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Contact to corresponding author: Mohammad Bin Amin, binamindu@gmail.com

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Mohammad Bin Amin
University of Debrecen, Hungary
orcid.org/0000-0002-9184-4828

Md Asaduzzaman
University of Malaysia Perlis, Malaysia
Bangladesh University of Business and Technology, Bangladesh
orcid.org/0009-0000-8038-1760

Gouranga Chandra Debnath
United International University, Bangladesh
orcid.org/0000-0003-3262-6270

Md Atikur Rahaman
Jiujiang University, China
orcid.org/0000-0003-3356-7815

Judit Oláh
University of Debrecen, Hungary
John von Neumann University, Hungary
WSB University, Poland
orcid.org/0000-0003-2247-1711

Effects of circular economy practices on sustainable firm performance of green garments

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Abstract

Research background: The concept of sustainable firm performance has gained significant interest within the highly competitive business arena. There has been a significant increase in the adoption and implementation of circular economy practices by industries. If a company can implement an established approach to circular economy practices, it may expedite the attainment of sustainable corporate performance. This research is conducted in the context of ready-made garment organizations that are following green criteria in their business activities. The study focuses on an emerging South Asian country, Bangladesh, as it holds a strong position in the global apparel and garment market; it is imperative to assess and ensure the environmental maintenance of this country's garment sector.
Purpose of the article: The purpose of this research is to investigate the relationship between circular economy practices and sustainable organizational performance. The study focuses on the contributory relationship of circular economy practices on three-dimensional sustainable performance, i.e. on environmental, financial, and social performance.
Method: This is a quantitative survey-based study; a total of 418 managers were selected to participate. Primary data was collected through a structured questionnaire given to a sample of permanent managers of green garment organizations in Bangladesh. For data input and analysis, SPSS and PLS-SEM software were used.
Findings & value added: The results of our study demonstrate a noteworthy relationship between circular economy practices and sustainable performance. This research enhances our comprehension of the efficacy of circular economy practices in addressing environmental issues. The study examines the potential ramifications of implementing circular economy practices for policymakers in the green garment sector, which is known for its significant labor-intensive activities, and ranks as the country's second-largest contributor. The outcomes provide a distinctive perspective for adding value to the environmental concerns in emerging economies. Thus, through an investigation of circular economy practices, our research provides valuable insights for the market of global garment products concerning the environment, resource maximization, energy saving, and circular production processes.

Introduction

Industrial modernization has caused pollution, carbon emissions, and chemical releases (Cheng *et al.*, 2023). Climate change, land degradation, and animal extinction affect the ecological systems which are necessary for

humanity's existence and development (Yang *et al.,* 2023). Pertinently, Mehrotra and Jaladi (2022) indicated that human activity drives the planet toward multiple tipping points that might cause significant changes in the natural environment which sustains modern civilization. Thus, environmentally friendly production and consumption techniques have become obligatory. Similarly, Baah *et al.* (2022) stated that stakeholders are demanding that management work to provide a greener economy. That is why circular economy practices are recommended to measure sustainable economic, environmental, and social development by Rodríguez-Espíndola *et al.* (2022a). Besides, the circular economy is one of several ways to boost economic development and sustainability (Atstāja *et al.,* 2022).

Notably, the process of circular economy preserves products and resources beyond their usefulness; the materials of a discontinued product are reused (Cullen & Angelis, 2021). Moreover, organizations configure and coordinate marketing, selling, manufacturing, logistics, IT, investment, and customer service divisions to close material and energy loops for maximum efficiency and performance. Due to the growing knowledge about the environmental impact of production, firms in emerging and developed countries are under pressure (Kayikci *et al.,* 2022). At the same time, there is also a growing expectation that manufacturers will enhance their performance. Consequently, management must balance economic development and environmental impacts, as industrial sectors are growing rapidly (Shang *et al.,* 2022). Hence, manufacturers have acknowledged the need for recycling in co-operation with consumers and suppliers to reduce the environmental effects of their products and services (Alonso-Almeida *et al.,* 2021).

Businesses, industries, government organizations, and consumers are increasingly concerned about the adaptation of circular economy system (Tapaninaho & Heikkinen, 2022); consequently, academic research must determine whether or not these activities improve corporate success (Alonso-Almeida *et al.,* 2021). The impact of circular economy procedures on corporate efficiency still needs to be determined by further empirical studies. Recently, Shang *et al.* (2022) found that Chinese manufacturing firms' economic growth has increased since circular economy practices were still in their infancy, suggesting enormous investments that may reduce operation costs and grow business earnings. Rodríguez-Espíndola *et al.* (2022b) found a connection between organizational practices of the circular economy and environmental sustainability. The authors indicated

that circular economy system assists in the achievement of an organization's social, economic, and ecological sustainability. Additionally, the transition to the circular economy has an ethical component since its societal effects may improve social sustainability (Marsh *et al.,* 2022). To fully understand sustainable firm performance (SFP), the present research considers environmental, financial, and social performance.

The current study highlights that the relationships between circular economy practices and sustainable performance still need to be studied and require more investigation in the organizational context. Notably, most previous studies have focused on the circular economy and its impact on all elements of corporate performance, concentrating mostly on developed countries (Blinova *et al.,* 2022). Research on circular economy and its consequences in the context of rising economies and emerging Asian nations is very limited (Khajuria *et al.,* 2022). Previously, the circular economy has been explored as a conceptual model by several scholars (for example, Razmjooei *et al.,* 2024; Ossio *et al.,* 2023; Andooz *et al.,* 2023; Yin *et al.,* 2023). Those studies were focused on bibliometric, systematic, meta-analysis, and comprehensive representation of circular economy models in practice. The experiences of the managers who have adapted and implemented circular economy models, as well as the challenges they face, the potentials of the system, and their insightful perceptions, all must be explored, and that is the primary concern of the present study. This research indicates the gap which exists in the investigation of existing organizations which are practicing a circular economy system in their emerging economies.

The notable fact is that numerous empirical studies have been conducted on the concept of circular economy practices in the areas of general company operations and activities (for instance, Velasco-Muñoz *et al*., 2022; Mazzucchelli *et al*., 2022). However, it is crucial to acknowledge that the studies mentioned above primarily adhere to the linear economic model and the conceptualization based on the circular economy adaptation. Moreover, the gap in their investigation was related to the need for a more significant commitment to comprehensive information management and sustainable principles, which are essential to the notion of circular economy practices, as described by Fernando *et al*. (2022). Moreover, as Dey *et al*. (2022) point out, there is a need for additional understanding of the orchestration process that is required to make efficient use of circular economy practices in order to improve firm performance with a particular emphasis on sustainability.

Similarly, some previous studies have initiated a new concept based on the circular economy model and its application process, underlying theories, implementation and new technology adaptation models (for example, Ahmad *et al.,* 2023; Evans, 2023; Demartini *et al.,* 2023; Fatimah *et al.,* 2023) Scholars have undertaken circular economy related studies based on various industry contexts; for instance, in the SME sector (Zheng *et al.,* 2023a), the healthcare sector (Kandasamy *et al.,* 2022), the agri-production sector (Kowalska & Bieniek, 2022; Cavicchi *et al.,* 2022), the fashion industry (MacGregor Pelikánová & Sani, 2023; D'Adamo *et al.,* 2022), water treatment (López-Serrano *et al.,* 2023), the energy production sector (Jakubelskas & Skvarciany, 2023), and tourism and hospitality (Li *et al.,* 2023). This study focuses on the environmental and economic aspects of Bangladesh's garment organizations, and thus represents an emerging nation and one of the largest garment production contributors in the global market.

This research selected green garments in Bangladesh because of its global leading position and contribution to green business activities. The most recognized global certification and assurance for operating green garment factories is the Leadership in Energy and Environmental Design (LEED). The LEED accreditation program recognizes and rewards green factories for their environmental compliance. Many factories now use LEED-certified accreditation to represent their reduction of environmental threats and safeguard the ecosystem. Although there are more than hundreds of LEED-certified green garment factories worldwide, few stand out for their excellent sustainability. The factories decrease their environmental adverse effect, save resources, and encourage social accountability. Among the 100 top LEED green garment factories, most are in Bangladesh, and the rest of them are presented in Figure 1.

Sustainable businesses are financially feasible and contribute to the environment, the economy , and the society. One of the primary justifications for selecting the garment industry in Bangladesh is its notable position as a prominent global leader in the clothing production sector. Being the second largest exporter of garment products worldwide and having the highest number of certified green factories, Bangladesh's ready-made garment (RMG) industry has the potential to contribute to sustainable business activities and development. Rubel *et al.* (2021) indicated that in percentage terms the national revenue contribution to the overall export volume by the RMG industry is also substantial (84%). Moreover, the global garment industry is growing due to increasing demand for textiles, clothing, wool,

fabrics, and other garment products (Swazan & Das, 2022). Developing nations are working hard to build their clothing industries to boost their economies. The clothing industry is resource-intensive and energy-consuming. It takes a significant amount of natural resources to produce a sufficient quantity for the global market (Saha *et al.,* 2022).

Moreover, green structures, procedures, and strategies that consider the financial system, society, and ecology may facilitate the growth of the garment sector while protecting the environment (Swazan & Das, 2022). Bangladeshi apparel firms are joining the green revolution and targeting eco-conscious clients (Sarkar *et al.,* 2020). Sustainable workplaces are becoming more important in developing countries as their governments undertake long-term development plans with sustainable development objectives. Bangladesh has achieved economic growth by prioritizing sustainability in its long-term goals. The government will promote and execute the 2030 agenda's SDGs (Debnath *et al.,* 2024). Bangladesh is dedicated to creating sustainable infrastructure and operations, participating in global sustainability activities, and quickly assessing competitive advantages. Nevertheless, it is important to note that there is plenty of opportunity for enhancing the sustainability outcomes within Bangladesh's textile sector (Saha *et al.,* 2022). Promoting environmental efforts and encouraging active engagement from companies and researchers are essential for enhancing the sustainability performance of circular economy practicing garment companies in Bangladesh. Additional investigation is necessary to fully understand the circular economy concept within the specific framework of Bangladesh's garment sector.

Moreover, a considerable gap exists in the current state of research. Filling this gap is necessary to provide a foundation for the implementation of environmentally sustainable business practices specifically designed for garment companies. Considering the existing void in research and the notable impact of the industry on Bangladesh's economy, it is imperative to have a comprehensive understanding of the key elements that contribute to the implementation of environmentally sustainable business practices within this sector. Furthermore, it is vital to analyze the manner in which these aspects might be efficiently integrated to bolster competitiveness and foster sustainable development. This study demonstrates the "Resource-Based View" theory in order to discuss the theoretical basis for the posited relationships among constructs. Additionally, this research attempts to present empirical data supporting the relevance of this model within the RMG

sector in Bangladesh. This study indicates that organizations may improve their sustainable management and performance by adopting a resource-based view (RBV) paradigm and integrating it with the concept of the circular economy.

Chowdhury *et al.* (2022) stated that the organizational level of sustainable performance involves the evaluation of organizational performance considering social, environmental, and economic components. The fundamental perspective of the "triple bottom line (TBL)" does not focus on the economic factors alone, because this is deemed inadequate for evaluating sustainable performance (Chowdhury *et al.,* 2022). Thus, sustainable performance (SP) encompasses the viewpoints of several stakeholders, including shareholders and other interest groups, necessitating a comprehensive measuring strategy that considers multiple dimensions (Le *et al.,* 2022). Therefore, businesses need to endeavor to achieve a harmonious and cohesive integration of the economic, social, and environmental dimensions within the context of sustainable practices (Sudusinghe & Seuring, 2022). This study investigated sustainable performance through a representative sample of RMG organizations whose green practice have been certified by the Bangladeshi government. The *Bangladesh Garment Manufacturers and Exporters Association* (2024) gives this certification to validate their ecologically sustainable endeavors. The objective of this study is to investigate the relationship between circular economy practices and three-dimensional performance in garment organizations in Bangladesh. The research question for this study is: *Do circular economy practices have a relationship with sustainable performance?*

However, as shown in Figure 2, we propose three hypotheses on the relations between circular economy practices and the environmental, financial, and social performance of organizations. Additionally, this paper is organized into five distinct sections, beginning with a comprehensive presentation of the study's contextual background. The following section provides an overview of the relevant literature and proposed hypotheses. The third part of the paper delineates the methodology used in the research, followed by the section dedicated to analysis and discussion. Ultimately, the report culminates with a comprehensive examination of the implications, limits, and recommendations for future research endeavors.

Literature review

A discussion of the underlying theory, as well as the literature on the variables, the correlations between the variables, and the construction of hypotheses based on both the theoretical and the literary background, is included in the literature review of this research. The Resource-Based View (RBV) theory, which was developed by Barney (1991), serves as the basis for the theoretical framework that it employs in this investigation. According to the RBV theory, resources have no alternative, and it is necessary for the long-term functioning of an organization. As resources must always be effective and efficient enough to function successfully, RBV asserts that they must be maximum applicable. To achieve overall organizational success, the organization must focus on the manufacturing process, which is vital; however, it mainly uses resources. On the other hand, the characteristics of natural resources are that they are one-of-a-kind, uncommon, non-replicable, and productive.

The concept of circular economy focuses on using environmentally friendly resources and skills to reduce waste, maximize resource efficiency, and encourage recycling (Ren *et al.,* 2023). The integration of circular economy practices enhances the utilization of precious and limited resources, resulting in a competitive edge and sustainable performance (Kristoffersen *et al.* (2021). The circular economy is a system that combines economic, environmental, and social variables to improve sustainability (Chaudhuri *et al.,* 2022) and promote sustainable development (Ren *et al.,* 2023). The circular economy enhances RBV's strategic capabilities (Samadhiya & Agrawal, 2023), which is a distinctive advantage for achieving success. The recent studies on Resource-Based Views (RBV) focus on the connection between environmental sustainability in manufacturing and the enhancement of total business performance (Graham *et al.,* 2023). Companies use resource-based capabilities in the green manufacturing process to implement sustainable practices (Graham *et al.,* 2023) throughout sourcing, production, remanufacturing, reusing, and waste management.

This study highlights circular economy practices at the organizational level to emphasize the concept of maximum utilization of resources. In this context, circular economy practice concentrates on enhancing the life cycle of materials. The practices of the circular economy make it easier to acquire economic material rather than natural resources, which is necessary for the organization to achieve sustained organizational performance. However,

circular economy practices are a strategic instrument that is applicable to create business opportunities compatible with the circulation system and patterns. The enhancement of the capacity to meet the growing demand for all products and services, the improvement of resource efficiency, and the reduction of waste and pollution are all included in this. These measures have positive effects on both the environment and the economy.

Circular economy practices

The basic concept of the circular economy is to deal with the problem of the limited availability of natural resources (Pizzi *et al.,* 2022). Consequently, circular economy practices have become a prominent business and economic model that provides organizations with an alternative method of using resources. It focuses on the importance of recovering and regenerating resources once a product has reached the end of its useful life (Cavicchi *et al.,* 2022). Companies focusing on circular economy practices strive to use recycled materials and closed-loop systems for their raw materials. They strive to minimize the consumption of natural resources, eliminate energy waste, decrease emissions, and avoid pollution. The above objectives of circular economy practices have been highlighted by Shevchenko *et al.* (2023), Le *et al.* (2022), and Cavicchi *et al.* (2022). Organizations have adopted business models incorporating circular economy principles, including resilience, recycling, reuse, maintenance, reshaping, renovation, capacity-sharing, and decomposition. The aim is to optimize the use of resources and ensure efficiency.

The primary goals of circular economy practices are to minimize waste and enhance resource and energy efficiency, as acknowledged by Chembessi *et al.* (2022). These activities of the circular economy represent the development of the notion known as the 3R, i.e., reduce, reuse, and recycle. The term 'reduce' refers to examining approaches to alter the composition of raw materials, enhance production and consumption procedures, and restructuring processes (Shevchenko *et al.,* 2023). In a similar vein, Schöggl *et al.* (2024) defined the term ‘reuse’ as the practice of using items that have reached the end of their life cycle in order to minimize the need for raw materials and other resources in the creation, production, and consumption of new products. When reducing or reusing trash is impossible, recycling becomes a beneficial alternative. The term ‘recycling’ represents effective utilization of limited resources by converting waste materials into valuable

commodities (Blinova *et al.,* 2022). In conclusion, the integration of the 3Rs, i.e., reduce, reuse, and recycle leads to improved resource efficiency, which positively relates to benefits for the enterprises environmentally, economically, and socially in general (Pizzi *et al.,* 2022).

Sustainable firm performance

Manufacturing companies are addressing more environmental issues and improving their sustainable performance based on the requirements of shareholders, regulators, and investors (Le *et al.,* 2022). To attain sustainable corporate performance, they must address sustainability issues driven by a disparity of financial, social, and environmental factors (Chaudhuri *et al.,* 2022). In this regard, Kristoffersen *et al.* (2021) indicated sustainable performance as a situation in which the company's success considers the impacts of its operations on people, the economy, and the environment. According to Hourneaux *et al.* (2018), profit, people, and the environment are the three concerns of the "triple bottom line (TBL) of performance" that represents the measurement of sustainable performance. Le *et al.* (2022) stated that sustainable performance increased the business's clientele, market share, and bottom-line performance. The notion of the triple bottom line involving social, environmental, and financial factors can be applied to examine sustainable performance at the organizational level (Kristoffersen *et al.*, 2021).

Thus, this study uses the TBL model to assess corporate performance since organizations must adopt sustainability for their current and future success (Hourneaux *et al.*, 2018). According to Hourneaux *et al.* (2018), sustainable performance includes social, environmental, and economic factors in organizational outcomes, representing a three-dimensional measuring approach to account for shareholders and other stakeholders (Le *et al.*, 2022). A company's environmental performance may be measured by its capacity to reduce air emissions, effluent waste, hazardous materials, and environmental incidents, according to Kristoffersen *et al.* (2021). In contrast, Chaudhuri *et al.* (2022) defines social performance as the real effects of green practices on a company's image and goods as viewed by workers, customers, suppliers, and the broader public. Economic performance is the financial and marketing performance from green practices compared to industry averages (Le *et al.,* 2022). In this research, circular economy prac-

tices influence the performance of the organization's 'environmental,' 'economic,' and 'social' perspectives.

Hypotheses development

Circular economy practices and environmental performance

Previous empirical evidence has explored the association between circular economy practices and environmental performance. These studies were focused on the overall results of organizations (Małys, 2023; Marrucci *et al.*, 2022a). According to the results of the research carried out by Ncube *et al.* (2022), there is a favorable connection between the implementation of circular economy-based approach and the enormous enhancements in the environmental performance of organizations. All the company's stakeholders benefited from the relationship between circular economy practices and environmental performance (Rahaman *et al,* 2023; Dvorský *et al,* 2023a). According to the scholar's (For example, Dvorský *et al,* 2023b; Nishitani *et al.*, 2022) suggestions, the association between circular economy and ecological performance revealed ultimately advantages for the company itself. In this regard, Nishitani *et al.* (2022) advocated that the use of technology and the creation of innovative solutions have the potential to improve the practices of the circular economy, which would eventually result in improved outcomes for the benefit of the ecosystem.

Consequently, the characteristics discussed above have the potential to substantially impact on environmental performance, considering the implications that they have for ecological concerns and environmentally sustainable practices (Ogutu *et al,* 2023; Kiba-Janiak *et al,* 2022). It has been a great concern from all industrial stakeholders that organizations would prioritize adjusting to the changing corporate environment, environmental issues, and need to save resources, and not only concentrate on their business benefits because of the existence of fierce competition (Hasan *et al.,* 2023; Tang *et al.,* 2022). On the other hand, the circular economy strategy can make the resource utilization more convenient for the organization to fully appreciate the benefits that come with making the change to more environmentally

friendly approaches (Kiba-Janiak *et al,* 2022; Jagoda *et al,* 2023). Therefore, the present research proposes its first hypothesis as follows:

Hypothesis 1: *Circular economy practices have positive relationships with environmental performance.*

Circular economy practices and financial performance

The research by Uhrenholt *et al*. (2022) demonstrates that the financial side of sustainability has been a notable field of study. Several academic studies have made significant contributions to this area of the literature. Because some acts may negatively impact economic performance, organizations must take into consideration measures that encourage financial sustainability. Consequently, it is of the utmost importance to conduct a comprehensive analysis of the effect of circular economy practices, specifically focusing on the economic aspects of sustainable performance (Skvarciany *et al*., 2021). The notable point is that when businesses concentrate substantially on a specific indicator, they are mainly concerned with the financial success of their operations (Ogutu *et al*., 2023; Zheng *et al*., 2023b). The financial concern in sustainability is especially highlighted in the context of emerging countries and Asian nations. On the other hand, the emphasis placed on financial success is especially relevant in developing countries, where there is a need for further empirical research that investigates the role that circular economy practices play in the achievement of long-term benefits.

Several scholars (for example, Stjepanovic *et al*., 2023; Zheng *et al*., 2023b; Ogutu *et al*., 2023) focused on green practices, green economy, and sustainable performance, where they mainly highlighted the financial outcomes and success. In another similar research, Skvarciany *et al*. (2021) examined the relationship between circular economy and sustainability, where the authors represented economic sustainability in OECD countries. Similarly, Ogutu *et al*. (2023) discussed the past and present trends of business organizations to achieve sustainable competitive position. The researcher advocated that previously, businesses were focused only on financial gain, whereas businesses are changing this financial benefit-based concentration to additional focuses on environmental and social issues. Further studies by Fernando *et al*. (2022) and Rehman Khan *et al*. (2022) also argued that most of the studies that have been done investigating the prac-

tices of the circular economy have concentrated on the financial performance of the organization. Considering the above discussion and literature support, this research presents the following second hypothesis:

Hypothesis 2: *Circular economy practices have positive relationships with financial performance.*

Circular economy practices and social performance

According to Kuzma *et al*. (2021), the practices of the circular economy encourage the development of methods that are more sustainable, healthier, and better able to convert waste into resources for the production chain. The operations of a circular economy contribute in various ways to social challenges present in business, in contrast to the conventional linear economy, which is only focused on profit. Within the framework of a circular economy, businesses go beyond the realm of financial success metrics and into the realm of social objectives. According to Singh *et al*. (2022), all corporate efforts are motivated by aims directed towards the circular economy. The primary objective of the circular economy is to preserve the value of resources in order to ensure the long-term viability of businesses (Le *et al*., 2022). The "triple bottom line" idea of sustainable performance involves evaluating the economic, environmental, and social sustainability of the organization. In the case of achieving sustainability, the circular economy practice is a unique approach apart from other aspects.

However, it is anticipated that circular economy practices will drive production through a distinct method that will promote resource circulation, minimize the use of virgin materials, reduce resource shortages, and prolong product lifespan in order to protect society (Velenturf & Purnell, 2021). Activities that are part of a circular economy maximize the generation of resource value while simultaneously lowering the amount of energy used, waste, and pollution, boosting productivity, and elevating social values. The tactics of the circular economy improve the social performance of businesses, which eventually results in a social system that is in good health. Consequently, based on the RBV theory idea, the following hypotheses are presented to be responsible for the association between circular economy practices and sustainable societal performance:

Hypothesis 3: *Circular economy practices have positive relationships with social performance.*

Research method

Research design, survey measurement, and scaling

The current study employs a quantitative research methodology, using a cross-sectional survey design to collect primary data from the participants. Malhotra and Das (2017) suggested that participants in cross-sectional studies are less likely to refuse cooperation with research when compared to those in longitudinal investigations. Therefore, cross-sectional studies are seen as more convenient in this context. We employ a 6-item scale adapted from Kristoffersen *et al.* (2021) to measure the circular economy, and each of the three dimensions of SFP (environmental, economic, and social) used five items, derived from Yildiz and Sezen (2019). All responses are measured using a 5-point Likert scale extending from 1 (strongly disagree) to 5 (strongly agree). The questionnaire items are represented in Appendix.

Questionnaire design, data collection, pre-testing, and pilot testing

Primary data was collected from the participants using a standardized survey questionnaire. The survey instrument was developed with the intention of promoting efficient contact with participants so that it is fully understandable to them. During the first phase, we conducted a pre-test of the questionnaire using the 'protocol' method. A sample of 15 participants was selected for the purpose of administering the questionnaire to evaluate the effectiveness of the survey questions' phrasing and layout. Following this, a pilot study was also undertaken, using a cohort of 42 individuals (10% of the total sample size of 418) based on the recommendation of Memon *et al.* (2017), to establish the dependability of the scales for the intended use in the extensive research project. In previous academic investigations, researchers have proposed that a sample size of 15 participants is sufficient for pre-testing. Memon *et al.* (2017) asserted that a pilot test should ideally include a sample size of between 10 and 30 respondents.

Hence, the chosen sample sizes for pre-testing and pilot testing are deemed adequate in accordance with the defined criteria.

Target population, unit of analysis, and sampling method

The target population of this research are the managers who are working in the LEED certified green garments in Bangladesh. According to *Textile Focus* (2023), there are 49 LEED-certified green garments in Bangladesh. We followed some inclusion criteria for these garments: first, those that have been in operation for more than ten years; second, those that have more than 500 workers; and finally, those garments are in the platinum category (the best scorer in green activities). Based on these criteria, we found 26 garments to be included. The unit of analysis of this research is the full-time managers who are working in the selected green garment companies and possess the necessary academic qualifications and cognitive abilities to comprehend the questions. The focus of this study was on the RMG industry in Bangladesh, due to its significant economic impact on the country's GDP as documented by the *Bangladesh Bureau of Statistics in 2023*. However, this is organization-based research; the study investigates the performance at the organizational level, but based on the perception of the managers of those organizations. Each organization was represented by their managers. Moreover, managers have been selected from three levels (lower, mid, and higher) to generalize the representation of the entire company. Thus, it is fully representation of the overall organization through the manager of the company.

The researchers applied G*power testing to determine the sample size, following the recommendation of Faul *et al*. (2009). In addition, Memon *et al*. (2017) and Hair *et al*. (2021) have highlighted the importance of utilizing power analysis to ascertain the appropriate sample size in social science studies. Based on G*power analysis, a sample size of 77 is a minimum requirement for a research model with three constructs, whereas a medium effect size of 15 for 80% power with a 5% level of significance (Faul *et al*., 2009). In this regard, Malhotra and Dash (2017) recommended that for structural equation modelling, each variable should be assessed with a minimum of three items or scales in the investigation; likewise, commonalities are desirable to be at least 0.5. Moreover, Malhotra and Dash (2017) suggested that a sample size of at least 200 is considered acceptable in a structural equation modelling analysis. This research involved the as-

sessment of four implicit variables, with each of the three dependent variables being evaluated using a minimum of five items, whereas the independent variable used six items for evaluation. Based on the abovementioned recommendations and discussions, the researchers in this study assume that the sample size chosen for this study is acceptable for proceeding to the next step.

The present research used a judgmental (or purposive) sampling technique to gather primary data from a total of 418 managers working in green garment organisations located in Bangladesh. Based on the suggestion of Krause (2019), the purposive sampling strategy was used for the selection of respondents in order to address the difficulties inherent in using random sampling methods within the realm of social scientific research. In addition, it was impossible to obtain a full sample frame, since a significant number of organisations declined to provide the whole list of their staff. As a result, we were inclined to choose a non-probability sampling technique. Hulland *et al.* (2017) recommended non-probability sampling procedures, since they may provide favourable results when researchers want to assess theoretical models without engaging in large generalisations. The current study is centred on the validation of a research model that has been developed based on previous theoretical findings. Therefore, the justification for the use of non-probability sampling in this investigation is acceptable.

We have distributed 800 questionnaires using conventional approaches, and we have received a total of 493 responses. During the questionnaire screening process, we discovered several participants who did not respond appropriately, had missing responses, blank or partial responses, or provided straight-line answers. Ultimately, 418 surveys were completed and deemed suitable for further analysis. In conclusion, the analysis included a total of 418 participants, surpassing the minimum required sample size of 386 as recommended by Kline (2023) and Faul *et al*. (2009). In addition, the study achieved a response rate of 52.25%. Regarding this issue, in earlier studies accomplished in several Asian nations, researchers obtained response rates ranging from 47.2% (Mahmud *et al*., 2023) in Bangladesh, 41.8% (Qing *et al*., 2023) in China, and 35.7% (Karim *et al*., 2023) in Malaysia.

Data analysis techniques and tools

In this study, to enter and encode data, the descriptive analysis was conducted using SPSS version 25. Additionally, the measurement and structural model were assessed using the PLS-SEM approach. The PLS-SEM analysis was performed using Smart-PLS version 4. The rationale for using PLS-SEM over covariance-based SEM is the prediction-oriented statistical approach, which exhibits robustness in handling non-normal data and small-sized samples (Hair *et al.,* 2014; Hair *et al.,* 2013). A point to note is that there are two commonly used methodologies for estimating the parameters of Structural Equation Modelling (SEM): the covariance-based approach (CB-SEM) and the variance-based approach (VB-SEM). According to Urbach and Ahlemann (2010), CB-SEM utilizes the maximum likelihood (ML) method to minimize the difference between the observed covariance and the expected covariance predicted by the theoretical model. If the data distribution follows the normality assumption of CB-SEM, the ML function can be used. Chin and Newstead (1999) confirmed that if researchers are required to ensure the accuracy and reliability of CB-SEM analysis, a larger sample size is required, for example, 200 to 800 cases.

This study employed VB-SEM to estimate the parameters of the model through an analysis of loadings and path values. Moreover, the methodological aim was to reduce the difference between the sample covariance and the predicted covariance values from the theoretical model. In addition, the VB-SEM procedure decreases the covariance matrix of the observed measurements' overall suitability (Urbach & Aklemann, 2010). CV-SEM is specifically designed for testing theories and is particularly suitable for confirmatory research. PLS-SEM is a statistical technique known as structural equation modelling (SEM) that utilizes variance analysis. The PLS-SEM method is commonly employed when researchers aim to predict and explain the variation of significant target components by utilizing multiple explanatory constructs (Hair *et al*., 2014). The PLS-SEM approach emphasizes maximizing the explained variation in the dependent variable through the independent variable rather than solely focusing on the covariance that explains the relationship between items. Moreover, the rationale for selecting Smart-PLS over AMOS was that Smart-PLS can generate the outcomes of both the compound measurement model and the structural model concurrently (Kline, 2023). Therefore, due to its ability to make accu-

rate predictions the current study employed PLS-SEM to analyze and interpret the data.

Profile of the respondents

According to Table 1, the demographic information regarding the participants states that around 47.6 percent of the managers in these certified green RMG organizations are female, while 52.4% are male. Additionally, based on the survey data, 45.9% of the participants have obtained a Post-Graduation/Masters degree, while 50.5% possess a General Bachelor or Business degree. A large percentage of respondents, i.e., 45.2%, are in the 35 to 44 year old age group. Moreover, most respondents (46.2%) reported having been employed in their current organization for 1 to 10 years, while a significant proportion (29.7%) reported having worked for 11 to 20 years. Table 1 shows the profile of the respondents.

Results

Common method bias

The research included modifying the sequence of survey factors. In order to mitigate the possible impact of common method bias (CMB), the scale length was decreased in accordance with the suggestions made by Podsakoff *et al*. (2003). The maintenance of secrecy regarding the replies supplied by the participants was likewise upheld. The inquiry also evaluated the efficacy of Harman's single-factor test (Harman, 1976) as a statistical approach for detecting CMB. According to Podsakoff *et al.* (2003), the measurement process is not substantially affected by CMB if a single component does not account for more than 50 percent of the covariance among the measures and variables. The results of this investigation (Table 2) suggest that the un-rotated single latent component accounts for less than 50% of the observed variance, specifically 32.86%. Therefore, it can be claimed that the CMB is not a problem within the framework of our study.

Subsequently, Kock (2015) proposed that Variance Inflation Factor (VIF) values obtained from an extensive collinearity test might indicate pathological collinearity and a potential intrusion of a model by common method bias. If all the VIF values derived from SEM analysis in the inner model are

less than or equal to 3.3, it indicates that the model does not possess any common method bias (Kock, 2015). Thus, based on the VIF values in Table 3, this study is not affected by common methos bias.

Measurement model

This study employed a measurement model and confirmatory factor analysis to assess scale validity and reliability. Instrument reliability was evaluated using composite reliability (CR), convergent validity using item loadings, and the average variance extracted (AVE) test. The instrument's discriminant validity was also examined using the Fornell-Larcker and Heterotrait-Monotrait Ratio (HTMT) criteria (Hair *et al.,* 2014). According to Henseler & Chin (2010), each item loading should be greater than 0.70, the average item reliability (AVE) should be greater than 0.50, and the correlation reliability (CR) should be greater than 0.70. Pertinently, Table 4 demonstrates that all items except SCPRF5 (0.597) scored higher than the required value, thus meeting the recommendations (Hair *et al.,* 2021; Henseler & Chin, 2010). The variables' composite reliability (CR) exceeded the threshold (CR > 0.70). Thus, the measurement model achieves convergent validity and composite reliability (Figure 3 — the measurement model before conducting confirmatory factor analysis (CFA); Figure 4 — after conducting CFA).

This study further evaluated discriminant validity using the Fornell-Larcker criterion test (Hair *et al.,* 2014). Following the Fornell-Larcker parameters, it is expected that the latent constructs of non-diagonal variables will exhibit values smaller than the square root of the AVE of all constructs. According to Hair *et al.* (2014), the findings presented in Table 5 demonstrate that this study satisfies the criteria for discriminant validity. Henseler *et al.* (2015) suggested that the HTMT criterion shows better empirical results when assessing discriminant validity than the Fornell-Larcker criterion. Based on Henseler *et al.* (2015), Table 6 shows that all HTMT values were below the threshold of 0.850, proving adequate discriminant validity. Therefore, the composite reliability scores of the unobserved variables surpassed the threshold of 0.70. In addition, the measurement model's predictive relevance was assessed using Stone-Geisser's Q^2 examination (Geisser, 1974; Stone, 1976). Furthermore, Henseler and Chin (2010) advised that the cross-validation redundancy of the construct's score in Q^2 should possess a value greater than zero (0). Concerning this specific criterion, Table 7 of

this study likewise shows the results of predictive relevance of the dependent variables and Table 8 demonstrates PLS prediction report.

Structural model

Based on the evaluation of the reliability and validity of the items, a structural model was constructed. In this model, the circular economy was considered the exogenous construct, while environmental, financial, and social business performance were regarded as the endogenous constructs. The results show that CEP has a positive impact on ENPRF ($\beta = 0.278$, $p < 0.05$), FNPRF ($\beta = 0.271$, $p < 0.05$), and SCPRF ($\beta = 0.294$, $p < 0.05$), significantly supporting the hypotheses. Therefore, the current study indicates that the circular economy positively affects three aspects of SFP. Table 9 presents direct effects among the variables. However, based on the beta value of Table 9 it is shown that circular economy practices make maximum contributions to social performance, and make comparably minimum contributions to financial performance. In this study, Figure 5 shows the PLS-SEM generated structural model including T-values and Figure 6 represents structural model with p values.

Discussion

This study examines the relationships among circular economy practices and tree dimensions of sustainability in perspective of organizational performance in Bangladeshi green garments. That is why this study intends to provide a thorough report of the obtained data, including the representation of the scientific data analysis approach. The findings are derived from the measurement model, explicitly indicating that the model's accuracy and credibility are substantially confirmed, as previously shown. It has been determined that the measurement model is within the acceptable threshold criteria. Therefore, the reliability criteria for the proposed model were fulfilled by establishing enough internal consistency by examining factor loading, alpha, CR, and AVE values for all variables; moreover, the impacts of the suggested structural model were discovered. The results obtained from the t-test are used to conduct an empirical analysis.

The result of the present statistical analysis, as shown in Table 9, indicates a β coefficient of 0.278, a T-value of 6.274, a VIF of 1.000, and a p-

value less than 0.05. Based on the significance criteria proposed by Hulland *et al*. (2017), the findings indicate that circular economy practices have a significant and positive effect on environmental performance. The statistical research reveals a favorable linear correlation between circular economy practices and environmental performance. The T value is 6.274, indicating a statistically significant association between circular economy practices and environmental performance. The P value validates the statistical significance of the correlation between the two constructs. The VIF value indicates the absence of any substantial problem of multicollinearity among the dependent constructs. Consequently, H1 is significant and demonstrates that the managers of green garments in Bangladesh believe that implementing circular economy practices can improve the environmental performance of their organizations. Finally, the first finding of this study represents that garment companies must adopt and implement circular economy approaches to improve their environmental performance (Islam & Halim, 2022). The results of this research were similar to those of some earlier studies, although a few results contradict previous research. The first result of this research shows a significant association between circular economy practices and environmental performance. Previously, Marrucci *et al*. (2022b) and Harris *et al*. (2021) identified a similar correlation. However, Schwarz *et al*. (2021) found an insignificant association between circular economy practices and environmental success in the plastic recycling industry.

The second finding ($\beta = 0.271$, T-value = 5.781, VIF= 1.000, $p< 0.05$) indicates that circular economy functions have a statistically significant and positive impact on financial performance. Based on Sekaran and Bougie's (2016) recommendation, the beta value and T value of the second result reveal a positive linear correlation between circular economy practices and financial success. The P value provides evidence of the statistical significance of the link between the two variables. The VIF score indicates the absence of any substantial multicollinearity problem among the independent variables. Consequently, H2 is endorsed, indicating that according to the perceptions of managers in garment organizations, circular economy activities substantially contribute to the company's economic performance. Therefore, these findings indicate that garment managers, investors, and other stakeholders should prioritize the adoption of circular economy techniques in order to get improved financial outcomes (Islam & Halim, 2022). Previous studies from Uhrenholt *et al*. (2022) and Rodríguez-González *et al*.

(2022a) supported this result. According to Rodríguez-González *et al*. (2022b), to achieve sustainability, changing the manufacturing process is difficult, but circular economy practices improve the company's financial outcome. In a production-consumption study on circular economy practices, Chembessi *et al.* (2022) found that circular economy practices can affect productivity through radical organizational change and new system adaptability. In another similar study, Schwarz *et al.* (2021) found that, although several studies may have identical subjects, the findings may differ owing to the uniqueness of each research context, region, cultural background, and respondents' perspectives.

However, the final result of this study ($\beta = 0.294$, T-value = 7.885, VIF = 1.000, $p < 0.05$) indicates a substantial and positive correlation between circular economy practices and social performance. The standardized regression coefficient, Beta value (0.294), indicates a statistically significant positive linear link between circular economy practices and social performance. This finding is verified by Sekaran and Bougie (2016). The T statistic value of 7.885 and the P value of 0.000 provide strong evidence to support the statistical significance of the association between circular economy practices and social performance. The VIF score of 1.000 indicates the absence of any severe multi-collinearity problem among the variables. Therefore, H3 is statistically significant, indicating that the managers of green garments have a good and favorable assessment of how circular economy methods contribute to social performance. Consequently, this research proposes that organizations have the potential to convert their non-environmentally friendly firms into manufacturing processes that align with the principles of a circular economy. Previously, Singh *et al.* (2022) and García-Muiña *et al.* (2021) demonstrated that circular economy practices accelerate optimal social performance. Furthermore, Rodríguez-González *et al.* (2022b) suggested that circular economy practices are the best solution for all environmental, economic, and social outcomes. Although there are empirical examples of information flow facilitating circular economy practices, and researchers have made progress in understanding the connection between circular economy practices and sustainable performance (Marrucci *et al.*, 2022b; Rodríguez-González *et al.*, 2022a), there is still a significant gap in empirical research regarding the specific mechanisms and circumstances in which circular economy practices can enhance firms' sustainable performance.

The current study represents multifaceted empirical findings representing RMG workers' perceptions in Bangladesh. Employees in this sector generally believe that all CEP efforts contribute to SFP, productivity, and growth. However, the findings of this study exhibited similarities with some previous investigations (for example, Uhrenholt *et al.,* 2022; Rodríguez-González *et al.,* 2022a) while also presenting some contrasting outcomes in relation to past research (such as Chembessi *et al.,* 2022; Schwarz *et al.,* 2021), for various reasons. One potential explanation for the discrepancy between the current findings and other research is that managers within environmentally conscious RMG organizations may not perceive CEP as a significant and essential need for SFP. This notion is substantiated by the findings of Chembessi *et al.* (2022), who demonstrated that some investors believe that the practices of circular economy may lead to additional costs to achieve their sustainable performance.

Theoretical implications

This finding has numerous significant theoretical implications. The primary contribution of this research is to the existing literature on continuous improvement and sustainable RMG. The study was carried out among managers in an emerging nation's large-scale green RMG production scenario. Managers within this field possess extensive knowledge in this professional sphere. One of the earliest empirical investigations to look into the topic is presented here to investigate the interrelationships between CEP and SFP in Bangladesh's green RMG manufacturing context. Therefore, the extant body of knowledge regarding the primary constructs under investigation has been expanded. Based on the RBV theory, this research revealed that green RMG managers' CEP is vital for extending and integrating SFP in RMG production. The application of RBV theory conceptualizes the managers in Bangladeshi green RMG manufacturing companies as understanding how manager-subordinate interactions and relationships contribute to organizational performance.

However, this study departs from the standard method of measuring SFP from a multifaceted perspective to understand the significance of SFP for managers in the RMG manufacturing business in Bangladesh. Yildiz and Sezen (2019) conceptualized SFP from a more recent perspective. The authors indicated that there are substantial distinctions between "traditional company performance" and "sustainable performance." Despite the dif-

ferences, relationships exist between the three SFP dimensions and other constructs. According to Yildiz and Sezen (2019), employing a multidimensional model of SFP represents the generalization of the total performance. In terms of sample selection, the present research differs from previous studies. This study examines the perceptions of managers currently employed in the 26 certified green RMG organizations in the platinum category. Bangladesh, the world's second-largest manufacturer of RMG, is at the forefront of sustainable green industrialization, and has several of the world's top-ranked green factories.

Therefore, the sample from the survey utilized in this study has increased the variety of samples used to comprehend the CEP concept in various contexts. This study theoretically verifies the lack of conclusive evidence regarding CEP. This study emphasizes the influence of CEP (reduce, repair, reuse, recover, recycling, and remanufacturing) on SFP in large-scale RMG production. Applying the RBV theory, this study found that CEP contributes to a positive impact on managers' SFP. There is a general trend towards using CEP to influence desired outcomes, such as affecting organizations' eco-friendly output.

Practical implications

This finding demonstrates the significance of encouraging senior management in the large-scale manufacturing sector to implement CEP to increase the aggregate SFP. RMG managers will be responsible for promoting awareness and initiating CEP programs, as they know the need to demonstrate CEP, specifically programs which reduce, repair, reuse, recover, recycle, and remanufacture. CEP programs must focus on educating employees about the significance of SFP and preparing them with the skills necessary to implement such practices. This study indicates that CEP can establish an organization's green employee management standards and sustainable behavior guidelines. Policies on reducing, repairing, reusing, recovering, recycling, and remanufacturing can highlight the environmental stance of green garments to attract prospective employees with an ecological perspective and concern for sustainable garments.

Furthermore, initiatives to increase ecological knowledge and cognizance of energy conservation and resource optimization are essential, as personnel with environmental expertise are more likely to participate in CEP. Consequently, Rubel *et al*. (2021) suggested that recognizing employ-

ees for their positive environmental practices and dealing with environmental responsibilities would increase employee enthusiasm, leading to more effort in environmental activities for sustainable RMG businesses. This research underlines the effect of CEP on sustainable RMG and the normative importance of CEP. Yildiz and Sezen (2019) identified that all SFP dimensions have similar importance, and organizations should emphasize all types of performance equally.

Organizational leaders should make further contributions, in addition to disseminating and putting into practice green policies (Robertson & Carleton, 2018). The commitment and support of organizational leaders are critical to business success in sustainability issues (Yamoah *et al.,* 2022). Therefore, leaders' sustainability attitudes can be a credible communication tool for influencing performance concern patterns within RMG organizations (Islam & Halim, 2022). To solve industrial crises, managers can act as role models for their organization's stakeholders (Ünal *et al.,* 2019). Employees are more likely to participate in green activities if they view their managers as influential organizational leaders who promote green projects and expect others to do the same. The importance of effective leadership communication in advancing sustainability or green initiatives has been underlined. Managers in RMG who are interested in and committed to going green are expected to set an example for their teams and employers.

SFP is crucial for managers, since they have direct contact with their subordinates; their actions, responsibilities, and tasks would further encourage their subordinates to perform similarly. The findings of this sustainability study are also helpful to policymakers in addressing the environmental concerns of industrial organizations, in this case, those focused on the garment industry's labor force. Policymakers could provide green guidelines, encouraging employees to participate in future voluntary tasks such as cleaning campaigns and recycling days to improve the environmental performance of their garment businesses. As outlined in green guidelines, sustainable performance would be integrated into daily operations. Policymakers concerned with sustainability should ensure that businesses adopt eco-friendly practices that boost their environmental impact when implementing circular economy.

Limitations and future research

Like earlier studies, the present study acknowledges its methodological and theoretical shortcomings, which provide the opportunity for future research. First, this study collected cross-sectional data at a single point using a non-probability sampling method, i.e., purposive sampling. Future research may employ a probability sampling technique and longitudinal data to examine the changes in organizational performance over time to acquire a deeper understanding. Second, other non-green garment organizations in Bangladesh should be covered by research to determine what they consider green, as both green and non-green garments contribute to the Bangladesh Government's sustainability objective. In addition, further study can focus on a cross-cultural context, including a multidimensional perspective of CEP in labor-intensive manufacturing organizations. The consequences of empirical findings from this study based on Bangladesh may not contribute internationally.

Employing PLS-SEM is another limitation because PLS-SEM cannot evaluate the model's goodness of fit. Future research might use the LRM approach or mixed-method approach to investigate further the connection between CEP and sustainable results of the corporations. This study's intended participants were limited to garment managers. As a study population, further studies should encompass another level of employees. In addition, this study investigates the influence of CEP on three dimensions of SFP. Future research should emphasize organizational policies to minimize adverse environmental behaviors. In addition to SFP, prospective studies should explore the development of green behavior and employee perception; it may consider both enacted and professed values. In conclusion, despite the limitations described earlier, the research provides some basis for the suggested framework of study and an empirical premise for future comparisons.

Conclusions

The present study indicates that to facilitate the adoption of a circular system, the RMG sector needs to provide support from both regulatory bodies and government agencies. Moreover, the unfavorable perception of circular economy and the issue of deprivation need governmental motivating initi-

atives and subsidies to promote the environmental consciousness of firms. The local government should provide more regulatory support, policy implications, special loan facilities, and a tax rebate for the environment-related activities of the companies. Green garment organizations have realized that organizations should support and implement green organizational initiatives, leading to sustainable performance, in response to the growing trend of environmental responsibility. This study expanded circular economy related understanding of manufacturing greening literature based on circular economy practices by concentrating on garment managers' eco-friendly perception. The garment industry is a significant economic driver, but it should not be judged only on its contribution to GDP or export revenues; it should also be held to a higher standard if it actively works to improve the environment in which it operates.

The research presented here highlights the emerging notion of circular economy practices as a collection of green environments, resource maximization, energy conservation, and recirculation of resources perceived as facilitators in fostering sustainable productivity in the workplace. The impact of circular economy practices on sustainable corporate performance suggests that organizations should have a system for circling resources to develop sustainable business performance conditions. In addition, the managers' perspective on sustainable performance suggested that organizations must recognize the significance of the emergence of a circular system. Organizations could use this knowledge to engage themselves and their members in establishing an environment conducive to promoting circular economy practices among all employees to attain long-term competitive advantages and enhance company performance. The findings encourage policymakers to evaluate the actions of garment managers regarding the optimization of resources and the conservation of energy, as well as the factors that motivate garment managers to display such sustainable performance.

References

Ahmad, F., Bask, A., Laari, S., & Robinson, C. V. (2023). Business management perspectives on the circular economy: Present state and future directions. *Technological Forecasting and Social Change*, *187*, 122182. https://doi.org/10.1016/j.techfore.2022.122182.

Alonso-Almeida, M., Rodriguez-Anton, J. M., Bagur-Femenías, L., & Perramon, J. (2021). Institutional entrepreneurship enablers to promote circular economy in the European Union: Impacts on transition towards a more circular economy. *Journal of Cleaner Production*, *281*, 124841. https://doi.org/10.1016/j.jclepro.2020.124841.

Andooz, A., Eqbalpour, M., Kowsari, E., Ramakrishna, S., & Cheshmeh, Z. A. (2023). A comprehensive review on pyrolysis from the circular economy point of view and its environmental and social effects. *Journal of Cleaner Production*, *388*, 136021. https://doi.org/10.1016/j.jclepro.2023.136021.

Atstāja, D., Cudečka-Puriņa, N., Hrinchenko, R., Koval, V., Grasis, J., & Vesere, R. (2022). Alignment of circular economy business models for framing national sustainable economic development. *Acta Innovations, 42,* 5–14. https://doi.org/10.32933/ActaInnovations.42.1.

Baah, C., Afum, E., Agyabeng-Mensah, Y., & Agyeman, D. O. (2022). Stakeholder influence on adoption of circular economy principles: Measuring implications for satisfaction and green legitimacy. *Circular Economy and Sustainability, 2*, 91–111. https://doi.org/10.1007/s43615-021-00093-2.

Bangladesh Bureau of Statistics (2023). Manufacturing sector in Bangladesh to generate employment. Retrieved from https://bbs.bg.org/manufacturing-sector-and-emplyment-generation-2019 (1.10.2023).

Bangladesh Garment Manufacturers and Exporters Association (BGMEA) (2024). Bangladesh has highest number of green garment factories. Retrieved from https://www.bgmea.com.bd/page/Bangladesh_has_highest_number_of_green_garment_factories (29.04.2024).

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, *17*(1), 99–120. https://doi.org/10.1177/014920639101700108.

Blinova, E., Ponomarenko, T., & Knysh, V. (2022). Analyzing the concept of corporate sustainability in the context of sustainable business development in the mining sector with elements of circular economy. *Sustainability*, *14*(13), 8163. https://doi.org/10.3390/su14138163.

Cavicchi, C., Oppi, C., & Vagnoni, E. (2022). Energy management to foster circular economy business model for sustainable development in an agricultural SME. *Journal of Cleaner Production*, *368*, 133188. https://doi.org/10.1016/j.jclepro.2022.133188.

Chaudhuri, A., Subramanian, N., & Dora, M. (2022). Circular economy and digital capabilities of SMEs for providing value to customers: Combined resource-based view and ambidexterity perspective. *Journal of Business Research*, *142*, 32–44. https://doi.org/10.1016/j.jbusres.2021.12.039.

Chembessi, C., Beaurain, C., & Cloutier, G. (2022). Analyzing technical and organizational changes in circular economy (CE) implementation with a TOE framework: Insights from a CE project of Kamouraska (Quebec). *Circular Economy and Sustainability, 2,* 915–936. https://doi.org/10.1007/s43615-021-00140-y.

Cheng, Y., Masukujjaman, M., Sobhani, F. A., Hamayun, M., & Alam, S. S. (2023). Green logistics, green human capital, and circular economy: The mediating role of sustainable production. *Sustainability*, *15*(2), 1045. https://doi.org/10.3390/su15021045.

Chin, W. W., & Newsted, P. R. (1999). Structural equation modeling analysis with small samples using partial least squares. In R. H. Hoyle (Ed.). *Statistical strategies for small sample research* (pp. 307–341). Thousand Oaks, CA: Sage Publications.

Chowdhury, S., Dey, P. K., Rodríguez-Espíndola, O., Parkes, G., Tuyet, N. T. A., Long, D. D., & Ha, T. P. (2022). Impact of organisational factors on the circular economy practices and sustainable performance of small and medium-sized enterprises in Vietnam. *Journal of Business Research*, *147*, 362–378. https://doi.org/10.1016/j.jbusres.2022.03.077.

Cullen, U. A., & De Angelis, R. (2021). Circular entrepreneurship: A business model perspective. *Resources, Conservation and Recycling*, *168*, 105300. https://doi.org/10.1016/j.resconrec.2020.105300.

D'Adamo, I., Lupi, G., Morone, P., & Settembre-Blundo, D. (2022). Towards the circular economy in the fashion industry: The second-hand market as a best practice of sustainable responsibility for businesses and consumers. *Environmental Science and Pollution Research*, *29*(31), 46620–46633. https://doi.org/10.1007/s11356-022-19255-2.

Debnath, B., Taha, M. R., Siraj, M. T., Jahin, M. F., Ovi, S. I., Bari, A. B. M. M., Islam, A. R. M. T., & Raihan, A. (2024). A grey approach to assess the challenges to adopting sustainable production practices in the apparel manufacturing industry: Implications for sustainability. *Results in Engineering*, *22*, 102006. https://doi.org/10.1016/j.rineng.2024.102006.

Demartini, M., Ferrari, M., Govindan, K., & Tonelli, F. (2023). The transition to electric vehicles and a net zero economy: A model based on circular economy, stakeholder theory, and system thinking approach. *Journal of Cleaner Production*, *410*, 137031. https://doi.org/10.1016/j.jclepro.2023.137031.

Dey, P. K., Malesios, C., Chowdhury, S., Saha, K., Budhwar, P., & De, D. (2022). Adoption of circular economy practices in small and medium-sized enterprises: Evidence from Europe. *International Journal of Production Economics*, *248*, 108496. https://doi.org/10.1016/j.ijpe.2022.108496.

Dvorský, J., Bednarz, J., & Blajer-Gołębiewska, A. (2023a). The impact of corporate reputation and social media engagement on the sustainability of SMEs: Perceptions of top managers and the owners. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *18*(3), 779–811. https://doi.org/10.24136/eq.2023.025.

Dvorský, J., Švihlíková, I., Kozubíková, Ľudmila, Frajtova Michalíková, K., & Balcerzak, A. P. (2023b). Effect of CSR implementation and crisis events in business on the financial management of SMEs. *Technological and Economic Development of Economy*, *29*(5), 1496–1519. https://doi.org/10.3846/tede.2023.19821.

Evans, S. (2023). An integrated circular economy model for transformation towards sustainability. *Journal of Cleaner Production*, *388*, 135950. https://doi.org/10.1016/j.jclepro.2023.135950.

Fatimah, Y. A., Kannan, D., Govindan, K., & Hasibuan, Z. A. (2023). Circular economy e-business model portfolio development for e-business applications: Impacts on ESG and sustainability performance. *Journal of Cleaner Production*, *415*, 137528. https://doi.org/10.1016/j.jclepro.2023.137528.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149.

Fernando, Y., Shaharudin, M. S., & Abideen, A. Z. (2022). Circular economy-based reverse logistics: Dynamic interplay between sustainable resource commitment and financial performance. *European Journal of Management and Business Economics*, *32*(1), 91–112. https://doi.org/10.1108/EJMBE-08-2020-0254.

García-Muiña, F., Medina-Salgado, M. S., González-Sánchez, R., Huertas-Valdivia, I., Ferrari, A. M., & Settembre-Blundo, D. (2021). Industry 4.0-based dynamic social organizational life cycle assessment to target the social circular economy in manufacturing. *Journal of Cleaner Production*, *327*, 129439. https://doi.org/10.1016/j.jclepro.2021.129439.

Geisser, S. (1974). A predictive approach to the random effect model. *Biometrika*, *61*(1), 101–107. https://doi.org/10.1093/biomet/61.1.101.

Graham, S., Cadden, T., & Treacy, R. (2023). Examining the influence of employee engagement in supporting the implementation of green supply chain management practices: A green human resource management perspective. *Business Strategy and the Environment*, *32*(7), 4750–4766. https://doi.org/10.1002/bse.3391.

Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modeling (PLS-SEM) using R: A workbook* (p. 197). Springer Nature.

Hair, J., Ringle, C., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long Range Planning, 46*(1-2), 1–12. https://doi.org/10.1016/j.lrp.2013.01.001.

Hair, Jr. J., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM). *European Business Review, 26*(2), 106–121. https://doi.org/10.1108/EBR-10-2013-0128.

Harman, H. H. (1976) *Modern factor analysis.* Chicago: The University of Chicago Press.

Harris, S., Martin, M., & Diener, D. (2021). Circularity for circularity's sake? Scoping review of assessment methods for environmental performance in the circular economy. *Sustainable Production and Consumption*, *26*, 172–186. https://doi.org/10.1016/j.spc.2020.09.018.

Hasan, M., Abedin, M. Z., Amin, M. B., Nekmahmud, M., & Oláh, J. (2023). Sustainable biofuel economy: A mapping through bibliometric research. *Journal of Environmental Management*, *336*, 117644. https://doi.org/10.1016/j.jenvman.2023.117644.

Henseler, J., & Chin, W. W. (2010). A comparison of approaches for the analysis of interaction effects between latent variables using partial least squares path modeling. *Structural Equation Modeling*, *17*(1), 82–109. https://doi.org/10.1080/10705510903439003.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of Academy of Marketing Science, 43*(1), 115–123. https://doi.org/10.1007/s11747-014-0403-8.

Hourneaux Jr, F., Gabriel, M. L. D. S., & Gallardo-Vázquez, D. A. (2018). Triple bottom line and sustainable performance measurement in industrial companies. *Revista de Gestão*, *25*(4), 413–429. https://doi.org/10.1108/REGE-04-2018-0065.

Hulland, J., Baumgartner, H., & Smith, K. (2017). Marketing survey research best practices: Evidence and recommendations from a review of JAMS articles. *Journal of Academy of Marketing Science, 46*(3), 92–108. https://doi.org/10.1007/s11747-017-0532-y.

Islam, T., & Halim, M. A. (2022). Impact of ready-made garments (RMG) industries and sustainability: Perspective of the pandemic period in developing country. *Cleaner Engineering and Technology*, *11*, 100567. https://doi.org/10.1016/j.clet.2022.100567.

Jagoda, A., Kolakowski, T., Marcinkowski, J., Cheba, K., & Hajdas, M. (2023). E-customer preferences on sustainable last mile deliveries in the e-commerce market: A cross-generational perspective. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *18*(3), 853–882. https://doi.org/10.24136/eq.2023.027.

Jakubelskas, U., & Skvarciany, V. (2023). Circular economy practices as a tool for sustainable development in the context of renewable energy: What are the opportunities for the EU?. *Oeconomia Copernicana*, *14*(3), 833–859. https://doi.org/10.24136/oc.2023.025.

Kandasamy, J., Kinare, Y. P., Pawar, M. T., Majumdar, A., Kek, V., & Agrawal, R. (2022). Circular economy adoption challenges in medical waste management for sustainable development: An empirical study. *Sustainable Development*, *30*(5), 958–975. https://doi.org/10.1002/sd.2293.

Karim, M. R., Nordin, N., Yusof, M. F., Amin, M. B., Islam, M. A., & Hassan, M. S. (2023). Does ERP implementation mediate the relationship between knowledge management and the perceived organizational performance of the healthcare sector? Evidence from a developing country. *Cogent Business & Management*, *10*(3), 2275869. https://doi.org/10.1080/23311975.2023.2275869.

Kayikci, Y., Kazancoglu, Y., Gozacan-Chase, N., Lafci, C., & Batista, L. (2022). Assessing smart circular supply chain readiness and maturity level of small and medium-sized enterprises. *Journal of Business Research*, *149*, 375–392. https://doi.org/10.1016/j.jbusres.2022.05.042.

Khajuria, A., Atienza, V. A., Chavanich, S., Henning, W., Islam, I., Kral, U., Liu, M., Liu, X., Murthy, I. K., Oyedotun, T. D. T., Verma, P., Xu, G., Zeng, X., & Li, J. (2022). Accelerating circular economy solutions to achieve the 2030 agenda for sustainable development goals. *Circular Economy*, *1*(1), 100001. https://doi.org/10.1016/j.cec.2022.100001.

Kiba-Janiak, M., Cheba, K., Mucowska, M., & de Oliveira, L. K. (2022). Segmentation of e-customers in terms of sustainable last-mile delivery. *Oeconomia Copernicana*, *13*(4), 1117–1142. https://doi.org/10.24136/oc.2022.032.

Kline, R. (2023). *Principles and practice of structural equation modeling.* New York: The Guilford Press.

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration (ijec)*, *11*(4), 1–10. https://doi.org/10.4018/ijec.2015100101.

Kowalska, A., & Bieniek, M. (2022). Meeting the European green deal objective of expanding organic farming. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *17*(3), 607–633. https://doi.org/10.24136/eq.2022.021.

Krause, M. (2019). Randomness is problematic for social science research purposes. *Quality & Quantity*, *53*(2), 1495–1504. https://doi.org/10.1007/s11135-018-0824-4.

Kristoffersen, E., Mikalef, P., Blomsma, F., & Li, J. (2021). The effects of business analytics capability on circular economy implementation, resource orchestration capability, and firm performance. *International Journal of Production Economics*, *239*, 108205. https://doi.org/10.1016/j.ijpe.2021.108205.

Kuzma, E. L., Sehnem, S., Machado, H. P. V., & Campos, L. M. D. S. (2021). The new business is circular? Analysis from the perspective of the circular economy and entrepreneurship. *Production*, *31*, e20210008. https://doi.org/10.1590/0103-6513.20210008.

Le, T. T., Behl, A., & Pereira, V. (2022). Establishing linkages between circular economy practices and sustainable performance: The moderating role of circular economy entrepreneurship. *Management Decision*. https://doi.org/10.1108/MD-02-2022-0150.

Li, K., Cipolletta, G., Andreola, C., Eusebi, A. L., Kulaga, B., Cardinali, S., & Fatone, F. (2023). Circular economy and sustainability in the tourism industry: Critical analysis of integrated solutions and good practices in European and Chinese case studies. *Environment, Development and Sustainability*. https://doi.org/10.1007/s10668-023-03395-7.

López-Serrano, M. J., Lakho, F. H., Van Hulle, S. W. H., & BatllesdelaFuente, A. (2023). Life cycle cost assessment and economic analysis of a decentralized wastewater treatment to achieve water sustainability within the framework of circular economy. *Oeconomia Copernicana*, *14*(1), 103–133. https://doi.org/10.24136/oc.2023.003.

MacGregor Pelikánová, R. M., & Sani, M. (2023). Luxury, slow and fast fashion: A case study on the (un)sustainable creating of shared values. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *18*(3), 813–851. https://doi.org/10.24136/eq.2023.026.

Mahmud, A., Ding, D., Hasan, M., Ali, Z., & Amin, M. B. (2023). Employee psychological reactions to micro-corporate social responsibility and societal behavior: A structural equation modeling analysis. *Current Psychology*, *42*(20), 17132-17146. https://doi.org/10.1007/s12144-022-02898-2.

Malhotra, N., & Das, S. (2017). *Marketing research: An applied orientation*, New Delhi: Dorling Kindersley (India) Pvt. Ltd.

Małys, Ł. (2023). The approach to supply chain cooperation in the implementation of sustainable development initiatives and company's economic performance. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, *18*(1), 255–286. https://doi.org/10.24136/eq.2023.008.

Marrucci, L., Daddi, T., & Iraldo, F. (2022a). The circular economy, environmental performance and environmental management systems: The role of absorptive capacity. *Journal of Knowledge Management*, *26*(8), 2107–2132. https://doi.org/10.1108/JKM-06-2021-0437.

Marrucci, L., Daddi, T., & Iraldo, F. (2022b). Do dynamic capabilities matter? A study on environmental performance and the circular economy in European certified organisations. *Business Strategy and the Environment*, *31*(6), 2641–2657. https://doi.org/10.1002/bse.2997.

Marsh, A. T., Velenturf, A. P., & Bernal, S. A. (2022). Circular Economy strategies for concrete: Implementation and integration. *Journal of Cleaner Production*, *362*, 132486. https://doi.org/10.1016/j.jclepro.2022.132486.

Mazzucchelli, A., Chierici, R., Del Giudice, M., & Bua, I. (2022). Do circular economy practices affect corporate performance? Evidence from Italian large-sized manufacturing firms. *Corporate Social Responsibility and Environmental Management*, *29*(6), 2016–2029. https://doi.org/10.1002/csr.2298.

Mehrotra, S., & Jaladi, S. R. (2022). How start-ups in emerging economies embrace circular business models and contribute towards a circular economy. *Journal of Entrepreneurship in Emerging Economies*, *14*(5), 727–753. https://doi.org/10.1108/JEEE-10-2021-0410.

Memon, M., Ting, H., Ramayah, T., Chuah, F., & Cheah, J. (2017). A review of the methodological misconceptions and guidelines related to the application of structural equation modeling: A Malaysian scenario. *Journal of Applied Structural Equation Modeling, 1*(1), 1–13. https://doi.org/10.47263/JASEM.1(1)01.

Ncube, A., Fiorentino, G., Panfilo, C., De Falco, M., & Ulgiati, S. (2022). Circular economy paths in the olive oil industry: A life cycle assessment look into environmental performance and benefits. *International Journal of Life Cycle Assessment*. https://doi.org/10.1007/s11367-022-02031-2.

Nishitani, K., Kokubu, K., Wu, Q., Kitada, H., Guenther, E., & Guenther, T. (2022). Material flow cost accounting (MFCA) for the circular economy: An empirical study of the triadic relationship between MFCA, environmental performance, and the economic performance of Japanese companies. *Journal of Environmental Management*, *303*, 114219. https://doi.org/10.1016/j.jenvman.2021.114219.

Ogutu, H., El Archi, Y., & Dénes Dávid, L. (2023). Current trends in sustainable organization management: A bibliometric analysis. *Oeconomia Copernicana*, *14*(1), 11–45. https://doi.org/10.24136/oc.2023.001.

Ossio, F., Salinas, C., & Hernández, H. (2023). Circular economy in the built environment: A systematic literature review and definition of the circular construction concept. *Journal of Cleaner Production*, *414*, 137738. https://doi.org/10.1016/j.jclepro.2023.137738.

Pizzi, S., Leopizzi, R., & Caputo, A. (2022). The enablers in the relationship between entrepreneurial ecosystems and the circular economy: The case of circularity. com. *Management of Environmental Quality: An International Journal*, *33*(1), 26–43. https://doi.org/10.1108/MEQ-01-2021-0011.

Podsakoff, P., MacKenzie, S., Lee, J., & Podsakoff, N. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879.

Qing, W., Amin, M. B., Gazi, M. A. I., Khan, W., Al Masud, A., & Alam, M. N. (2023). Mediation effect of technology adaptation capabilities between the relationship of service quality attributes and customer satisfaction: An investigation on young customers perceptions toward e-commerce in china. *IEEE Access*, *11*, 123904–123923. https://doi.org/10.1109/ACCESS.2023.3328775.

Rahaman, M. A., Amin, M. B., Taru, R. D., Ahammed, M. R., & Rabbi, M. F. (2023). An analysis of renewable energy consumption in Visegrád countries. *Environmental Research Communications*, *5*(10), 105013. https://doi.org/10.1088/2515-7620/acff40.

Razmjooei, D., Alimohammadlou, M., Ranaei Kordshouli, H. A., & Askarifar, K. (2024). A bibliometric analysis of the literature on circular economy and sustainability in maritime studies. *Environment, Development and Sustainability*, *26*(3), 5509–5536. https://doi.org/10.1007/s10668-023-02942-6.

Rehman Khan, S. A., Yu, Z., Sarwat, S., Godil, D. I., Amin, S., & Shujaat, S. (2022). The role of block chain technology in circular economy practices to improve organisational performance. *International Journal of Logistics Research and Applications, 25*(4-5), 605–622. https://doi.org/10.1080/13675567.2021.1872512.

Ren, Y., Wu, K. J., Lim, M. K., & Tseng, M. L. (2023). Technology transfer adoption to achieve a circular economy model under resource-based view: A high-tech firm. *International Journal of Production Economics*, *264*, 108983. https://doi.org/10.1016/j.ijpe.2023.108983.

Robertson, J. L., & Carleton, E. (2018). Uncovering how and when environmental leadership affects employees' voluntary pro-environmental behavior. *Journal of Leadership & Organizational Studies*, *25*(2), 197–210. https://doi.org/10.1177/15480518177389.

Rodríguez-Espíndola, O., Cuevas-Romo, A., Chowdhury, S., Díaz-Acevedo, N., Albores, P., Despoudi, S., Malesios, C., & Dey, P. (2022a). The role of circular economy principles and sustainable-oriented innovation to enhance social, economic and environmental performance: Evidence from Mexican SMEs. *International Journal of Production Economics*, *248*, 108495. https://doi.org/10.1016/j.ijpe.2022.108495.

Rodríguez-González, R. M., Maldonado-Guzman, G., Madrid-Guijarro, A., & Garza-Reyes, J. A. (2022b). Does circular economy affect financial performance? The mediating role of sustainable supply chain management in the automotive industry. *Journal of Cleaner Production*, *379*, 134670. https://doi.org/10.1016/j.jclepro.2022.134670.

Rubel, M. R. B., Kee, D. M. H., & Rimi, N. N. (2021). Green human resource management and supervisor pro-environmental behavior: The role of green work climate perceptions. *Journal of Cleaner Production*, *313*, 127669. https://doi.org/10.1016/j.jclepro.2021.127669.

Saha, P., Talapatra, S., Belal, H. M., & Jackson, V. (2022). Unleashing the potential of the TQM and Industry 4.0 to achieve sustainability performance in the context of a developing country. *Global Journal of Flexible Systems Management*, *23*(4), 495–513. https://doi.org/10.1007/s40171-022-00316-x.

Samadhiya, A., & Agrawal, R. (2023). Total productive maintenance and sustainability performance: Resource-based view perspective. *Benchmarking: An International Journal*. https://doi.org/10.1108/BIJ-10-2022-0635.

Sarkar, A., Qian, L., & Peau, A. K. (2020). Structural equation modeling for three aspects of green business practices: a case study of Bangladeshi RMG's industry. *Environmental Science and Pollution Research*, *27*(28), 35750–35768. https://doi.org/10.1007/s11356-020-09873-z.

Schöggl, J. P., Stumpf, L., & Baumgartner, R. J. (2024). The role of interorganizational collaboration and digital technologies in the implementation of circular economy practices—Empirical evidence from manufacturing firms. *Business Strategy and the Environment*, *33*(3), 2225–2249. https://doi.org/10.1002/bse.3593.

Schwarz, A. E., Ligthart, T. N., Bizarro, D. G., De Wild, P., Vreugdenhil, B., & Van Harmelen, T. (2021). Plastic recycling in a circular economy; determining environmental performance through an LCA matrix model approach. *Waste Management*, *121*, 331–342. https://doi.org/10.1016/j.wasman.2020.12.020.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John wiley & sons.

Shang, Y., Song, M., & Zhao, X. (2022). The development of China's circular economy: From the perspective of environmental regulation. *Waste Management*, *149*, 186–198. https://doi.org/10.1016/j.wasman.2022.05.027.

Shevchenko, T., Saidani, M., Ranjbari, M., Kronenberg, J., Danko, Y., & Laitala, K. (2023). Consumer behavior in the circular economy: Developing a product-centric framework. *Journal of Cleaner Production*, *384*, 135568. https://doi.org/10.1016/j.jclepro.2022.135568.

Singh, R., Khan, S., & Centobelli, P. (2022). Investigating the interplay between social performance and organisational factors supporting circular economy practices. *Sustainability*, *14*(24), 16781. https://doi.org/10.3390/su142416781.

Skvarciany, V., Lapinskaite, I., & Volskyte, G. (2021). Circular economy as assistance for sustainable development in OECD countries. *Oeconomia Copernicana*, *12*(1), 11–34. https://doi.org/10.24136/oc.2021.001.

Stjepanovic, S., Tomic, D., & Skare, M. (2022). A new database on Green GDP; 1970-2019: A framework for assessing the green economy. *Oeconomia Copernicana*, *13*(4), 949–975. https://doi.org/10.24136/oc.2022.027.

Stone, M. (1976). Cross-validatory choice and assessment of statistical predictions (with discussion). *Journal of the Royal Statistical Society Series B: Statistical Methodology*, *38*(1), 102–102. https://doi.org/10.1111/j.2517-6161.1976.tb01573.x.

Sudusinghe, J. I., & Seuring, S. (2022). Supply chain collaboration and sustainability performance in circular economy: A systematic literature review. *International Journal of Production Economics*, *245*, 108402. https://doi.org/10.1016/j.ijpe.2021.108402.

Swazan, I. S., & Das, D. (2022). Bangladesh's emergence as a ready-made garment export leader: An examination of the competitive advantages of the garment industry. *International Journal of Global Business and Competitiveness*, *17*(2), 162–174. https://doi.org/10.1007/s42943-022-00049-9.

Tang, Y. M., Chau, K. Y., Fatima, A., & Waqas, M. (2022). Industry 4.0 technology and circular economy practices: Business management strategies for environmental sustainability. *Environmental Science and Pollution Research*, *29*(33), 49752–49769. https://doi.org/10.1007/s11356-022-19081-6.

Tapaninaho, R., & Heikkinen, A. (2022). Value creation in circular economy business for sustainability: A stakeholder relationship perspective. *Business Strategy and the Environment*, *31*(6), 2728–2740. https://doi.org/10.1002/bse.3002.

Textile Focus (2023). Top 100 LEED green factories number country based. Retrieved from https://textilefocus.com/top-100-leed-green-factories-number-country-based/ (10.05.2023).

Uhrenholt, J. N., Kristensen, J. H., Rincón, M. C., Jensen, S. F., & Waehrens, B. V. (2022). Circular economy: Factors affecting the financial performance of product take-back systems. *Journal of Cleaner Production*, *335*, 130319. https://doi.org/10.1016/j.jclepro.2021.130319.

Ünal, E., Urbinati, A., & Chiaroni, D. (2019). Managerial practices for designing circular economy business models: The case of an Italian SME in the office supply industry. *Journal of Manufacturing Technology Management*, *30*(3), 561–589. https://doi.org/10.1108/JMTM-02-2018-0061.

Urbach, N., & Ahlemann, F. (2010). Structural equation modeling in information systems research using partial least squares. *Journal of Information Technology Theory and Application (JITTA)*, *11*(2), 2.

Velasco-Muñoz, J. F., Aznar-Sánchez, J. A., López-Felices, B., & Román-Sánchez, I. M. (2022). Circular economy in agriculture. An analysis of the state of research based on the life cycle. *Sustainable Production and Consumption 34*, 257–270. https://doi.org/10.1016/j.spc.2022.09.017.

Velenturf, A. P., & Purnell, P. (2021). Principles for a sustainable circular economy. *Sustainable Production and Consumption*, *27*, 1437–1457. https://doi.org/10.1016/j.spc.2021.02.018.

Yamoah, F. A., Sivarajah, U., Mahroof, K., & Peña, I. G. (2022). Demystifying corporate inertia towards transition to circular economy: A management frame of reference. *International Journal of Production Economics*, *244*, 108388. https://doi.org/10.1016/j.ijpe.2021.108388.

Yang, M., Chen, L., Wang, J., Msigwa, G., Osman, A. I., Fawzy, S., Rooney, D. W., & Yap, P. S. (2023). Circular economy strategies for combating climate change and other environmental issues. *Environmental Chemistry Letters*, *21*(1), 55–80. https://doi.org/10.1007/s10311-022-01499-6.

Yildiz, S. C., & Sezen, B. (2019). Effects of green supply chain management practices on sustainability performance. *Journal of Manufacturing Technology Management*, *30*(1), 98–121. https://doi.org/10.1108/JMTM-03-2018-0099.

Yin, S., Jia, F., Chen, L., & Wang, Q. (2023). Circular economy practices and sustainable performance: A meta-analysis. *Resources, Conservation and Recycling*, *190*, 106838. https://doi.org/10.1016/j.resconrec.2022.106838.

Zheng, L. J., Wang, Y. A., Lin, H. Y., & Liu, W. (2023a). Understanding circular economy adoption by SMEs: A case study on organizational legitimacy and Industry 4.0. *Industrial Management & Data Systems*, *123*(4), 1157–1177. https://doi.org/10.1108/IMDS-04-2022-0266.

Zheng, M., Feng, G. F., & Chang, C. P. (2023b). Is green finance capable of promoting renewable energy technology? Empirical investigation for 64 economies worldwide. *Oeconomia Copernicana*, *14*(2), 483–510. https://doi.org/10.24136/oc.2023.013.

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Annex

Table 1. Profile of the respondents

Criteria	Number	Percentage
Gender		
Male	219	52.4
Female	199	47.6
Total (n)	**418**	**100**
Age groups		
25-34	71	17.0
35-44	189	45.2
45-54	110	26.3
55-60	48	11.5
Total (n)	**418**	**100**
Job Position		
Lower-level	130	31.1
Mid-level	211	50.5
Top level	77	18.4
Total (n)	**418**	**100**
Educational level		
Bachelor/Business Graduation	211	50.5
Post-Graduation/Masters	192	45.9
Higher Studies/PhD	15	3.6
Total (n)	**418**	**100.0**
Job experience (in years)		
01-10	193	46.2
11-20	124	29.7
21-30	72	17.2
31 or more	29	6.9
Total (n)	**418**	**100.0**

Table 2. Harman Single Factor test (Common Method Biasness test)

Total Variance Explained						
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	**6.900**	**32.856**	**32.856**	**6.900**	**32.856**	**32.856**
2	3.222	15.342	48.198			
3	2.880	13.714	61.912			
4	2.127	10.128	72.040			
5	.911	4.340	76.380			
6	.619	2.946	79.327			
7	.530	2.524	81.850			
8	.470	2.239	84.089			
9	.456	2.170	86.259			
10	.426	2.026	88.285			
11	.374	1.781	90.066			
12	.323	1.540	91.607			
13	.306	1.458	93.064			

Table 2. Continued

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
14	.280	1.333	94.397			
15	.267	1.272	95.670			
16	.232	1.104	96.774			
17	.207	.987	97.761			
18	.201	.957	98.718			
19	.144	.686	99.404			
20	.119	.565	99.969			
21	.007	.031	100.000			
Extraction Method: Principal Component Analysis.						

Table 3. VIF values for Constructs

	Circular Economy	Environment Performance	Financial Performance	Social Performance
Circular Economy		1.000	1.000	1.000
Environment Performance				
Financial Performance				
Social Performance				

Table 4. Measurement model (CFA outputs)

Item Code	Constructs and Items	Item Loadings	Cronbach 's Alpha	CR	AVE
	Circular Economy Practices		0.930	0.945	0.742
CEP1	We produce replacement products and repair products throughout their life cycles	0.900			
CEP2	We reuses the wastage of the products for another production	0.907			
CEP3	We recycle the raw materials of the products to reuse	0.897			
CEP4	We remanufacture the raw materials of the products	0.887			
CEP5	We remanufacture the used products to produce a new product	0.734			
CEP6	We reduced energy, costs, and raw material use compared to previous process	0.829			
	Environmental Performance		0.904	0.929	0.722
ENP RF1	We reduced energy consumption	0.843			
ENP RF2	Our company reduced waste generation	0.876			

Table 4. Continued

Item Code	Constructs and Items	Item Loadings	Cronbach's Alpha	CR	AVE
ENP RF3	We reduced atmospheric pollution	0.889			
ENP RF4	Our company reduced carbon emissions	0.832			
ENP RF5	We reduced environmental pollution	0.807			
	Financial Performance		0.923	0.942	0.766
FNP RF1	We decreased manufacturing/operational costs	0.764			
FNP RF2	Our company increased annual turnover	0.892			
FNP RF3	We increased market share	0.962			
FNP RF4	Our company increased our profit	0.781			
FNP RF5	We increased return on investment	0.957			
	Social Performance		0.829	0.885	0.657
SCPR F1	We improved investments on various social projects such as, education, culture, and sports	0.856			
SCPR F2	Our company improved its corporate image in the perception of our customers	0.789			
SCPR F3	We optimized the level of awareness and secured the demands and rights of individuals within the community being served.	0.813			
SCPR F4	Our company ensured worker safety and health in the wor kplace	0.783			

Note: CEP = Circular Economy, ENPRF = Environmental Performance, FNPRF = Financial Performance, SCPRF = Social Performance; Due to an unsatisfactory loading score (< 0.70), one item, i.e., SCPRF5: Our company has improved the general well-being or enhancement of its stakeholders (0.597), was excluded from the final output of the measurement model.

Table 5. Fornell-Larcker criterion

	CEP	ENPRF	FNPRF	SCPRF
CEP	**0.861**			
ENPRF	0.278	**0.850**		
FNPRF	0.271	0.242	**0.875**	
SCPRF	0.294	0.315	0.309	**0.811**

Note: CEP = Circular Economy, ENPRF = Environmental Performance, FNPRF = Financial Performance, SCPRF = Social Performance; The diagonals, represented in bold, indicate the square root of the AVE, while the remaining numbers represent the correlations.

Table 6. Heterotrait-Monotrait ratio

	CEP	ENPRF	FNPRF	SCPRF
CEP				
ENPRF	0.295			
FNPRF	0.275	0.268		
SCPRF	0.316	0.377	0.369	

*Note: **NB: CEP = Circular Economy, ENPRF = Environmental Performance, FNPRF = Financial Performance, SCPRF = Social Performance*

Table 7. Predictive relevance of the dependent variables

Variables	Q^2 Values	R^2	Adjusted R^2
Environmental Performance	0.054	0.077	0.075
Financial Performance	0.052	0.074	0.071
Social Performance	0.040	0.087	0.085

Table 8. PLS prediction report

	RMSE	MAE	Q^2_predict
ENPRF	0.969	0.816	0.069
FNPRF	0.969	0.836	0.066
SCPRF	0.969	0.792	0.074

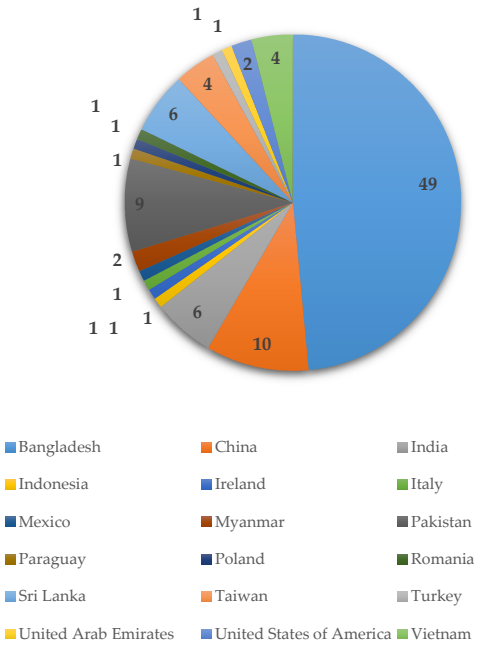
Note: ENPRF = Environmental Performance, FNPRF = Financial Performance, SCPRF = Social Performance

Table 9. Results of the hypothesis tests

Paths	Coefficients	t Statistics	P Values	2.5% LLCI	97.5% ULCI	VIF	Decisions
CEP → ENPRF	0.278	6.274	0.000	0.193	0.372	1.000	Supported
CEP → FNPRF	0.271	5.781	0.000	0.178	0.368	1.000	Supported
CEP → SCPRF	0.294	7.885	0.000	0.231	0.377	1.000	Supported

Note: **NB: CEP = Circular Economy, ENPRF = Environmental Performance, FNPRF = Financial Performance, SCPRF = Social Performance

Figure 1. Top 100 LEED certified green factories in the world



Source: Textile Focus (2023).

Figure 2. Framework of the study

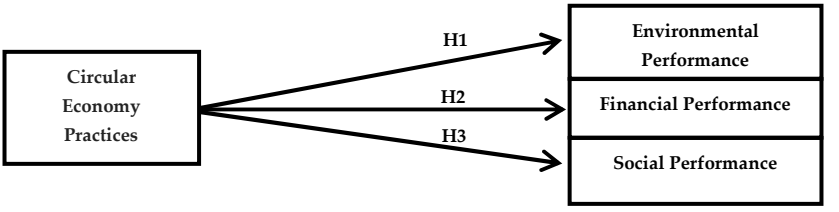
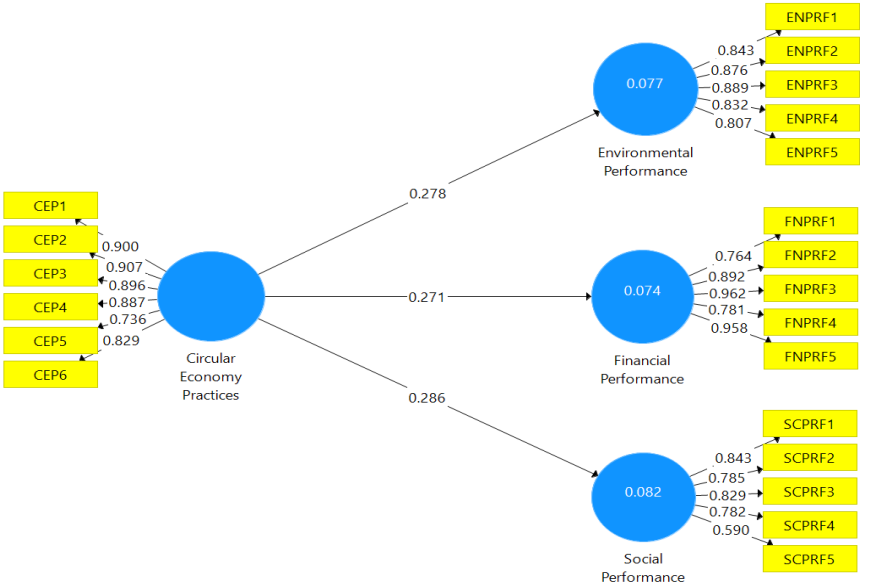
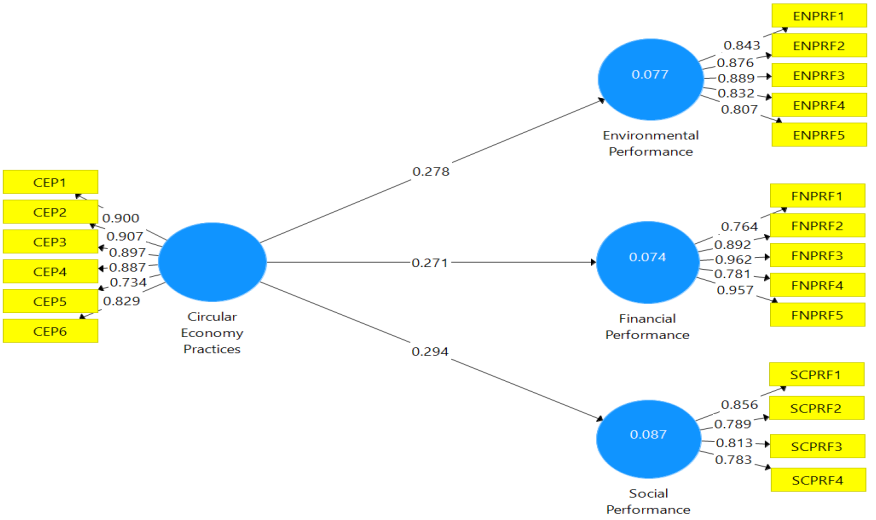


Figure 3. Measurement model before conducting CFA



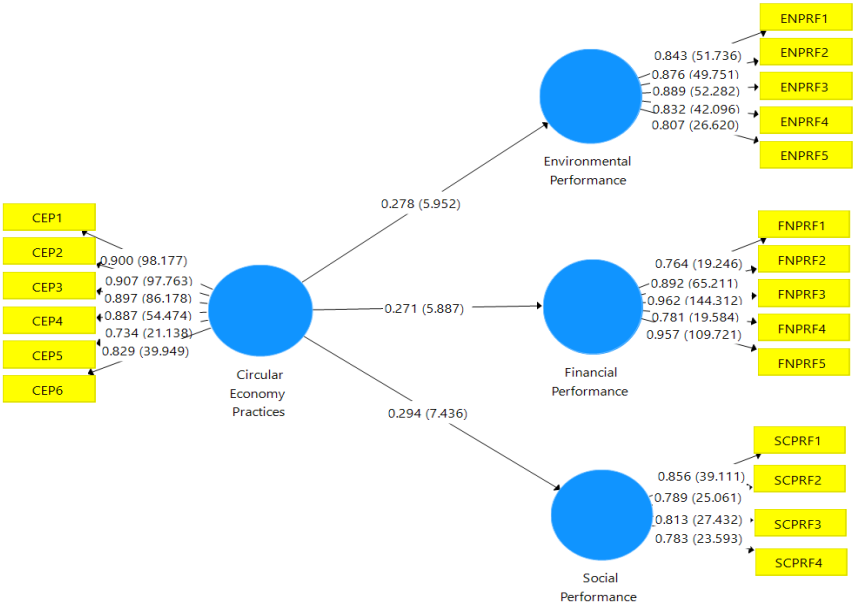
Note: CEP = Circular Economy, ENPRF = Environmental Performance, FNPRF = Financial Performance, SCPRF = Social Performance; Source: Smart-PLS 4

Figure 4. Measurement model after conducting CFA



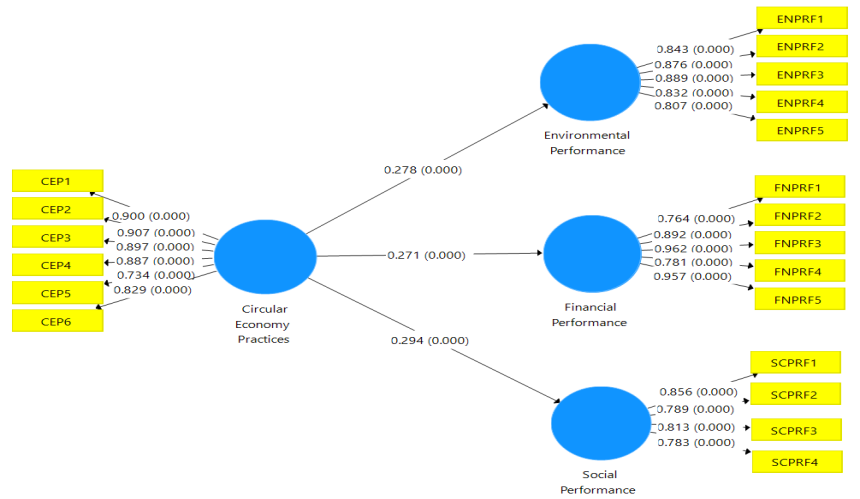
Note: CEP = Circular Economy, ENPRF = Environmental Performance, FNPRF = Financial Performance, SCPRF = Social Performance; Source: Smart-PLS 4

Figure 5. Structural model of the study (including T values)



Note: CEP = Circular Economy, ENPRF = Environmental Performance, FNPRF = Financial Performance, SCPRF = Social Performance; Source: Smart-PLS 4

Figure 6. Structural model including p-values



Note: CEP = Circular Economy, ENPRF = Environmental Performance, FNPRF = Financial Performance, SCPRF = Social Performance; Source: Smart-PLS 4

Appendix

Questionnaire items adapted from literature sources

Variables	Item Code	Items	Literature source(s)
Circular Economy Practices (CEP)	CEP1	We produce replacement products and repair products throughout its life cycle	Kristoffersen *et al.* (2021).
	CEP2	We reuses the wastages of the products for another production	
	CEP3	We recycle the raw materials of the products to reuse	
	CEP4	We remanufacture the raw materials of the products	
	CEP5	We remanufacture the used products to produce a new product	
	CEP6	We reduced energy, cost, raw material use than the previous time	
Environmental Performance (ENPRF)	ENPRF1	We reduced energy consumption	Yildiz & Sezen (2019)
	ENPRF2	We reduced waste generation	
	ENPRF3	We reduced atmospheric pollution	
	ENPRF4	We reduced carbon emission	
	ENPRF5	We reduced environmental pollution	
Financial Performance (FNPRF)	FNPRF1	We decreased manufacturing/operational costs	
	FNPRF2	We increased annual turnover	
	FNPRF3	We increased market share	
	FNPRF4	We increased our profit	
	FNPRF5	We increased return on investment	
Social Performance (SCPRF)	SCPRF1	We improved in investments on various social projects such as, education, culture, and sports	
	SCPRF2	Our company improved its corporate image in the perception of our customers	
	SCPRF3	We optimized the level of awareness and secured the demands and rights of individuals within the community being serviced.	
	SCPRF4	Our company ensured worker safety and health in the work place	
	SCPRF5	Our company has improved the general well-being or enhancement of its stakeholders.	