal and external barriers motivate the garment suppliers to discover long-term paths to overcome those. For instance, our case firms have created several corporate policies, programs, and management standards to remain sustainable companies in the export business. However, some issues have appeared as post challenges such as costly safety equipment, high renovation costs, expert migrations, and unexpected unionization.

As a lead supplier, all firms have organizational and operational strengths to drive for long-term development tackling above barriers. The study results have found that the firms emphasized to increase internal coordination and external collaborations through utilizing human knowledge capital (employees' experiences, skills and learning abilities), operating resources (investments, lands, structural properties, machinery, technologies, and production setups), institutional measures (regulatory policies, standardized management systems, facilities' audits, and cultural values), and stakeholders' engagement (dialogue, partnership projects, external knowledge sharing and feedback system).

The data shows that the firms possess many tangible and intangible resources that motivate them to approach new opportunities to overcome challenges. The operating resources of these firms are valuable and rare. The RBV theory advocates, the firm's success depends on the adequate management and alignment of valuable and rare resources.

Again, they have designed several corporate learning and training methods (summarized in table 4.7) to develop employees' experiences, knowledge, and skills as organizational knowledge management. The two firms have emphasized improving employees' knowledge, skills, and learning through extensive training and vocational education. Their independent T&D team designs the annual training and drill schedules for management employees.

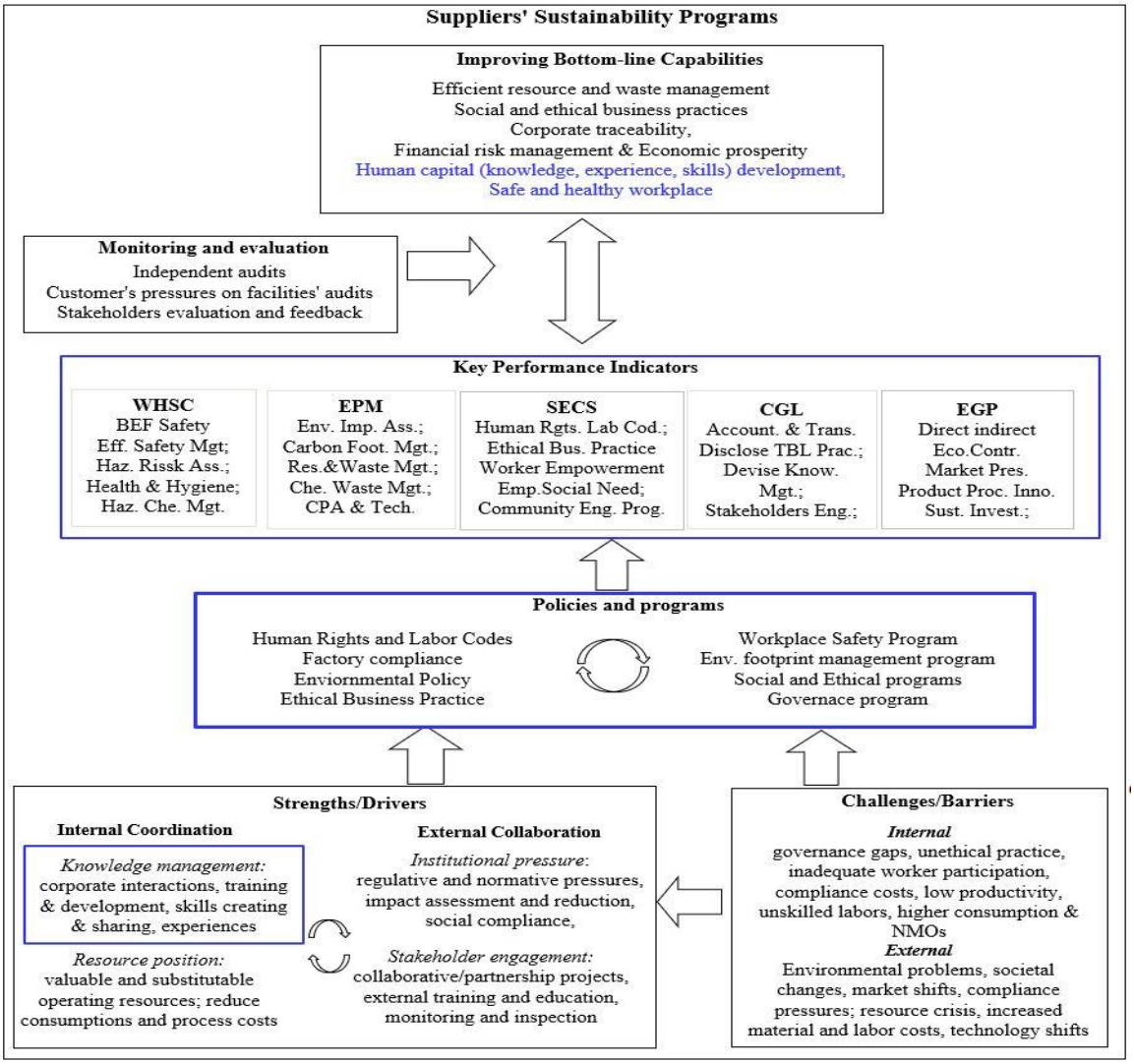


Figure 5.3: Garment Suppliers' Sustainability Programs

Round the year, all three firms provide in-house knowledge sessions through formal training, on-job training, orientation, and meeting. Besides the in-house training, all three firms have extended the organizational learning in collaborating with external parties such as public and private regulators, NGOs, industry associations, and trade unions. The firms joined the Accord's training program to train their employees on regulatory and voluntary issues such as workplace safety, employee health safety, workers' labor, and human rights

issues. The training, vocational education, and EDP policy empower employees to negotiate their rights and work responsibly. Moreover, these firms often arrange technical training on process innovation through EIAs, CPA, resource management, and waste/emission control.

The case firms have focused on the regulatory, normative, and local cultural values to formulate the corporate policies and regulate employees' behaviors. The corporate governing bodies follow the national laws/rules and international standardized frameworks to make corporate policies and management systems. Again, the stakeholders' engagement in evaluating corporate policies and programs helps firms know outside views in improving workplace safety compliance and environmental and socially responsible practices.

All firms have created frequent dialogue and interaction with NGOs, Unions, and local communities. These stakeholders' engagement help firms to increase partnership projects, accountability, and traceability. The external collaborations encourage firms to make social and environmental partnership projects. For instance, firms A and B have partnered with the PaCT during 2016-2017. Again, firm B has joined another environmental partnership project with Sustainable Apparel Coalition (SAC) to implement Higgs's FEM index. In contrast, firm C has joined green factory projects following LEED standards with the USGBC. These partnership projects improve impact assessment, cleaner production technologies, and efficient infrastructure to minimize NMOs.

Moreover, the stakeholders' involvement also improves social partnership, improving social need creation and better work practices. Our study finds that firm A has joined the workers' health project with BKMEA, firm B with BWB, and firm C with Netherland-based NGOs to extend their workers' social needs and social lives. These corporate partnership policies and management steps drive them toward improving SECS. Moreover, firms B and C have developed female supervisor programs to increase female workers' participation in production roles.

The case firms constantly combine their resource position, employees' knowledge, rules/norms (system), and stakeholders' relationship to design several policies and programs toward setting KPIs. The study data reveals that the firms have taken several policies and programs (table 4.3) to implement across MCS. There are many specific policies under the four central policies (shown in figure 5.2) that are easily communicable and implementable. The firms assigned respective who disseminate and implement those policies. On the other

hand, the case firms have also implemented several bottom-line programs, including safety, environmental footprint management, social need creation, and governance to increase safe work conditions, green and socially responsible practices (figure 5.2). These policies and programs have mediated to develop KPIs steps-by-step. The study has summarized twenty-three KPIs under five main pillars: workplace, environmental, social, economic, and governance. The continuous improvement of these KPIs is key to creating bottom-line capabilities.

Among all, the three indicators EIAs, CPA, HRA, are focused on measuring the NMOs generated from garment production processes. These three indicators aimed to protect the internal environment, employees' health, energy and water resources, and community's livelihood. However, the three firms have been practicing hundreds of above measures under KPIs (see Appendix C: appendix tables C1-C5) to implement sustainability programs. These KPIs are constantly improving concerning the internal and external barriers because of continuous changes in the environment and social issues. Thus, they focus on external evaluation and feedback on their corporate reporting practices.

The independent monitoring, the annual evaluation on KPIs, and facilities' audits help firms to make corporate traceability. As a modern corporation, all case firms have become more open to the public through reporting practices. The disclosure practice also proves the firm's knowledge transparency. The direct and indirect stakeholders often become 'watchdogs' to know the safety measures and measurements to tackle annual impact generations (emission/wastes) and social bottom line' performances. The study finds that two firms (case A and B) publish business profiles, safety inspections data, and third-party impact assessment reports through their websites. The other firm (case C) discloses the annual sustainability report and the COP under GRI and UNGC.

All three firms' core values focus on improving customer trust and employees' empowerment (direct stakeholders' needs). Besides, they also meet indirect stakeholders' hopes by reducing NMOs, participating in corporate volunteering/sponsorships, and promoting local entrepreneurship. Nowadays, the suppliers' business behaviors continuously reform based on meeting direct stakeholders' needs, and indirect stakeholders hope toward economic prosperity.

CHAPTER SIX: CONCLUSION

6. Introduction

The chapter is designed into four subsections. First, the research provides the answers to the three subsidiary research questions and one central research question. Second, we give an overview of the research implications from academic angel and practitioners' perspectives. The study examines the quality of the research results through the lens of prior studies and four dominant theories of the firm. Third, we have depicted the case study research limitations and discussed on how these gaps promote the scope of future studies. In conclusion, we illustrate a brief remark depicting the claims of the findings as originality.

6.1 Answer to the Research Questions

The major findings of this study are illustrated sustainability programs implementation through the case study survey. Here we answer the subsidiary research questions (SRQs) and major research question (MRQ) from case firms' investigations.

SRQ1. How do garment suppliers define sustainability and why it is important to consider in improving business practices

The case firms possess different business visions, but the main goal is to be a suitable name for their customers. As a vertical-integrated lead garment supplier, the firms have multi-side businesses with diverse customers. These lead suppliers are labor-intensive, resource and waste driven. Although all three firms are homogenous, they have a variety of perceptions to define 'sustainability' concerning their business practices and management policies. However, all companies intend to be the most regarded company by delivering production services (capacity, price, delivery, and quality) with workplace, social and environmental compliance agendas. Therefore, the study argues that sustainability motto influences the garment supplying firms to care financial growth with concerning customer trust, employee safety, and surrounding environmental security.

The 'sustainability theme is perceived in many ways by the corporate management people. For instance, firm A defines sustainability as one of the core values embedded to achieve its long-term vision. Firm B considers sustainability as a philosophy or business

process representing its business vision, missions, and values. Finally, firm C's corporate statement defines it as standard to implement for improving management practices across business activities. The result reveals that these organizations constantly upgrade their facilities by integrating products and process innovations, technologies incorporations, and voluntary codes.

The corporate bodies of the firms consider sustainability programs (SPs) to resolve internal and external factors such as lack of coordination, governance gaps, unskilled labor, market dynamics, environmental impacts, and societal changes. Therefore, they interpreted SPs to achieve the capabilities of safe workplace, workers' rights and their social needs, human capital, environmental accountability, transparency, and stakeholder engagement in their business practices. They have emphasized a corporate statement that can communicate sustainability-led business practices across the manufacturing supply chain (MSC). The firms' statements clarify that the sustainability as core value, or business process, or corporate standard is to deliver to the outside world through business activities and management practices. Therefore, they took several relevant policies, programs, and codes-of-practices to promote SPs.

SRQ2. What are the key performance indicators to implement a sustainability program by case firms?

The results identified three case firms' KPIs with numerous enabling measures to improve sustainability practices across the MSC. These indicators were categorized into the five pillars: workplace health safety compliance (WHSC), environmental performance management (EPM), Social and Ethical Compliance Standards (SECS), economic growth and prosperity (EGP), and corporate governance and leadership (CGL). Many key indicators replicated in the prior studies. Some of those KPIs are new derived by case analyses data, shown in table 5.1. All three firms included many measures under these indicators (see Appendix C: appendix tables C1 to C5) to promote the SPs across MSC. The study argued that the sustainability concept in the GGS could be viewed as a five-dimension practice of workplace, environmental, social, governance, and economic.

The garment supply firms always go through many changes. They need to adapt to the market's flux, customers' requirements, and environmental pressures to remain sustained. The case firms are always ready to change themselves concerning internal and external challenges. They evolve corporate policies aligned with state regulations and voluntary

COPs to prepare and manage their bottom-line performance. However, the firms have been developed steps-by-step all the bottom lines practices and review those practices through internal monitoring, reviewing and third-party auditing.

SRQ3. How do workplace compliance pressures mediate suppliers' sustainability programs?

All three firms have been approaching SPs step-by-step voluntarily over the years. Nevertheless, the result shows that they have initiated mandatory WSC as part of SPs after the 2013 Rana Plaza collapse. As lead firms, the suppliers have valued their key customers' COC and agreed to do the mammoth tasks of infrastructural inspection and remediation. Besides infrastructural safety tasks, all three firms have restructured existing corporate policies and actions plans over workers' safety, health, and rights issues toward workplace compliance. The study results find that the firms' sustainability programs are extended from the workplace safety compliance initiatives and stakeholders' continuous pressures on health and hygiene, and worker's health rights issues. The study has found, the suppliers split their sustainability programs into three major phases: 2013-2017 as workplace program, 2017-2021 as social and environmentally responsible programs, and 2030 as the extension of regulatory and standardized practices to remain sustainability programs (see figure 5.2).

At the beginning of the workplace program, all three companies have created a safe and healthy workplace (SHW) through constructions inspections, remediations and verifications, occupational healthcare, and workers' participation. Secondly, during the 2017-2021 period, all three firms have expanded their WHSC initiatives integrating many societal and environmental programs to improve human and labor rights, ethical business practices, social needs, worker's empowerment, energy performance, impact assessment, resource and waste management, emission reductions. Moreover, the firms have included, participatory management, transparency, accountability practices, and stakeholders' engagement toward corporate governance. However, the third phase considered until 2030 as the extension of suppliers' SPs for continuous improvement aligned the national SDGs Agendas 2030 to achieve more energy-efficient infrastructures, renewable resources use, zero-emissions, and zero-discriminations.

MRQ: How do the lead suppliers implement the Sustainability Program (SP) toward bottom-line practices (BLP) in the labor-intensive global garment sector?

The implementation of the Sustainability Programs (SPs) in the labor-intensive industry has become an inevitable concern but it is not an easy process. The export industry is very complex considering diverse issues: labor intensive, customer satisfaction, supply chain, vendor management, social and environmental problems. The study results reveal that the case firms have begun the basic requirement of the SPs through resolving worker's health safety issues followed by social, environmental, and governance problems. The supply firms have determined those challenges through increasing the organizational strengths, renewable operating resources, human capital, participatory management, stakeholders' collaboration. They have focused corporate policies, programs, and partnership projects to lever sustainability programs within five bottom-line practices, including workplace health safety, environmental performance management, socially responsible business practices, corporate governance, and economic growth.

The study results identified suppliers' SPs have combined the twenty-three KPIs (see Appendix C: appendix tables C1 to C5) under five dimensions: workplace, social, environmental, economic, and governance. Although the garment supply firms are homogenous, the sustainability implementation approaches vary because different corporate governance people understand SPs differently (see Appendix C: appendix table C1 to C5). These firms' top management people (BODs) gathered sustainability knowledge and information from several regulatory and international standardized organizations, industry associations, unions, and NGOs. Therefore, they developed different knowledge from external interactions that influenced them to make different business strategies and targets toward implementing SPs.

6.2 Research implication

6.2.1 Theoretical Contributions

6.2.1.1 Findings contribute to existing literature

The study argued sustainability had become an effective strategy for the garment manufacturing sector. Its' implementation is not limited to triple-bottom-line or three pillar practices. The results find two critical aspects: workplace health and safety compliance (or workplace) and Corporate Governance and Leadership (or Governance) with TBL initiatives. Therefore, the suppliers' SPs have incorporated five dimensions or bottom-lines:

workplace, environmental, social, economic, and governance (WESEG) as a new version of sustainability of the GGS context.

The study found several internal issues, including weak workplace regulations, inhumane work conditions, unskilled workforce, renewable resources, and material crises, inadequate wastes/emission management are also similar to many previous studies [2], [4], [6], [15], [69], [88], [127], [130]. However, the case survey also revealed some unique problems, including the communcation gaps among the top, mid-and lower management employees, limited technical knowledge, employees' negligence, delayed responses, lack of organizational learning, absence of participatory management, and inadequate environmental management knowledge. The study addressed these problems as internal organizational and operating challenges. Few other issues like customers' fast fashion policy, stakeholders' pressures, poor purchasing practices, pricing strategy, numerous COCs are identified as external issues replicated in many studies[2], [4], [6], [69], [185]. However, those studies did not highlight customers' overproduction pressures, misalignment between industry associations and member factories, unhealthy price competition, shortage of skilled worker supplies, and inadequate recyclers.

The study results suggest that the implementation of SPs in a garment supply firm has become a soft business requirement as it has no regulatory pressure. The 'workplace' pillar has emerged independently to mitigate poor work condition issues during 2012-2013. This pillar has become mandatory COPs respecting state-regulated and other regulators' COCs. For instance, the firms gave priority to Accord's factory safety program after the factory collapse in 2013. This strategy was not only to solve workers' safety and their health issues but to protect their corporate image. Again, stakeholders have increased pressure on firms to share detailed reports of factory construction inspections and remediations status, health and hygiene initiatives, and workers' rights practices. The garment supply firms have become more accountable and transparent over the workplace, social, environmental, governance pillars. These findings are coherent with many previous works of several prior literatures [4], [6], [70].

These workplace compliance tasks have motivated suppliers to drive increasing environmental, social and governance programs. This finding is consistent with a few prior literatures [6], [56], [57]. In line with Gilding et al. [97], suppliers' SPs were launched to safeguard work conditions, workers' healthcare, and health and safety rights. The suppliers

expanded the workplace compliance activities as a safety funnel that remained their sustainability vision. Consistent with [6], [174], the study results found that garment suppliers constantly increase structural and fire safety, workers' health safety, and ethical compliance practices as a foundation of sustainable business practices.

6.2.1.2 Findings contirbute to existing theories of firms

The NIT-focused firms have perceived sustainability efforts as a comprehensive regulative, normative, and cultural cognitive [69]. The study argues that legally binding codes such as labor laws, the building acts, conservation laws are forced manufacturers as a regulatory practice. The absence of such regulatory rules can endanger the working conditions, such as the 2013 Rana Plaza accident. This accident was occurred because of ignorance of national building codes during construction [6], [15].

Moreover, firms focus on the extensive COPs over social and environmental pillars as normative action. These normative behaviors continuously motivate them to address the negative impacts and eliminate them from firms' operating models. For instance, the case firms have adapted wage and benefit policies, paid maternity leaves, in-house medical and childcare benefits, adult healthcare and family planning supports, and eye care treatment as social responsibilities. Like [3], we find that the garment suppliers emphasized standardized management systems as voluntary COPs to uphold workers' rights and social needs.

Usually, the firms have considered the social responsibilities as voluntary COPs to solve the social issues. A few studies [4], [42], [69] also replicated, the garment suppliers developed voluntary obligations for managing social and ethical risks to increase corporate accountability. But we argued these COPs have no regulative form, mainly, derived from corporate board members' intent and corporate governance measures. Therefore, the lack of monitoring and inadequate follow-up often causes them to fail their socially and culturally responsive practices. Moreover, the data have shown that workers' negligence, delayed responses, and communication gaps create a void to implement policies and programs.

In the RBV lens, the study argued that the case firms emphasized efficient resource use and waste/emission reductions to manage environmental performance. For instance, the case firms' cleaner assessment projects, Higgs's facility environmental module, and green factory projects (USGBC LEED) enabled them to improve the energy and water efficiencies per unit production. The RBV of a firm argued saving valuable resources and

creating alternative resources is vital to coping with environmental challenges [53], [141], [186]. They focused on waste heat recovery, wastewater recycling, and recycled contents to develop alternative resources. Besides that, the firms continuously reduce nonrenewable resources and virgin material use by incorporating technology shifts (automation, software-based planning, and sensor-based metering), energy-efficient machinery and process innovations. The firms adopted conservation policy, reduced material consumptions, use of alternative resources as the key strategies to decrease emissions/pollutions from the operating model. These findings become reliable with the prior studies' results [16], [17].

From the KBV perspective, the garment sector's sustainability programs have included three critical elements: engagement in employees and stakeholders, continuous policymaking changes, and societal problems. The study results have shown that the firms have maintained various training and development programs to increase employees' technical and soft skills (see table 4.7). In recent decades, garment supply firms have engaged management employees and workers in the participatory management system based on equal participation. For instance, the study finds that the case firms have formed labor-management-based committees: PC, SC, and AHC to monitor workplace compliance, ethical, and other voluntary works.

Moreover, the garment suppliers have partnered with direct and indirect stakeholders to create and share knowledge in managing ESG issues. The stakeholders' interventions increase ethical business practices, information transparency, environmental accountability, and CSR practice of a firm, which is widely discussed in the scientific literature. An organization's ethical and social behavior are directly or indirectly influenced by the internal and external groups or individuals [153], [154]. The stakeholders can cooperate with firms to improve environmental and social performance by sharing feedback, criticism, and recommendations [154], [156]. The firms' SPs are different not only because of their dependency on diverse resources and various management systems but also because they possess various human resources who have a variety of abilities and skills. This finding is very crucial to examine through KBV theory [148]. The neoclassical theorists see that the corporations differ because of heterogeneous resources, efficient management, multi-layered stakeholders' relationship, and institutional formation.

Although theories like RBV, stakeholder approach, and NIT have focused corporate governance toward achieving a firm's bottom-line capabilities [53], [147], [150], [152],

those theories have excluded the human resources (intellectual abilities, experiences, skills) to make policies and strategies. The KBV of firms has highlighted diversity among corporate leaders based on employees' subjective knowledge, experiences, abilities [148], [184]. The case study results find the differences in implementing the SPs among these firms because of the BODs and managers' abilities who possess a diverse understanding of strategy making. The increasing management literature continuously focuses on the KCS to remain competitive-advantage [187].

Again, the firms always combine employees' experiences (tacit) and corporate policies (explicit) to improve work conditions, CEP, CSR, products quality, and processes efficiency. The firm's tacit and explicit knowledge is interconnected in the corporate training and development programs. Their organization's missions and policies guide the employees. Further, they execute the policies to achieve performances and evaluate them to set a new caproate statement. Employees' intellectual and technical abilities are critical assets to the KBV of a firm. The firm must acknowledge employees' intellectual and technical abilities as valuable and rare resources.

The employees' social and cultural communication also triggers the continuous KCS to improve the quality of work, learning method, creativity, and innovation. Therefore, when we talk about a firm's SP, we refer to the quality of employers' business activities and employees' life in terms of the workplace, social, environmental, and economic dimensions. The firms capture the new knowledge (skills, learning, and experiences) from internal and external interactions and formalize it to drive product and process innovation [148], [149]. That is why Nonaka [187] sees the employees of an organization as knowledge workers who make a difference.

Finally, we conclude that the infancy of sustainability issues in the GGS is still limited in multidisciplinary literature. Most prior studies have been investigated only an independent pillar linked with other pillars of SDGs [2], [69], [114]. However, the study covered a holistic approach to exploring SPs in the garment supplier's context, which are important players in the GGS. Moreover, the findings of this study have been examined from various theoretical angles, including KBV, which is rare in the priors works. Therefore, we argue, the continuity of sustainability programs can be progressed by increasing employees' abilities, corporate boards' intents, and participatory management.

6.2.2 Practical Implication

The study results have a high impact considering practical implications. The study identified a set of sustainability indicators with hundreds of measures. Besides, we have developed above theoretical framework on the supplier's SPs through case-based exploration. The KPIs of the SPs can be employed to measure sustainability initiatives across the industries. As mentioned, the Bangladesh garment sector comprises above 5000 production factories, including direct and indirect export contributions. The garment suppliers and manufacturers use these KPIs to scale their corporate performance voluntarily as these are inevitable to increase ESG performance.

In past years, several industrial accidents caused massive fatalities and injuries that impacted the victims' social lives and families. These were immeasurable losses to recover by workers' families. Therefore, workers' absence and migrations became common phenomena at garment production locations. The garment sector searched for careful alignment of workplace, social and environmental issues with its economic contributions. In this light, the KPIs of the SP can be easily transferrable for the whole sector toward improving services for workers, customers, local communities, stockholders, and other beneficiaries. The performance indicators of SPs consist of five main pillars including workplace, environmental, social, economic, and governance to improve bottom-line practices across MSC. Again, the KPIs are designed with twenty-third indicators that include more than one hundred specific measures so that suppliers can implement them to assess their bottom-line performance.

6.3 Limitation and Future Study

6.3.1 Research Limitation

The research is encountered several limitations concerning the research context, subject matter, and methodological barriers. The major limitation is to exclude the indirect suppliers. The research findings are derived from direct suppliers' investigations, the results may not represent for all in the global garment production network. Due to access limitations, reluctance to share information, and lack of business data, this study did not consider the subcontractor or informal garment sector. It is assumed that indirect suppliers have material and human resource limitations to implement the global sustainability framework. However, our proposed model guides them to address the pressing materiality

issues concerning workplace compliance, health safety, and ethical business practices to improve work conditions.

Secondly, the study faced a methodological constraint because of case study research. Here the case study selected limited respondents of the case firms to explore sustainability practices that might not reflect sustainability practices of the whole RMG sector. The critical challenge of qualitative research is to prove reproducibility and internal validity based on a small sampling. However, the respondents' size is only twenty-two, and only male respondents may not replicate the perception of the whole population. However, the experienced respondents are purposely chosen as they have obtained adequate knowledge on the issues. Their valuable insights spark the actual events embedded in the real-life setting.

The third is the restrictions of random visits inside facilities and the access limitations to interviewees. Although we respect case firms' conditions, they often refuse us to face interviews. To avoid this, we take time and talk to key informants to help us. Besides, we ensured respondents through the consent form before conducting interviews. The fourth is the limited sustainability data sources concerning environmental data, workplace incidents, complaints, and workers' ill-health-related issues. Firms record environmental, and health occurrence data in different logs, and they hardly compile it in a single database. It is not very easy to get official records from factories. Therefore, we excluded discussing how the culture of safe and sustainable practices influences overall occupational accidents or ill-health issues.

6.3.2 Future study

The study supports future studies in two directions. First, it provides an extensive view of the suppliers' strategies in setting materiality issues and reflecting in their long-term practices that redirect sustainable business development. Future studies can seek the relationship between crucial materiality issues and business performances. How much impact on productivity and worker efficiencies after implementing these issues? Second, there are immense scopes to improve this model in further research.

The said limitations also help future research verifying our model over suppliers fell in indirect sourcing and other informal manufacturing sectors. Finally, how to improve future research to overcome the boundary of data sources and the overlooked subject matters due

to the limited scope of case study research. Therefore, we suggest an ethnographic investigation of the above sensitive issues in the global garment sector to find more succinct results.

6.4 Concluding Remarks

The garment suppliers have perceived the SPs as a continuous improvement by implementing several regulatory policies and normative projects over the workplace, social, environmental, and economic pillars. The study results show that the lead suppliers have practiced hundred above visible measures to create and deliver sustainability-based values to their customers, markets, and stakeholders. The study categorized visible measures as twenty-third KPIs to scale their SPs. Nevertheless, workplace compliance is underpinned as the initial effort that mediated the SPs through several phases. The lead garment suppliers of Bangladesh have intended to integrate the SPs for increasing ethical and social trading practices across the MSC. Simultaneously, they reduce resource wastes, workplace hazards, discrimination, and corruption, leading them to achieve cost leadership across the manufacturing chain. The study argued that the sustainability practices had increased the branding images of these firms toward a safe, green, and cost-effective supplier.

The sustainability agendas are dynamic because of many uncertainties. Therefore, garment suppliers need to adjust their sustainability KPIs over time. In that regard, the garment suppliers should increase the internal coordination, external engagement, and stakeholders' assessment to address the risk factors. Moreover, they need to adopt new corporate policies, programs, and technologies to battle for uncertainties.

Bibliography

[1] M. Pagell and Z. Wu, "Building a more complete theory of sustainable supply chain management using case studies of 10 exemplars," *J. Supply Chain Manag.*, vol. 45, no. 2, pp. 37–56, 2009, doi: 10.1111/j.1745-493X.2009.03162.x.

[2] F. A. Huq, M. Stevenson, and M. Zorzini, "Social sustainability in developing country suppliers An exploratory study in the ready made garments industry of Bangladesh," *Int. J. Oper. Prod. Manag.*, vol. 34, no. 5, 2014, doi: 10.1108/IJOPM-10-2012-0467.

[3] S. Barrientos and S. Smith, "Do workers benefit from ethical trade? Assessing codes of labour practice in global production systems," *Third World Q.*, vol. 28, no. 4, pp. 713–729, 2007, doi: 10.1080/01436590701336580.

[4] N. Sinkovics, S. F. Hoque, and R. R. Sinkovics, "Rana plaza collapse aftermath: Are CSR compliance and auditing pressures effective?," *Accounting, Audit. Account. J.*, vol. 29, no. 4, pp. 617–649, 2016, doi: 10.1108/AAAJ-07-2015-2141.

[5] F. Caniato, M. Caridi, L. Crippa, and A. Moretto, "Environmental sustainability in fashion supply chains: An exploratory case based research," *Int. J. Prod. Econ.*, vol. 135, no. 2, pp. 659–670, 2012, doi: 10.1016/j.ijpe.2011.06.001.

[6] S. Labowitz and D. Baumann-Pauly, "Business as Usual is Not an Option: Supply Chains and Sourcing after Rana Plaza," *Center for Business and Human Rights*, 2014. .

[7] A. R. Belal and S. Cooper, "The absence of corporate social responsibility reporting in Bangladesh," *Crit. Perspect. Account.*, vol. 22, no. 7, pp. 654–667, 2011, doi: 10.1016/j.cpa.2010.06.020.

[8] L. Hossain and M. S. Khan, "Water Footprint Management for Sustainable Growth in the Bangladesh Apparel Sector," *Water*, vol. 12, p. 2760, 2020, doi: https://doi.org/10.3390/w12102760.

[9] R. Paul and E. Rocha, "Factbox: Major industrial accidents in Bangladesh in recent years," *Reuters*, Jul. 04, 2017. https://www.reuters.com/article/us-bangladesh-blast-accidents-factbox/factbox-major-industrial-accidents-in-bangladesh-in-recent-years-idUSKBN19P0JN (accessed Jun. 25, 2019).

[10] J. Siddiqui and S. Uddin, "Human rights disasters, corporate accountability and the state: Lessons learned from Rana Plaza," *Accounting, Audit. Account. J.*, vol. 29, no. 4, pp. 679–704, 2016, doi: 10.1108/AAAJ-07-2015-2140.

[11] L. Macchion *et al.*, "Strategic approaches to sustainability in fashion supply chain management," *Prod. Plan. Control*, vol. 29, no. 1, pp. 9–28, 2018, doi: 10.1080/09537287.2017.1374485.

[12] F. Palpacuer, "Voluntary Versus Binding Forms of Regulation in Global Production Network: Exploring the 'Paradoxes of Partnership' in the European Anti-Sweatshop Movement," in *Unmaking the Global Sweatshop: Health and Safety of the World's Garment Workers*, N. Greet De and R. Prentice, Eds. Philadelphia, Pennsylvania: University of Pennsylvania Press, 2017, pp. 57–86.

[13] N. Greet De and R. Prentice, "Introduction: Rethinking Garment Worker's Health and Safety," in *Unmaking the Global Sweatshop: Health and Safety of the World's Garment*

Workers, N. Greet De and R. Prentice, Eds. Philadelphia, Pennsylvania: University of Pennsylvania Press, 2017, pp. 1–28.

[14] I. M. Taplin, "Who is to blame?," *Crit. Perspect. Int. Bus.*, vol. 10, no. 1/2, pp. 72–83, Feb. 2014, doi: 10.1108/cpoib-09-2013-0035.

[15] M. A. Ansary and U. Barua, "Workplace safety compliance of RMG industry in Bangladesh: Structural assessment of RMG factory buildings," *Int. J. Disaster Risk Reduct.*, vol. 14, pp. 424–437, 2015, doi: 10.1016/j.ijdrr.2015.09.008.

[16] A. Fayez, M. S. Islam, M. S. Islam, and H. M. A, "Energy consumption and estimation of greenhouse gas emission from garment and textile industries in Bangladesh : A case study on Dhaka City," *Acad. J. Environ. Sci.*, vol. 5 (4), no. April, pp. 65–75, 2017, doi: 10.15413/ajes.2017.0102.

[17] S. Dey and A. Islam, "A review on textile wastewater characterization in Bangladesh," *Resour. Environ.*, vol. 5, no. 1, pp. 15–44, 2015, doi: 10.5923/j.re.20150501.03.

[18] F. A. Sunny, T. Karimanzira, and Z. Huang, "Environment security: An empirical study of industrialization and the impact on environment in the Dhaka division, Bangladesh," *Environ. Dev. Sustain.*, vol. 14, no. 6, pp. 885–900, 2012, doi: 10.1007/s10668-012-9357-5.

[19] T. N. Gladwin, T. -S Krause, and J. J. Kennelly, "Beyond eco-efficiency: Towards socially sustainable business," *Sustain. Dev.*, vol. 3, no. 1, pp. 35–43, 1995, doi: 10.1002/sd.3460030105.

[20] WCED, "Report of the World Commission on Environment and Development: Our Common Future," Oxford, 1987. [Online]. Available: https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf.

[21] W. M. Adams, "The future of sustainability:Re-thinking Environment and Development in the Twenty-first Century," Zurich, 2006. doi: 10.1007/1-4020-4908-0.

[22] R. J. A. Goodland, H. E. Daly, and S. EL Serafy, "The Urgent Need for Rapid Transition to Global Environmental Sustainability," *Environ. Conserv.*, vol. 20, no. 4, pp. 297–309, 1993.

[23] T. Dyllick, K. Hockerts, and K. H. Thomas Dyllick, "Beyond the business case for corporate sustainability," *Bus. Strateg. Environ.*, vol. 11, no. 2, pp. 130–141, 2002, doi: 10.1002/bse.323.

[24] J. Bateh and G. W. Arbogast, "Defining Sustainability In The Business Setting 1," *J. Sustain. Manag.*, vol. 1, no. 1, pp. 1–4, 2013, doi: 10.19030/jsm.v1i1.8386.

[25] J. R. Mihelcic *et al.*, "Sustainability Science and Engineering : The Emergence of a New Metadiscipline," *Environ. Sci. Technol.*, vol. 37, no. 23, pp. 5314–5324, 2003.

[26] J. Elkington, *Cannibals with forks: the triple bottom line of 21st century business*. Oxford OX2 OJX, United Kingdom: Capstone Publishing Limited Oxford, 1997.

[27] I. Scoones, "Sustainability," *Dev. Pract.*, vol. 17, no. 4–5, pp. 589–596, Aug. 2007, doi: 10.1080/09614520701469609.

[28] R. Goodland, "The Concept of Environmental Sustainability," *Annu. Rev. Ecol. Syst.*, vol. 26, pp. 1–24, 1995, [Online]. Available: http://www.jstor.org/stable/2097196.

[29] IUCN/UNEP/WWF, "Caring for Earth: A Strategy for Sustainable Living," Gland, Switzerland, Switzerland, 1991.

[30] United Nations, "Home : SUSTAINABLE DEVELOPMENT GOALS," 2019.

https://sustainabledevelopment.un.org/# (accessed Sep. 04, 2019).

[31] T. Kuhlman and J. Farrington, "What is sustainability?," *Sustainability*, vol. 2, no. 11, pp. 3436–3448, 2010, doi: 10.3390/su2113436.

[32] J. K. . Lein, *Futures Research and Environmental Sustainability*, 1st ed. Boca Raton, FL 33487-2742: CPC Press, Tylor and Fracis Group, 2017.

[33] R. Lozano, "Developing collaborative and sustainable organisations," *J. Clean. Prod.*, vol. 16, no. 4, pp. 499–509, 2008, doi: 10.1016/j.jclepro.2007.01.002.

[34] S. Bell and S. Morse, *Sustainability Indicators: Measuring the Immeasurable?*, Second Edi. Sterling,VA, London, EC1N 8XA,UK: London:Earthscan, 2008.

[35] A. Greiner and W. Semmler, *The Global Environment, Natural Resources, and Economic Growth*. Oxford University Press.Inc., 2008.

[36] M. H. Smith, K. Charlie Hargroves, and C. Desha, "Securing 'Our Common Future,'" in *Cents and Sustainability:Securing Our Common Future by Decoupling Economic Growth from Environmental Pressures*, 1st ed., M. H. Smith, K. Charlie Hargroves, and C. Desha, Eds. London EC1N 8XA, UK: Earthscan Ltd., 2010, pp. 1–20.

[37] Y. Eslami, M. Dassisti, M. Lezoche, and H. Panetto, "A survey on sustainability in manufacturing organisations : dimensions and future insights," *Int. J. Prod. Res. ISSN*, vol. 7543, 2018, doi: 10.1080/00207543.2018.1544723.

[38] S. Roos, G. Sandin, B. Zamani, and G. Peters, "Carbon footprints in the textile industry 1 €," pp. 3–30, 2015, doi: 10.1016/B978-0-08-100169-1.00001-0.

[39] E.-H. Salah M., "Sustainable Development and Environmental Reform," in *Sustainable Industrial Design and Waste Management: Cradle-to-Cradle for Sustainable Development*, Burlington, MA 01803, USA: Burlington: Elsevier Academic Press, 2007, pp. 125–148.

[40] R. Goodland and H. Daly, "ENVIRONMENTAL SUSTAINABILITY :," *Ecol. Appl.*, vol. 6, no. 4, pp. 1002–1017, 1996.

[41] S. N. Morioka and M. M. de Carvalho, "A systematic literature review towards a conceptual framework for integrating sustainability performance into business," *J. Clean. Prod.*, vol. 136, pp. 134–146, 2016, doi: 10.1016/j.jclepro.2016.01.104.

[42] F. A. Huq, I. N. Chowdhury, and R. D. Klassen, "Social management capabilities of multinational buying firms and their emerging market suppliers: An exploratory study of the clothing industry," *J. Oper. Manag.*, vol. 46, pp. 19–37, 2016, doi: 10.1016/j.jom.2016.07.005.

[43] F. A. Huq and M. Stevenson, "Implementing Socially Sustainable Practices in Challenging Institutional Contexts: Building Theory from Seven Developing Country Supplier Cases," *J. Bus. Ethics*, vol. 161, no. 2, pp. 415–442, 2020, doi: 10.1007/s10551-018-3951-x.

[44] M. J. Hutchins and J. W. Sutherland, "An exploration of measures of social sustainability and their application to supply chain decisions," *J. Clean. Prod.*, vol. 16, no. 15, pp. 1688–1698, 2008, doi: 10.1016/j.jclepro.2008.06.001.

[45] A. B. Carroll, "Corporate social responsibility: Evolution of a definitional construct," *Bus. Soc.*, vol. 38, no. 3, pp. 268–295, 1999, doi: 10.1177/000765039903800303.

[46] R. D. Klassen and A. Vereecke, "Social issues in supply chains: Capabilities link responsibility, risk (opportunity), and performance," *Int. J. Prod. Econ.*, vol. 140, no. 1, pp.

103–115, 2012, doi: 10.1016/j.ijpe.2012.01.021.

[47] P. Drucker, “The Discipline of Innovation :,” *Harv. Bus. Rev.*, vol. 2, no. 4, pp. 484–485, 1987, doi: 10.20801/jsrpim.2.4_484_2.

[48] Y. Kamal and C. Deegan, “Corporate social and environment-related governance disclosure practices in the textile and garment industry: Evidence from a developing country,” *Aust. Account. Rev.*, vol. 23, no. 2, pp. 117–134, 2013, doi: 10.1111/j.1835-2561.2012.00205.x.

[49] S. Barrientos, G. Gereffi, and A. Rossi, “Economic and social upgrading in global production networks: A new paradigm for a changing world,” *Int. Labour Rev.*, vol. 150, no. 3, pp. 319–340, 2011, doi: 10.1111/j.1564-913X.2011.00119.x.

[50] J. A. Schumpeter, *The Theory of Economic Development: An inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*, English Ed. Transaction Publishers, 1983.

[51] J. Pfeffer and G. R. Salancik, “Gerald R. Salancik Jeffrey Pfeff er,” *Organ. Dyn.*, no. Autumn, pp. 15–29, 1977.

[52] M. E. Porter, “Competitive Strategy: The Core Concepts,” in *Competitive Advantage: Creating and Sustaining Superior Performance: with a New Introdcution*, 1st ed., vol. 18, no. 2, M. E. Porter, Ed. The Free Press, 1985, pp. 213–240.

[53] B. Wernerfelt, “A Resource-Based View of the Firm,” *Strateg. Manag. J.*, vol. 5, no. 2, pp. 171–180, 1984, [Online]. Available: http://onlinelibrary.wiley.com/doi/10.1002/smj.4250050207/abstract.

[54] S. Gupta and V. Kumar, “Sustainability as corporate culture of a brand for superior performance,” *J. World Bus.*, vol. 48, no. 3, pp. 311–320, 2013, doi: 10.1016/j.jwb.2012.07.015.

[55] R. Harik, W. El Hachem, K. Medini, and A. Bernard, “Towards a holistic sustainability index for measuring sustainability of manufacturing companies,” *Int. J. Prod. Res.*, vol. 53, no. 13, pp. 4117–4139, Jul. 2015, doi: 10.1080/00207543.2014.993773.

[56] P. Gilding, M. Hogarth, and R. Humphries, “Safe Companies: An Alternative Approach to Operationalizing Sustainability,” *Corp. Environ. Strateg.*, vol. 9, no. 4, pp. 390–397, 2002, doi: 10.1016/S1066-7938(02)00108-2.

[57] W. Nawaz, P. Linke, and M. Koç, “Safety and sustainability nexus: A review and appraisal,” *J. Clean. Prod.*, vol. 216, pp. 74–87, 2019, doi: 10.1016/j.jclepro.2019.01.167.

[58] M. A. Gardetti and A. L. Torres, “Introduction,” in *Sustainability in Fashion and Textiles*, 2nd ed., M. A. Gardetti and A. L. Torres, Eds. New York, NY 10017, USA: New York: Routledge, 2013.

[59] R. Heath and A. Mushfiq Mobarak, “Manufacturing growth and the lives of Bangladeshi women,” *J. Dev. Econ.*, vol. 115, pp. 1–15, 2015, doi: 10.1016/j.jdeveco.2015.01.006.

[60] M. Yunus and T. Yamagata, *The Garment Industry in Bangladesh*. Chousakenkyu Houkokusho, IDE-JETRO, 2012.

[61] McKinsey & Company, “Bangladesh’s ready-made garments landscape: The challenge of growth,” McKinsey & Company, Inc., Düsseldorf, Germany, 2011. [Online]. Available: https://www.mckinsey.com/search?q=Bangladesh’s ready-made garments landscape.

[62] A. Kearney and Ashoka, “Social Innovation Offers Five Golden Opportunities to the Apparel Industry,” Ashoka and and A.T. Kearney Limited, 2017. [Online]. Available:

www.atkearney.com.

[63] T. Dana, *Fashionopolis: The price of Fast Fashion and the Future of Clothes*, 1st ed. Penguin Press, 2019.

[64] S. Seuring and M. Mu, "From a literature review to a conceptual framework for sustainable supply chain management," vol. 16, pp. 1699–1710, 2008, doi: 10.1016/j.jclepro.2008.04.020.

[65] M. P. De Brito, V. Carbone, and C. M. Blanquart, "Towards a sustainable fashion retail supply chain in Europe: Organisation and performance," *Int. J. Prod. Econ.*, vol. 114, no. 2, pp. 534–553, 2008, doi: 10.1016/j.ijpe.2007.06.012.

[66] B. Shen, Q. Li, C. Dong, and P. Perry, "Sustainability issues in textile and apparel supply chains," *Sustain.*, vol. 9, no. 9, 2017, doi: 10.3390/su9091592.

[67] N. Hussain, U. Rigoni, and R. P. Orij, "Corporate Governance and Sustainability Performance: Analysis of Triple Bottom Line Performance," *J. Bus. Ethics*, vol. 149, no. 2, pp. 411–432, 2018, doi: 10.1007/s10551-016-3099-5.

[68] Hasan Ashraf, "Beyond Building Safety: An Ethnographic Account of Health and Well-Being on the Bangladesh Garment Shop Floor," in *Unmaking the Global Sweatshop: Health and Safety of the World's Garment Workers*, 1st ed., R. Prentice and G. De Neve, Eds. Philadelphia, Pennsylvania: University of Pennsylvania Press, 2017, pp. 250–290.

[69] S. Akbar and K. Ahsan, "Workplace Safety Compliance Implementation Challenges in Apparel Supplier Firms," *J. Clean. Prod.*, vol. 232, pp. 462–473, 2019, doi: 10.1016/j.jclepro.2019.05.368.

[70] R. Prentice, G. De Neve, A. Mezzadri, and K. N. Ruwanpura, "Health and safety in garment workers ' lives : Setting a new research agenda," *Geoforum*, vol. 88, no. October 2017, pp. 157–160, 2018, doi: 10.1016/j.geoforum.2017.11.024.

[71] M. Shahbaz, G. Salah Uddin, I. Ur Rehman, and K. Imran, "Industrialization, electricity consumption and CO2 emissions in Bangladesh," *Renew. Sustain. Energy Rev.*, vol. 31, pp. 575–586, 2014, doi: 10.1016/j.rser.2013.12.028.

[72] Z. Wadud and F. Y. Huda, "Fire Safety in the Readymade Garment Sector in Bangladesh: Structural Inadequacy Versus Management Deficiency," *Fire Technol.*, vol. 53, no. 2, pp. 793–814, 2017, doi: 10.1007/s10694-016-0599-x.

[73] M. S. Mahmood, N. H. Ruma, T. Ahmed, and Y. Nagai, "Exploring Suppliers' Approaches toward Workplace Safety Compliance in the Global Garment Sector: From Bangladesh Perspective," *Soc. Sci.*, vol. 10, no. 3, p. 90, Mar. 2021, doi: 10.3390/socsci10030090.

[74] K. Kazutaka, "Roles of Participatory Action-oriented Programs in Promoting Safety and Health at Work," *Saf. Health Work*, vol. 3, no. 3, pp. 155–165, 2012, doi: 10.5491/shaw.2012.3.3.155.

[75] M. Z. Haque and F. Azmat, "Corporate social responsibility, economic globalization and developing countries: A case study of the ready made garments industry in Bangladesh," *Sustain. Accounting, Manag. Policy J.*, vol. 6, no. 2, pp. 166–189, 2015, doi: 10.1108/SAMPJ-04-2014-0028.

[76] I. M. Taplin, "Who is to blame?: A re-examination of fast fashion after the 2013 factory disaster in Bangladesh," *Crit. Perspect. Int. Bus.*, vol. 10, no. 1, pp. 72–83, 2014, doi:

10.1108/cpoib-09-2013-0035.

[77] S. Kumar, “Empowerment or exploitation: the case of women employment system in India’s textile and clothing industry,” *Emerald Emerg. Mark. Case Stud.*, vol. 4, no. 8, pp. 1–10, 2014, doi: 10.1108/EEMCS-12-2013-0229.

[78] K. G. Moazzem, “ACD study on ‘Garment Workers in Bangladesh’ a benchmark for the industry: Dr. Moazzem | CPD,” *Center for Policy Dialogue*, Mar. 07, 2016. https://cpd.org.bd/acd-study-on-garment-workers-in-bangladesh-a-benchmark-for-the-industry-dr-moazzem/ (accessed Apr. 10, 2021).

[79] L. Hossain, S. K. Sarker, and M. S. Khan, “Evaluation of present and future wastewater impacts of textile dyeing industries in Bangladesh,” *Environ. Dev.*, vol. 26, no. July 2017, pp. 23–33, 2018, doi: 10.1016/j.envdev.2018.03.005.

[80] M. A. Habib, M. Hasanuzzaman, M. Hosenuzzaman, A. Salman, and M. R. Mehadi, “Energy consumption, energy saving and emission reduction of a garment industrial building in Bangladesh,” *Energy*, vol. 112, pp. 91–100, 2016, doi: 10.1016/j.energy.2016.06.062.

[81] D. Masi, V. Kumar, J. A. Garza-Reyes, and J. Godsell, “Towards a more circular economy: exploring the awareness, practices, and barriers from a focal firm perspective,” *Prod. Plan. Control*, vol. 29, no. 6, pp. 539–550, 2018, doi: 10.1080/09537287.2018.1449246.

[82] M. Bagheri, R. Esfilar, M. Sina Golchi, and C. A. Kennedy, “Towards a circular economy: A comprehensive study of higher heat values and emission potential of various municipal solid wastes,” *Waste Manag.*, vol. 101, pp. 210–221, 2020, doi: 10.1016/j.wasman.2019.09.042.

[83] M. C. Do Amaral, W. F. Zonatti, K. L. Da Silva, D. K. Junior, J. A. Neto, and J. Baruque-Ramos, “Industrial textile recycling and reuse in Brazil: Case study and considerations concerning the circular economy,” *Gest. e Prod.*, vol. 25, no. 3, pp. 431–443, 2018, doi: 10.1590/0104-530X3305.

[84] A. Moretto, L. Macchion, A. Lion, F. Caniato, P. Danese, and A. Vinelli, “Designing a roadmap towards a sustainable supply chain: A focus on the fashion industry,” *J. Clean. Prod.*, vol. 193, pp. 169–184, 2018, doi: 10.1016/j.jclepro.2018.04.273.

[85] M. Martin, “Creating Sustainable Apparel Value Chains A Primer on Industry Transformation,” Geneva, Switzerland, 2013.

[86] M. Boström and M. Micheletti, “Introducing the Sustainability Challenge of Textiles and Clothing,” *Journal of Consumer Policy*, vol. 39, no. 4, 2016.

[87] J. Schmitt, *Social Innovation for Business Success: Shared Value in the Apparel Industry*, vol. 53, no. 9. Springer Gabler, 2015.

[88] L. A. Carlson and V. Bitsch, “Social sustainability in the ready-made-garment sector in Bangladesh: An institutional approach to supply chains,” *Int. Food Agribus. Manag. Rev.*, vol. 21, no. 2, 2018, doi: 10.22434/IFAMR2017.0114.

[89] A. R. Belal, S. M. Cooper, and N. A. Khan, “Corporate environmental responsibility and accountability: What chance in vulnerable Bangladesh?,” *Crit. Perspect. Account.*, vol. 33, pp. 44–58, 2015, doi: 10.1016/j.cpa.2015.01.005.

[90] E. Schuessler, S. J. Frenkel, and C. F. Wright, “Governance of Labor Standards in Australian and German Garment Supply Chains: The Impact of Rana Plaza,” *ILR Rev.*, vol. 72, no. 3,

pp. 552–579, 2019, doi: 10.1177/0019793918771360.

[91] J. Céspedes-Lorente, J. de Burgos-Jiménez, and M. Álvarez-Gil, "Stakeholders' environmental influence. An empirical analysis in the Spanish hotel industry," *Scand. J. Manag.*, vol. 19, no. 3, pp. 333–358, 2003, doi: 10.1016/S0956-5221(02)00034-9.

[92] W. Y. Li, T. M. Choi, and P. S. Chow, "Risk and benefits brought by formal sustainability programs on fashion enterprises under market disruption," *Resour. Conserv. Recycl.*, vol. 104, 2015, doi: 10.1016/j.resconrec.2014.08.005.

[93] K. Fletcher and L. Grose, "Chapter 1: Materials," in *Fashion & Sustainability: design for change*, 1st ed., K. Fletcher and L. Grose, Eds. London: Laurence King Publishing Ltd, 2012, pp. 12–32.

[94] A. Awasthi, K. Govindan, and S. Gold, "Multi-tier sustainable global supplier selection using a fuzzy AHP-VIKOR based approach," *Int. J. Prod. Econ.*, vol. 195, no. October 2017, pp. 106–117, 2018, doi: 10.1016/j.ijpe.2017.10.013.

[95] V. Bhardwaj and A. Fairhurst, "Fast fashion: response to changes in the fashion industry," *Int. Rev. Retail. Distrib. Consum. Res.*, vol. 20, no. 1, pp. 165–173, Feb. 2010, doi: 10.1080/09593960903498300.

[96] S. Garcia-Torres, L. Albareda, M. Rey-Garcia, and S. Seuring, "Traceability for sustainability – literature review and conceptual framework," *Supply Chain Management*, vol. 24, no. 1. 2019, doi: 10.1108/SCM-04-2018-0152.

[97] R. M. Dangelico, P. Pontrandolfo, and D. Pujari, "Developing sustainable new products in the textile and upholstered furniture industries: Role of external integrative capabilities," *J. Prod. Innov. Manag.*, vol. 30, no. 4, pp. 642–658, 2013, doi: 10.1111/jpim.12013.

[98] Y.-A. Lee, M. Suzanne Sontag, and A. C. Slocum, "Michigan Apparel and Textile Manufacturing Industry: Characterization and needs assessment," *J. Text. Apparel, Technol. Manag.*, vol. 2, no. 3, 2002.

[99] V. Shirole, "An introduction to sustainable textile production," *BTRA Scan*, vol. 47, no. 2, pp. 1–7, 2017.

[100] B. Zamani, M. Svanstr??m, G. Peters, and T. Rydberg, "A Carbon Footprint of Textile Recycling: A Case Study in Sweden," *J. Ind. Ecol.*, vol. 19, no. 4, 2015, doi: 10.1111/jiec.12208.

[101] E. Ozturk, H. Koseoglu, M. Karaboyaci, N. O. Yigit, U. Yetis, and M. Kitis, "Sustainable textile production: cleaner production assessment/eco-efficiency analysis study in a textile mill," *J. Clean. Prod.*, vol. 138, pp. 248–263, 2016, doi: 10.1016/j.jclepro.2016.02.071.

[102] S. Sharma and I. Henriques, "Stakeholder influences on sustainability practices in the Canadian forest products industry," *Strateg. Manag. J.*, vol. 26, no. 2, pp. 159–180, 2005, doi: 10.1002/smj.439.

[103] J. K. W. Wong and J. Zhou, "Enhancing environmental sustainability over building life cycles through green BIM: A review," *Autom. Constr.*, vol. 57, pp. 156–165, 2015, doi: 10.1016/j.autcon.2015.06.003.

[104] S. Cuc and M. Vidovic, "Environmental Sustainability through Clothing Recycling," vol. 4, no. 2, pp. 108–115, 2011.

[105] L. L. Hayes, "Synthetic textile innovations: Polyester fiber-to-fiber recycling for the

advancement of sustainability," *AATCC Rev.*, vol. 11, no. 4, pp. 37–41, 2011.

[106] W. R. Blackburn, "Addressing the Confusion About Sustainability: The Typical Executive View," in *THE SUSTAINABILITY HANDBOOK: The Complete Management Guide to Achieving Social, Economic, and Environmental Performance*, 1st ed., W. R. Blackburn, Ed. London, NW1 0JH, UK: London: Earthscan Ltd., 2007, pp. 1–16.

[107] C. K. Y. Lo, A. C. L. Yeung, and T. C. E. Cheng, "The impact of environmental management systems on financial performance in fashion and textiles industries," *Int. J. Prod. Econ.*, vol. 135, no. 2, pp. 561–567, 2012, doi: 10.1016/j.ijpe.2011.05.010.

[108] L. Vnoucková, J. Hyršlová, and P. Tomšík, "How does implementation of environmental management system contribute to corporate sustainability management," *Acta Univ. Agric. Silvic. Mendelianae Brun.*, vol. 62, no. 6, pp. 1499–1508, 2014, doi: 10.11118/actaun201462061499.

[109] T. T. Muthukumarana, H. P. Karunathilake, H. K. G. Punchihewa, and M. M. I. D. Manthilake, "Life cycle environmental impacts of the apparel industry in Sri Lanka : Analysis of the energy sources," *J. Clean. Prod.*, vol. 172, pp. 1346–1357, 2018, doi: 10.1016/j.jclepro.2017.10.261.

[110] J. Mohammed and A. Sadique, "Lean Value Stream Manufacturing for Sustainability," in *Advances in Sustainable Manufacturing:: Proceedings of the 8th Global Conference on Sustainable Manufacturing*, 2011, pp. 365–370.

[111] S. Roos, B. Zamani, G. Sandin, G. M. Peters, and M. Svanström, "A life cycle assessment (LCA)-based approach to guiding an industry sector towards sustainability: the case of the Swedish apparel sector," *J. Clean. Prod.*, vol. 133, pp. 691–700, 2016, doi: 10.1016/j.jclepro.2016.05.146.

[112] B. Zamani, G. Sandin, and G. M. Peters, "Life cycle assessment of clothing libraries: can collaborative consumption reduce the environmental impact of fast fashion?," *J. Clean. Prod.*, vol. 162, pp. 1368–1375, 2017, doi: 10.1016/j.jclepro.2017.06.128.

[113] G. Baydar, N. Ciliz, and A. Mammadov, "Life cycle assessment of cotton textile products in Turkey," *Resour. Conserv. Recycl.*, vol. 104, 2015, doi: 10.1016/j.resconrec.2015.08.007.

[114] M. A. Moktadir, T. Rahman, M. H. Rahman, S. M. Ali, and S. K. Paul, "Drivers to sustainable manufacturing practices and circular economy: A perspective of leather industries in Bangladesh," *J. Clean. Prod.*, vol. 174, pp. 1366–1380, 2018, doi: 10.1016/j.jclepro.2017.11.063.

[115] OECD, "OECD sustainable manufacturing tookit: seven steps to environmental excellence," 2011. [Online]. Available: www.oecd.org/innovation/green/toolkit.

[116] S. Weber, *A circular economy approach in the luxury fashion industry: A case study of eileen fisher*. 2019.

[117] K. Fletcher, *Sustainable Fashion and Textiles: Design Journeys*, Second. Abingdon, Oxon OX14 4RN: Routledge, 2014.

[118] K. Shirvanimoghaddam, B. Motamed, S. Ramakrishna, and M. Naebe, "Death by waste: Fashion and textile circular economy case," *Sci. Total Environ.*, vol. 718, 2020, doi: 10.1016/j.scitotenv.2020.137317.

[119] K. Fletcher, "1 Sustainable Fashion and Textile Products Chapter," in *Sustainable Fashion*

and Textiles, 1st ed., London, NW1 0JH, UK: Earthscan, 2008, p. 227.

[120] S. Shahbazi, M. Wiktorsson, M. Kurdve, C. Jönsson, and M. Bjelkemyr, "Material efficiency in manufacturing: swedish evidence on potential, barriers and strategies," *J. Clean. Prod.*, vol. 127, pp. 438–450, 2016, doi: 10.1016/j.jclepro.2016.03.143.

[121] H. R. Bowen, *Social Responsibilities of the Businessman*. Iowa City: USA: University of Iowa Press, Iowa City, 2013.

[122] D. J. Wood, "Corporate Social Performance," *Encycl. Corp. Soc. Responsib.*, vol. 16, no. 4, pp. 574–576, 2013, doi: 10.1007/978-3-642-28036-8_8.

[123] S. L. Wartick and P. L. Cochran, "The Evolution of the Corporate Social Performance Model," *Acad. Manag. Rev.*, vol. 10, no. 4, pp. 758–769, 1985, doi: 10.5465/amr.1985.4279099.

[124] M. K. Linnenluecke and A. Griffiths, "Firms and sustainability: Mapping the intellectual origins and structure of the corporate sustainability field," *Glob. Environ. Chang.*, vol. 23, no. 1, pp. 382–391, 2013, doi: 10.1016/j.gloenvcha.2012.07.007.

[125] R. Locke, M. Amengual, and A. Mangla, *Virtue out of necessity? compliance, commitment, and the improvement of labor conditions in global supply chains*, vol. 37, no. 3. 2009.

[126] D. Turker and C. Altuntas, "Sustainable supply chain management in the fast fashion industry: An analysis of corporate reports," *Eur. Manag. J.*, vol. 32, no. 5, pp. 837–849, 2014, doi: 10.1016/j.emj.2014.02.001.

[127] D. M. Siddiqi, "Starving for Justice: Bangladeshi Garment Workers in a 'Post-Rana Plaza' World," *Int. Labor Work. Hist.*, vol. 87, no. 87, pp. 165–173, 2015, doi: 10.1017/S0147547915000101.

[128] C. Reuter, P. Goebel, and K. Foerstl, "The impact of stakeholder orientation on sustainability and cost prevalence in supplier selection decisions," *J. Purch. Supply Manag.*, vol. 18, no. 4, pp. 270–281, 2012, doi: 10.1016/j.pursup.2012.06.004.

[129] D. Abdelzaher, W. D. Fernandez, and W. D. Schneper, "Legal rights, national culture and social networks: Exploring the uneven adoption of United Nations Global Compact," *Int. Bus. Rev.*, vol. 28, no. 1, pp. 12–24, 2019, doi: 10.1016/j.ibusrev.2018.05.001.

[130] Z. Wadud, F. Y. Huda, and N. U. Ahmed, "Assessment of Fire Risk in the Readymade Garment Industry in Dhaka, Bangladesh," *Fire Technol.*, vol. 50, no. 5, pp. 1127–1145, 2014, doi: 10.1007/s10694-013-0349-2.

[131] D. M. Siddiqi, "Do Bangladeshi factory workers need saving Sisterhood in the post-sweatshop era," *Fem. Rev.*, vol. 91, no. 1, pp. 154–174, 2009, doi: 10.1057/fr.2008.55.

[132] N. M. Nasrullah and M. M. Rahim, *CSR in Private Enterprises in Developing Countries: Evidences from the Ready-Made Garments Industry in Bangladesh*. Switzerland: Springer International Publishing Switzerland, 2014.

[133] M. A. Rahman and M. S. Hossain, "Compliance Practices in Garment," *J. Bus. Technol.*, vol. 5, no. 02, pp. 71–87, 2010.

[134] A. R. Belal and R. W. Roberts, "Stakeholders' Perceptions of Corporate Social Reporting in Bangladesh," *J. Bus. Ethics*, vol. 97, no. 2, pp. 311–324, 2010, doi: 10.1007/s10551-010-0511-4.

[135] S. Colnar, V. Dimovski, and D. Bogataj, "Knowledge management and the sustainable

development of social work," *Sustain.*, vol. 11, no. 22, pp. 1–20, 2019, doi: 10.3390/su11226374.

[136] S. Islam, T. Engr, and T. Mahmood, "Solid Waste for Knit Fabric : Quantification and Ratio Analysis," *J. Environ. Earth Sci.*, vol. 4, no. 12, pp. 68–81, 2014.

[137] M. M. Hossan Chowdhury and M. A. Quaddus, "Supply chain sustainability practices and governance for mitigating sustainability risk and improving market performance: A dynamic capability perspective," *J. Clean. Prod.*, vol. 278, p. 123521, 2021, doi: 10.1016/j.jclepro.2020.123521.

[138] R. Lozano, A. Carpenter, and D. Huisingh, "A review of 'theories of the firm' and their contributions to Corporate Sustainability," *J. Clean. Prod.*, vol. 106, pp. 430–442, 2015, doi: 10.1016/j.jclepro.2014.05.007.

[139] M. Ehrgott, F. Reimann, L. Kaufmann, and C. R. Carter, "Social Sustainability in Selecting Emerging Economy Suppliers," *J. Bus. Ethics*, vol. 98, no. 1, pp. 99–119, Jan. 2011, doi: 10.1007/s10551-010-0537-7.

[140] T. Chi, "Building a sustainable supply chain: An analysis of corporate social responsibility (CSR) practices in the Chinese textile and apparel industry," *J. Text. Inst.*, vol. 102, no. 10, pp. 837–848, 2011, doi: 10.1080/00405000.2010.524361.

[141] W. L. Tate and L. Bals, "Achieving Shared Triple Bottom Line (TBL) Value Creation: Toward a Social Resource-Based View (SRBV) of the Firm," *J. Bus. Ethics*, vol. 152, no. 3, pp. 803–826, 2018, doi: 10.1007/s10551-016-3344-y.

[142] M. V. Russo and P. A. Fouts, "A resource-based perspective on corporate environmental performance and profitability," *Acad. Manag. J.*, vol. 40, no. 3, pp. 534–559, 1997, doi: 10.2307/257052.

[143] M. M. Wilhelm, C. Blome, V. Bhakoo, and A. Paulraj, "Sustainability in multi-tier supply chains: Understanding the double agency role of the first-tier supplier," *J. Oper. Manag.*, vol. 41, pp. 42–60, 2016, doi: 10.1016/j.jom.2015.11.001.

[144] J. Palthe, "Regulative, Normative, and Cognitive Elements of Organizations: Implications for Managing Change," *Manag. Organ. Stud.*, vol. 1, no. 2, pp. 59–66, 2014, doi: 10.5430/mos.v1n2p59.

[145] T. Nishiguchi, "Fractal Design: Self Organizing Links in Supply Chain Management," in *KNOWLEDGE CREATION: A SOURCE OF VALUE*, First Edit., G. von Krogh, I. Nonaka, and T. Nishiguchi, Eds. 175 Fifth Avenue, New York, N.Y. 10010: PALGRAVE, 2000, pp. 1–266.

[146] DIMAGGIO and P., "Interest and Agency in Institutional Theory," *Institutional Patterns Organ. Cult. Environ.*, pp. 3–21, 1988, Accessed: Sep. 18, 2019. [Online]. Available: http://ci.nii.ac.jp/naid/10030010621/en/.

[147] R. E. Freeman, *Strategic management: A stakeholder approach*. 1020 Plain Street, Marshfield, Massachusetts 02050: Pitman Publishing Ins, 1984.

[148] I. Nonaka and H. Takeuchi', *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation.* New York, NY 10003-4812, USA: Oxford University Press Inc., 1995.

[149] I. Nonaka, "Leading the Knowledge-Creating Firm," *Manag. Flow*, no. December 1991, pp.

53–69, 2008, doi: 10.1057/9780230583702_4.

[150] J. B. Barney, “Resource-Based Theory of the Firm,” *Organ. Sci.*, vol. 7, no. 5, 1996, doi: http://dx.doi.org/10.1287/ orsc.7.5.469.

[151] S. Hart, “A Natural-Reouces Based View of the Firm,” *Acad. Manag. Rev.*, vol. 51, no. 3, pp. 49–51, 1995.

[152] W. W. Powell and P. J. DiMaggio, *The New Institutionalism in Organizational Analysis*. Chicago 60637: Chicago:The University of Chicago Press, 1991.

[153] A. Argandoña, “The stakeholder theory and the common good,” *J. Bus. Ethics*, vol. 17, no. 9–10, pp. 1093–1102, 1998, doi: 10.1023/a:1006075517423.

[154] R. E. Freeman, *Strategic management: A stakeholder approach*. 2015.

[155] K. E. Goodpaster, “Business Ethics and Stakeholder Analysis,” *Bus. Ethics Q.*, vol. 1, no. 1, pp. 53–73, 1991, doi: 10.2307/3857592.

[156] C. Fontaine, “The Stakeholder Theory,” *Management*, vol. 1, no. December, pp. 37–44, 2006, doi: 10.1057/9780230524224.

[157] M. Rock, “Globalisation and bangladesh: The case of export-oriented garment manufacture,” *South Asia J. South Asia Stud.*, vol. 24, no. 1, pp. 201–225, 2001, doi: 10.1080/00856400108723430.

[158] N. Ahmed, “Sustaining ready-made garment exports from Bangladesh,” *J. Contemp. Asia*, vol. 39, no. 4, pp. 597–618, 2009, doi: 10.1080/00472330903076891.

[159] BGMEA, ::..“BGMEA B2B Web Portal..::,” 2019. http://www.bgmea.com.bd/home/pages/TradeInformation (accessed Aug. 17, 2019).

[160] BKMEA, “Apparel export statistics of Bangladesh,” 2019. https://goo.gl/smEEcV (accessed Oct. 20, 2019).

[161] H. Ashraf and R. Prentice, “Beyond factory safety: labor unions, militant protest, and the accelerated ambitions of Bangladesh’s export garment industry,” *Dialectical Anthropology*, vol. 43, no. 1. Springer Netherlands, pp. 93–107, Mar. 05, 2019, doi: 10.1007/s10624-018-9539-0.

[162] DIFE, “Status of Safety Assessment and Remediation,” *Department of Inspection for Factories and Establishments*, 2019. http://database.dife.gov.bd/index.php (accessed Aug. 26, 2019).

[163] BGMEA, “BGMEA Sustainability Report 2020,” Dhaka-1230, Bangladesh, 2020. [Online]. Available: https://images.samsung.com/is/content/samsung/p5/uk/pdf/Sustainability_report_2020_en_new.pdf.

[164] R. Hasan and K. K. Leonas, “Collaborative approach for water & energy conservation: Clothing industry of bangladesh,” *J. Text. Apparel, Technol. Manag.*, vol. 10, no. 4, pp. 1–11, 2018.

[165] R. K. Yin, “Designing Case Studies,” in *Case Study Research Design and Methods*, 3rd ed., SAGE Publications, Inc., 2009, pp. 29–53.

[166] A. Bryman, *Social Research Methods*, 4th ed. New York: Oxford University Press Inc., 2012.

[167] D. R. Hancock and B. Algozzine, “Selecting a Design,” in *Doing case study research : a*

practical guide for beginning researcher, New York: Teachers College Press, 1234 Amsterdam Avenue, New York, NY 10027, 2006, pp. 31–38.

[168] K. M. Eisenhardt and M. E. Graebner, "Theory building from cases: Opportunities and challenges," *Acad. Manag. J.*, vol. 50, no. 1, pp. 25–32, 2007, doi: 10.5465/AMJ.2007.24160888.

[169] M. Saunders, P. Lewis, and A. Thornhill, *Research Methods For Business Students*, Seventh ed. Pearson, Edinburgh gate, Harlow, Essex CM20 2JE, England, 2016.

[170] Y. S. Denzin, Norman K Lincoln, *The SAGE Handbook of Qualitative Research - Fifth Edition*, 5th ed. Thousand Oaks, California 91320: SAGE Publications, Inc., 2017.

[171] M. Q. Patton, "Practical and Actionable Qualitative Applications," in *Qualitative Research and Evaluation Methods: Integrating Theories and Practice*, 4th ed., SAGE Publications, Inc., 2015, pp. 265–370.

[172] R. E. Boyatzis, "Developing Themes and Codes," in *Transforming Qualitative Information: Thematic Analysis and Code Development*, 1st ed., Thousand Oaks, California 91320: SAGE Publications, Inc., 1998, pp. 29–53.

[173] V. Braun and V. Clarke, "Using thematic analysis in psychology,Qualitative Research in Psychology," *J. Chem. Inf. Model.*, vol. 3, no. 2, pp. 77–101, 2013, [Online]. Available: http://dx.doi.org/10.1191/1478088706qp063oa.

[174] P. M. Barrett, D. Baumann-Pauly, and A. Gu, "Five Years After Rana Plaza: The Way Forward," no. April, pp. 1–29, 2018.

[175] F. A. Esteve-Turrillas and M. de la Guardia, "Environmental impact of Recover cotton in textile industry," *Resour. Conserv. Recycl.*, vol. 116, 2017, doi: 10.1016/j.resconrec.2016.09.034.

[176] D. M. M. Yacout and M. S. Hassouna, "Identifying potential environmental impacts of waste handling strategies in textile industry," *Environ. Monit. Assess.*, vol. 188, no. 8, 2016, doi: 10.1007/s10661-016-5443-8.

[177] S. Mair, A. Druckman, and T. Jackson, "Global inequities and emissions in Western European textiles and clothing consumption," *J. Clean. Prod.*, vol. 132, 2016, doi: 10.1016/j.jclepro.2015.08.082.

[178] R. J. Baumgartner and R. Rauter, "Strategic perspectives of corporate sustainability management to develop a sustainable organization," *J. Clean. Prod.*, vol. 140, pp. 81–92, 2017, doi: 10.1016/j.jclepro.2016.04.146.

[179] H. Cao, C. Scudder, and M. A. Dickson, "Sustainability of Apparel Supply Chain in South Africa: Application of the Triple Top Line Model," *Cloth. Text. Res. J.*, vol. 35, no. 2, pp. 81–97, 2017, doi: 10.1177/0887302X16688560.

[180] H. Kabir, M. Maple, M. S. Islam, and K. Usher, "The current health and wellbeing of the survivors of the rana plaza building collapse in Bangladesh: A qualitative study," *Int. J. Environ. Res. Public Health*, vol. 16, no. 13, pp. 1–21, 2019, doi: 10.3390/ijerph16132342.

[181] U. Barua and M. A. Ansary, "Workplace safety in Bangladesh ready-made garment sector: 3 years after the Rana Plaza collapse," *International Journal of Occupational Safety and Ergonomics*, vol. 23, no. 4. pp. 578–583, 2017, doi: 10.1080/10803548.2016.1251150.

[182] M. U. Ahmed, A. K. M. Nurul Hossain, and S. Hasanuzzaman, "Exploring the depth of

energy penetration in economic advancement: Perspective of Bangladesh," *Renew. Sustain. Energy Rev.*, vol. 49, pp. 1033–1047, 2015, doi: 10.1016/j.rser.2015.04.140.

[183] TextileToday, "Sustainable Development and Industrial Ecology: A review," Jun. 08, 2016.

[184] H. Takeuchi', "Knowledge-Based View of Strategy," *Universia Bus. Rev.*, vol. Cuarto Tri, no. 40, pp. 68–79, 2013.

[185] K. Aruna, "Paying for a Bus Ticket and Expecting to Fly: How Apparel Brand Purchasing Practices Drive Labor Abuses," USA, 2019.

[186] J. B. Barney, "Firm Resources and Sustained Competitive Advantage," *J. Manage.*, vol. 17, no. 1, pp. 99–120, 1991, doi: 10.1177/014920639101700108.

[187] I. Nonaka, R. Toyama, and T. Hirata, *Managing Flow*, 1st ed. New York, N.Y. 10010: Palgrave Macmillan, 2008.

Appendix A: Questionnaire

Table A1 Content Questionnaire for Management Employees

Category	Key Contents and Questions
General topics on sustainability	
General	Meaning: how does 'sustainability mean to this firm? Policy / Regulations/ Action plans: what are policies to design toward sustainable development? Corporate Governance: How do the corporate board members ensure accountability and transparency across business activities? Knowledge management: How does sustainability-related data and information are managed by the corporate management team? Technologies: What are technologies firm introduced to manage a safe and green work environment?
Specific issues on three-pillar sustainability	
Environmental	Impacts assessment: Does the firm address its adverse impacts across the manufacturing chain? What actions have been taken to reduce those impacts? Sources of Resources/ Footprint management: What are this firm's major sources of energy, water, and raw materials? How does this firm improve the energy/ raw materials /water performances? Emissions/wastes management: What kind of emissions/wastes firms yield from production, and how do they handle these? Environmental quality: How does this company manage its workplace environmental quality? Reduce/Recycle/Reuse policy: How does the firm implement the 3R policy toward sustainability?
Social	Workplace safety health: How do firms ensure facility safety issues and health and hygiene issues? What OHS rights does this firm implement toward a safe and healthy workplace? Labor codes and workers' human rights: What are the practices the company evolved concerning labor and human rights? How does the management deal with the worker's complaint issues? Employees/Development/empowerment: How does this firm develop its employees' skills and knowledge? Does this firm give freedom to employees for their jobs Ethical practice: How does a firm make sure the ethical business practices? Social contributions: How does this organization contribute to developing the surrounding communities and the nations?
Economic	Economic values/market presence: What are the direct and indirect economic contributions firms generated over the years? How does it set the market position? Product and process improvement: How does a firm improve its efficiency and productivity? Sustainable investment: What areas firm increase its capital investment over the years? Financial risks and opportunities: What are financial risks and opportunities assess by firms toward long-term stability?

Table A2: Content Questionnaire for Non-management Employees

Category	*Key Contents and Questions*
Demographic	Personal information: Name, Categories of work, year of experiences and highest education
	Specific questions
safety	Workplace safety: What is your opinion about the work condition in recent years? How safe do you feel during work? Work environment condition: What initiatives has this company taken toward employees' health and hygiene issues? Are you happy with these initiatives?
Workers' Rights	OHS Rights: What practices does this company develop for health safety rights? Are you happy with these initiatives? Labor Codes & Human Rights: Are you aware of workers' human rights and labor practice? And what is your opinion about the human rights of this company
Ethical practices	Decent work condition: Do you believe this company provides you enough benefits and rights to work and live happily?
Worker Empowerment	Social life: Do you believe this company offers you a social life? If yes, what initiatives have your company taken? Employee's Development: How does your company develop worker's skills and work efficiencies?

Appendix B: Interview Summaries

Table B1: Sustainability concept from respondents' perceptions

Core Category	Categories	Respondents' feedback
Sustainability	Meaning	(RS.6_A) I believe that the 'SD' also appeared as a strategy to improve corporate management. It is sometimes confusing us what to achieve and how to achieve. The firm started to increase factory safety in 2014 and attempted to continuous improvement from sustainability commitment. (RS.1_A) Our sustainability goal is to act as a best-regarded company. The SP is crucial for improving from compliance and business growth perspectives. Our challenges are to tackle safety, worker's rights, and environmental degradation. Parallelly, we face sizable costs, price decline, stakeholder intervention, and market changes. (RS.9_B) Nowadays, it is hard to define in the business setting, especially in garment manufacturing. I say it is a 'Philosophy' as we cannot achieve this within specific deadlines or doing certain activities. The SD is a continuous process. The importance of SP varies on sectoral impacts and crises. (RS.12_B) SD is a vision, and we aim to achieve the ability to adjust in every action concerning internal challenges and uncertainties. The external pressures are increasing concerning customers' poor pricing, quick lead time, material price hikes, supply shortages, and labor union pressures. (RS.18_C) The company adopted SDGs as the corporate policy to implement throughout business practices. We define sustainability as the best standard to incorporate with corporate vision. It becomes business requirement to mitigate several workers' safety, environmental, social, ethical issues. (RS.20_C) Many of our customers already talk about sustainability standards, so we must consider this with our business practices as a proactive company. Besides, we must consider several uncertainties as a supplier of export markets.

Note: These comments are from the 'Management Employees' as per the Content Questionnaire of management respondents.

Table B2: Respondents' comments over social dimension

Core Category	Categories	Respondents' Comments (story lines)
Social	Buildings, Electrical and Fire Safety	(RS.1_A) We were forced to conduct structural inspections by our internal safety commitment. The Rana Plaza disasters in 2013 pushed us to reconsider the factory safety inspections and constructions' remediations. That were the big challenges for us as well the direct suppliers of Bangladesh. However, we remediated work floor layouts, egress, rooftop and floor capacities, and power generation areas as per Accord's CAPs. (RS.10_B) Accord inspection became mandatory to respect our customers' commitment and workers' safety. We renovated SEF issues as per Corrective Action Plans that provided by Accord. (RS.20_C) The Accord experts forced us to change several unnecessary fire equipment during follow-up inspections and verification. For example, the costly fire door, sprinkler, and fire pump, etc.
	Safety management	(RS.2_A) Although our factory's constructions are not so old, Accord advised changing the floor layout plan, exit stairs, and emergency escape route. (RS.13_B) the Accord's safety remediation helped this company upgrade many fires, electrical equipment, and communication systems to reduce probable fire hazards. (RS.18_C) the company has been concerned about safety management to prevent workplace accidents since the 2013 Rana Plaza collapse. We do not claim long-term business success and profitability without workers' safety and their healthcare.
	Hazards and risks assessment	(Rs.4_A) we inspect and monitor to identify the physical and chemical hazards. These two hazards are most common in dyeing sections because of wet floors and chemical dirt. (RS.14_B) the garment-making tasks (cutting, sewing, and finishing) are repetitive works, so long hours of work in the same position often affect workers' health. (RS.15_B) We mostly face fabric dust that affects our normal breath. To overcome this issue, daily cleaning and sweeping are performed to remove fabric dust and cut pieces. (RS.19_C) We provided training to workers of dyeing, printing, and store department on dealing with hazardous chemicals during inventory, use, and post-use phases.
	Health and Hygiene measures	(RS.5_A) Our health and safety policies emphasized daily cleanliness, improving visibility, temperature and humidity control, air quality monitoring, and waste management. (RS.10_B) Following BLA 2006 and ISO 45000 standards, the company developed a physical and biological health protection system. The internal safety committee and floor managers conduct regular inspections over hygiene issues. (RS.21_C) Yes, the lines' layouts were changed to increase space between sewing machines that help us to easy movement. All lights are also replaced, and now lighting is enough. The new cooling pads were installed to control the workroom temperatures.

	Workplace Healthcare management	(RS.8_A) we provide in-house treatment through full-time doctors and nurses. All workers receive free medicines from the medical center. Moreover, the pregnant workers are separated by the special uniform (RS.12_B) The top management is trying to improve Sanitation & Hygiene facilities, maternity care, and family planning in collaboration with Better Health Bangladesh, BKMEA, and SNV programs by Netherland-based NGOs. (RS.19_C) we provide treatment and medicines for general sicknesses such as fever, gastric, and pain. We have collaboration with local hospitals and medical colleges for emergency support.
	Human Rights & Labor codes	(RS.8_A) No, there is no child labor. However, sometimes managers push us to work when the shipment is approaching. Workers have already adapted to this situation over overtime. I didn't face or notice any worker's harassment and discrimination issues. The owner is very kind, and he often visits production floors and talks to workers. (RS.14_B) We joined the national labor foundation (Union). Our representatives (PC and SC) contact Union leaders for any suggestions. We can negotiate with top management for our payment, leaves, bonuses, and health safety issues. (RS.22_C) nowadays, the line managers or supervisors are aware of anti-harassment policies and disciplinary action. We usually contact the PC or Compliance team to complain about any misconduct.
	Ethical business practices	(RS.2_A) Following SEDEX standards and national regulation. Worker's wages, benefits, break time, holidays, leaves, overtime duties, maternity leaves, and payments are maintained. (RS.7_A) Yes, we receive monthly wages as per national wage grades. Besides salary, attendance bonuses, and two festival bonuses also receive timely. But target bonuses and overtime payments often delay pay. The company provides four months of paid maternity leave for female employees. (RS15_B) I receive a monthly salary, but more than 60 percent of production workers are contracted as piece-rate wages. They also receive a festival bonus and attendant bonus. Piece-rate workers earn much higher than monthly salaried workers. (RS.21_C) We earn a good income from here. Our company offers timely salary, paid leave, two Eid bonuses, production incentives to all workers. Besides, we can take loans during an emergency: the paid maternity leaves and health allowance for female workers.
	Worker Empowerment	(RS.5_A) We are working to improve workers' functional skills, multi-tasking capacity, and personal development. The workers, in general, are not technically efficient, so only the on-job training is not enough to increase their productivities. (RS.12_B) the workers' skill development is not new in the RMG sector. This requires because, for the firm's own sake, I mean the 'productivity improvement. (RS.20_C) The company also intended to do worker's skills improvement and worker empowerment (WE) as they can enjoy social lives with dignity. (RS.18_C) Employees can learn not only technical know-how but also some entertainment courses to develop diverse interests.
	Workers' social lives	(RS.1_A) the factory provided many jobs for uneducated people. Now they can earn a good salary with several bonuses that help them to live with social dignity. (RS.9_B) we provide two more rare benefits two our employees, such as educational attainment program workers and their family members, and subsidized daily goods via in-house fair shops.

		(RS.16_C) Our commitment is to give employees a balanced and peaceful work-life where he/they can enjoy their social relationships. Therefore, adequate leaves during EID vacations, national holidays, and recreational benefits are provided to them.

Table B3 the respondents' comments on the environmental dimension

Core Category	categories	Respondent Comments (story lines)
Environ-mental	Environmental impact assessment	(RS.1_A) we conduct the EIA every year to measure which areas are producing negative impacts across the manufacturing chain. The external auditors train our internal teams to perform regular assessments to measure impacts. (RS.6_A) The EIA shows, the fabric processing unit, AOP, and laundry operations usually release high volume hazardous wastes that contaminate air, water, and landfill. These also relate to societal impacts. (RS.10_B) The diverse issues affect the environmental performance; For EIA, the product life cycle and cleaner assessment are followed to estimate resource consumption and waste intensity. EIA is necessary to put more focus on the particular areas. (RS.18_C) we conduct several assessments of the environment components and store the data, E.g., Carbon emissions measurement, Air quality test as the main component, Wastewater parameter, and so on. (RS.16_C) The fabric washing, dyeing, and finishing processes usually release many toxic substances into the environment. These processes also require heavy infrastructure and machinery that affect lands, water, and air quality.
	Carbon footprint mgt. (CFM)	(RS.1_A) We address the correct energy sources that release fewer carbons and eco-friendly raw material uses in production for CFM. We replaced all diesel generators with gas generators to lessen higher carbon emissions. Besides, we emphasized organic and recycled contents in fabric production. (RS.11_B) We focused on carbon reduction and controlling pollution from energy, steam, and materials used. We target to reduce carbon intensity by 5 to 10 percent every year. The energy reduction directly offsets emissions. (RS.20_C) Our structures are modified with energy-efficient materials to save energy and also replaced the oil generators and boilers with gas to achieve zero-carbon emissions. Again we installed LED lights, solar power, and increased daylights to reduce GHG emissions. (RS.18_C) We were awarded the prestigious LEED recognitions for best practices of energy, water, and emission across the processes
	Solid Waste and Wastewater Mgt.	(RS.1_A) the company attempted to recover both solid waste and wastewater through reuse the leftover materials and recycle the wastewaters throughout the process. The industrial engineers, CAD & Pattern department, and R&D teams are working to meet resource efficiency and wastes management. (RS.9_B) We focus on the reduction of the usage of water by installing modern machinery rather than wastewater treatment. We have a target to reach less than 50-liter water/kg of fabric for production. We have a plan to move forward by espousing Cold Pad Batch Dyeing within a few years. (RS.18_C) we test water quality before and after the treatment to have an overall insight of functionality of the ETP and feasibility of disposal of sludge in the environment considering the impacts. The company generates many solid wastes, including fabrics, poly, plastic drums,

		paper cartons, food wastes are the major sources
	Chemical Waste mgt.	(RS.4_A) The chemical waste is hazardous, and we follow the safe use and dispose of the following chemical provisions. We targeted to reduce the 5% of the chemical consumption in dyeing, printing, and washing processes. Functional and awareness training is provided in this regard. (RS.13_B) We adopted a Zero-discharge Hazardous Chemical (ZDHC) policy that is guided us about the Manufacturing Restricted Substance Lists (MRSL). We follow ZDHC policy to purchase, use, and dispose of landfills. The in-house chemical assessment and MSDS are kept. (RS.18_C) We are managing the chemical as per the regulation and standardized practices. We provide several training on chemical management to respective employees in cooperation with chemical providers. Besides, currently, we prefer ZDHC approved environment-friendly chemicals and nonhazardous dyes.
	Cleaner Prod. Assessment & Tech.	(RS.6_A) In CP initiatives, we set KPI on water, natural gas, steam, and power consumption. Currently, we efficiently use water, and almost 45% less water requires in the wet processing unit. At the same time, reduced wastewaters and energy consumption also decline 18 % GHGs emissions. (RS.10_B) the CPA is one of the industry-wide tools to upgrade the production technologies and utility areas. We almost invested $270K for factory process and utility improvement. However, the investment is very effective as the return is rapid. We implement more CPA measures. (RS.16_C) We integrated several cleaner technologies for resource efficiency and process improvement, collaborating with the USGBC. Currently, we use water and energy efficiency in fabric processing as one of the best dyeing machines (Cold Pad Batch Dyeing) is installed. Only a few garments factories invested such high technology. The CPB dyeing requires an average of 80 to 85 litter waters per kilogram fabric.

Table B4: the respondents' comments on the economic dimension

Core Category	categories	Respondent Perceptions
Economic	Financial risks mgt.	(RS.6_A) We face several financial risks. Customer's price pressures, compliance costs, and raw materials crisis are major risks for manufacturing operations. Besides, nonrenewable material, energy and cut-make-trimming costs are increasing every years. (RS.9_B) For economic stability, we need to concern the assessment and management of the financial risks in advance. Our corporate board members usually address the financial risks factors as they know very well about the financial matters. We concern about the country's fiscal policies, trade schemes, and market shifts that impact our future business. (RS.16_C) The corporate board members' annual general meeting (AGM) has discussed the risks factors from various perspectives. The Accounts & Finance team prepared the whole picture of company financial issues; therefore, they share anticipated risks in the AGM. The BODs finalize appropriate measures to deal with the situations in detail.
	Economic share	(RS.3_A) The company contributes to the nation by generating foreign revenues. This contributes to improving GDP growth. Besides, the company provides giant jobs to low-skilled or even no skills people. Indirectly, the company helps to promote local enterprises.

		(RS.11_B) Above 10000 jobs are provided to the country's labor market, and it is increasing gradually. Another issue is that the sector has changed women's lives, especially those from remote villages with low education profiles. (RS.17_C) Our company serves many advantages to the country. I can mention GDP growth, improving workers' living standards, economic development, empowerment, local industry, local consumer market, primary education entrance, and regional development.
	Market presence	(RS.3_A) Generally speaking, we always stay in the market both home and abroad. As a manufacturing-based business, we already created a corporate identity and have the memberships of several trade bodies. Besides, we sell products to foreign customers. (RS.11_B) we are constantly trying to increase our market presence through quality products and services to our customers. Besides, we are also flexible and transparent with our subcontractors, raw material suppliers, and customers. We recruit freshers and hire experts with a good salary package considering the market average. (RS.17_C) Our company started the RMG business more than three decades ago, and it is almost familiar in the local market. Besides, our presence has been increasing over the years in many areas such as economic contributions, education, and health sectors improvement, and local communities' development.
	Product and Process innovation	(RS.3_A) As we have basic garment stitching, the key obstacle is to search for high-value products with better prices. We consider improving these gaps through product diversification and process innovation. The company set up a design studio and hired a product development team, overseas designers (for the London office), and a unique sample team. (RS.11_B) First, we developed a skilled human resource such as the R&D team, contractual designers, and salary-based workers are recruited over the years. Second, we established a well-furnished design studio, increased fine sewing lines, and installed auto machines across knitting, dyeing, cutting, and sewing sections. (RS.17_C) We continuously practice production and processes innovation by integrating automation, using alternative materials, increasing development costs, and providing special training to the product development team, IE, sample, and production team.
	Investment mgt.	(RS.1_A) the company has been increasing investments over the years for improving energy and water efficiency, social welfare, and employee development. So, these investments brought positive impacts across the manufacturing process. (RS.9_B) Over the year, we constantly spend lots of capital on process up-gradation to achieve an eco-friendly setup. Also increased investment for the standardized practices, audits, and skilled workforce that led firm's social and environmental performance. (RS.16_C) we increased the capital budget in implementing the green factory, retrofitting, and cleaner technologies. We have also impact investments that directly help communities' development, such as school projects, hospitals, and other volunteering activities.

Appendix C: Key Performance Indicators (KPIs)

Appendix C1: Workplace Health Safety Compliance

Table C1: Firms' initiatives toward WHSC program

	Firm A	Firm B	Firm C
Factory building, electrical and fire safety			
Periodical safety Inspections over SEF	√	√	√
SEF repair works including structural design, fire protection, electrical wiring method	√	√	√
Regular Electrical and Fire Safety assessment	√	√	√
Periodical Boiler safety inspection by third-party audits	x	x	√
Efficient Safety management			
Installation of electrical and fire equipment after expiration	√	√	√
Regular monitoring fire detection and protection system	√	√	√
Adequate Personal Protective Equipment (PPE) supply	√	√	√
First Aid Boxes throughout the facilities	√	√	√
Improve unanimous Safety Complaint System via Complaint Box	√	√	√
Engaged Certified Engineers or Engineering firms	x	√	x
Assign dedicated safety workforce (firefighter, rescue, and first aid team)	√	√	√
Quarterly Safety inspections, testing, and drills	√	√	√
Develop educational programs for OHS awareness	√	√	√
Hazards and Risks Assessment (HRA)			
Develop inspection system to address physical, chemical, biological, and machine hazards	√	√	√
Monitoring and assessing potential risks and undertake reasonably practical initiatives for advance	√	√	√
Improve the hazards recording system across facilities	√	√	√
Develop in-house training on conducting HRA	x	√	x
Health and Hygiene (H&H) measures			
Implementing H&H policy, objectives, and action plan	√	√	√
Developed an integrated management system to monitor and evaluate H&H issues	√	√	x
Building management system to control indoor air, moisture, temperature, and sound quality	√	√	√
Develop training and manual to improve H&H practices	√	√	√
Workplace Healthcare Management			
Develop in-house Medical and Childcare Center (MCC)	√	√	√
Hired occupational Nurses and Physicians	√	√	√
Arranged adequate diagnosis, medicines, and vaccination	√	√	√
Annual Medical Camp / Health Checkups for employees	△	△	√
Outdoor Healthcare supports/Outpatient medical benefits	x	x	△
Free Eyecare treatment and medicine benefits	x	x	√
Personal hygiene Supports to female employees	√	△	√
Reproductive Healthcare & Family Planning (FP) Supports for all employees	x	√	△
Adopted Group Health Insurance Policy	△	√	△

Note: '√' = Action has taken, 'x' = No action, '△' = Unidentified

Appendix C2: Environmental Performance Management

Table C2 Suppliers' strategies for Environmental Performance Management

	Firm A	Firm B	Firm C
Environmental Impact Assessment (EIA)			
Develop a policy for periodical EIA	√	√	√
Address Ecological, biological & socio-economic impacts	√	√	√
Maintain Quality of available environmental data	x	△	x
Consider technology and investment scopes for EIA.	x	△	√
Perform periodic Third party's EIA	√	√	√
Activate periodical training, monitoring plan, and capacity building programs develop to EIA	x	△	√
Carbon footprint management (EFM)			
Energy-efficient infrastructure development	x	△	√
Developed flexible, cost-effective, and applicable measures for carbon emissions and pollution reduction	√	√	√
Adoption of the GHG Protocol to reduce carbon emission	x	x	△
Increasing renewable materials (recycled contents) as input	√	√	√
Solid wastes and Wastewater Management (SWWM)			
Assess and control wastewater intensity	√	√	√
Wastewater Treatment before discharge to ecosystem	x	△	x
Solid wastes management through science-based matrices (hazardous and non-hazardous)	△	√	√
Solid wastes handover to certified waste collectors and recycled companies	√	√	√
A comprehensive ETP sludge management by recycling and reusing policies	√	√	√
Chemical Waste Management (CWM)			
Develop Chemical Policy respecting the Chemical Regulations (RSL or MRSL)	√	√	√
Build accredited Laboratory for in-house assessment of the hazardous substances	△	√	△
Apply standardized management system for Chemical purchase, use, and post-use	√	√	√
Increasing the use of Green Chemicals and dyes	√	√	√
Cleaner Production Assessment & Technology (CPA&T)			
Measure daily resource (water & energy) consumption through digital metering	√	√	√
Developed alternative sources of resources in operations	△	△	*
Minimize the process loss from production and utility areas through retrofitting and replacing technology	√	√	√
Developed a recovery system to reduce waste-heat and steam across fabric production processes	√	√	√
Integrated best available technologies (BATs) to reduce the resource use intensity	√	√	√

Note: '√' = Action has taken, 'x' = No action, '△' = Unidentified ||

Appendix C3: Social and Ethical Compliance Standards

Table C3: Suppliers core strategies for Social and Ethical Compliance Standards

	Firm A	Firm B	Firm C
Human rights and Labor codes			
Adopted universal human rights respecting UNGC	x	x	√
Implemented labor codes respecting state laws and ILO	√	√	√
Developed Anti-harassment, Anti-Discrimination, anti-forced labor, and Anti-child labor policy	√	√	△
Developed surveillance measures and security measures against workplace violence	√	√	√
Freedom of association and collective bargaining policy	√	√	√
Impartial Grievance Management policy	√	√	√
Ethical business practices			
Living Wages and benefits respecting national labor laws	√	√	√
Fair recruitment & termination policy	√	√	√
Adequate Breaks and Leave policy	△	√	△
Maternity leave rights and payment	√	√	√
Annual leave encashment policy	△	√	√
Employers' liability insurance coverage	√	√	√
Meeting employees' Social Needs			
Wages and salaries are paid timely through the bank or other financial institutions	√	√	√
performances bonus and incentives benefit to workers	√	√	√
Health Insurance Coverage	√	√	√
Annual profit sharing with all employees	x	x	√
Subsidized Grocery Shop policy (Fair price shop)	x	√	x
Worker's orientation program and periodic training for functional skills improvement	√	√	√
Education attainment program to enhance worker's skill	x	√	√
Annual recreational program	√	√	√
Workforce empowerment through Labor Management-Based Committees			
Worker participatory committee	√	√	√
Factory Safety Committee	√	√	√
Anti-harassment committee	√	√	√
Anti-discrimination committee	√	△	△
Community Engagement			
Community health program	x	x	√
Engagement in volunteering activities (donation & relief)	√	√	√
Facilitating and Sponsoring education institutions	x	△	√
Periodical dialogue with communities' leaders, local government, and NGOs	△	√	△

Note: '√' = Action has taken, 'x' = No action, '△' = Unidentified ||

Appendix C4: Economic Growth and Prosperity

Table C4: Companies initiatives toward Economic Prosperity

	Firm A	Firm B	Firm C
Direct and indirect economic contributions			
Continuous employment creation for marginalized people	√	√	√
Annual recruitment for local people as a management position	√	√	√
Hire expert and skill management from the overseas labor pool	√	√	x
Continuous contribution for creating a skilled workforce	√	√	√

Generates indirect economic impact promoting local SMEs	√	√	√
Creating the atmosphere for Product and Process innovation			
Develop an R&D project with design studio	√	√	√
Increase R&D budgets for innovating products and processes	√	√	√
Assign a dedicated innovation and design team	√	√	√
Increasing budgets for BATs and employees' efficiencies	△	△	√
Focus on the increasing use of renewable resources	△	△	△
Enhancing Market Presence			
Increase the company branding across export markets	√	√	√
developing new customers from both traditional and non-traditional markets	△	△	△
Create the B2C scopes to access local or overseas market	x	√	△
Sustainable Investment			
improving investments for the green structures	√	√	√
increase socially responsible business investment	√	√	√
Improving the impact investment to develop the local community	△	√	√
compensate for carbon emissions	x	△	√

Note: '√' = Action has taken, 'x' = No action, '△' = Unidentified ||

Appendix C5: Corporate Governance and Leadership (CGL)

Table C5: Firms' initiatives of Corporate Governance and Leadership (CGL)

	Firm A	Firm B	Firm C
Accountability and transparency on materiality issues			
BODs directly engage in developing sustainability policies	△	√	√
BODs promote environmental and societal governance for their every action,	△	△	△
BODs agile to revise ESG policies and plans concerning future challenges	√	√	√
The BODs describe the processes of identifying and assessing climate-related risks, societal issues, and financial risks	√	√	√
maintains closed-loop information flows	√	√	√
top management shares business impacts to all employees	x	△	x
Devising a knowledge-based management approach			
BODs have knowledge and motivations toward sustainability	√	√	√
Top management promotes employee's autonomy	△	√	√
Corporate managers are accountable for every action	√	√	√
The company gives rewards for employee's creative efforts and innovativeness	√	√	√
Firm developed a physical archive center and integrated platform to store data and information related to SDGs	x	√	△
BODs allow changes and diversity in org. structures	√	√	√
Company discloses materiality issues			
BODs flexible to disclose factory SEF safety status	√	√	△
BODs promote independent audits to report company's progress on work conditions	√	√	√
Management often arranges third-party audits and share auditor's findings with stakeholders	√	√	√
The company reveals the metrics to assess climate-related risks	x	x	△

or opportunities			
Disclose greenhouse gas emissions respecting GHG protocol' 2011	x	x	△
The company share annual sustainability report for all	△	△	√
Stakeholder Engagement and dialogue			
Increasing concerns stakeholders' interests	√	√	√
Management can identify its internal and external stakeholders	√	√	√
Focus stakeholders' guidance's, suggestions, & consultation on ESG issues	√	√	√
Arrange periodical dialogue with all stakeholders	△	△	△
Cross-checking materiality issues with external experts	√	√	√
Company invites activists or civil societies to share knowledge-creating and sharing process	√	√	√

Note: '√' = Action has taken, 'x' = No action, '△' = Unidentified ||