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Circular Economy Practices and Plastic Waste Management Performance in Bangladesh's Textile and Garment Industry: The Roles of Recycling Capability and Management Commitment

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ABSTRACT

Plastic waste is an even more critical operational and environmental issue to textile and garment producers, but scarce empirical data clarifies how the concept of circularity turns into tangible waste-management results in a new industrial format. The present research analyses regulation and stakeholder pressure, circular economy practices, the ability of organisations to recycle materials, the commitment of the top management, the performance of plastic waste management, and the performance of the environment within the textile and garment industry of Bangladesh. A cross-sectional survey left 459 valid responses of managers, executives, sustainability and compliance professionals, production people. Partial least squares structural equation modelling was used to test the relationships. Findings indicate that regulatory and stakeholder pressure greatly facilitates circular economy practices whereas circular economy practices enhance recycling ability in the organisations and the performance in the plastic waste management. Recycling potential also enhances the management of plastic waste performance and moderates the impact of circular economy practices to some degree. The performance of plastic waste management augments the environmental performance. The top management commitment has a positive and the interaction effect is relatively small strengthening the relationship between circular economy practices and plastic waste management performance. The results indicate that the external pressure alone is ineffective; companies are more successful when the recycling capability of their operations and devoted managerial leadership underlies the implementation of the circular practices. The paper offers a synthesized model of enhancing plastic circularity within an export-based manufacturing industry.

INTRODUCTION

One of the most resource-consuming production systems in the production of nowadays is the textile and garment industry. It relies on large material flows, packaging systems, logistics networks, accessories, synthetic fibres, polymer-based components and protective materials to develop its activities. These activities result in various types of plastic wastes in the production, storage, shipment, retail preparation, and postindustrial disposal (Juanga-Labayen *et al.*, 2022). Plastic pollution is thus no longer only a local or domestic problem. It is also an organisational concern which influences production efficiency, compliance, expectations of buyers, recovery of waste, use of resources and performance of the environment.

The country of Bangladesh offers a significant context of investigating this issue. The nation boasts of a big textile and garment production center that is closely connected with global supply chains. Businesses are under intense trade pressure imposed on them by world consumers, certification organizations, government bodies and other interested parties. Supplier evaluation and market legitimacy have also included environmental performance. Simultaneously, numerous factories have to handle expansive material volumes at the cost, time, and production constraints (Niebler, 2020). All these factors render plastic waste management not a secondary

environmental endeavor but a viable strategic issue.

Conventional waste management tends to be linear. Materials are bought, utilized, disposed of, gathered and ultimately disposed of or handed over to third parties (Velicko *et al.*, 2020). This method can minimize the short-term operational complexity, but in the infrequent cases that the discarded materials could have full economical value, this method does not capture this value. It can also develop poor traceability, inconsistent segregation, unnecessary disposal, and reliance on virgin material supplies. Thinking in a circular economy provides an alternative. It aims to minimize the use of materials, re-design processes, hold on to products and materials in circulation, enhance reuse, better recovery, and link waste streams to recycling mechanisms.

Nonetheless, the introduction of circular practices does not necessarily yield good waste-management results. An organisation can publicly agree to reduce waste but fail to have sorting facilities, trained workers, strong records, recovery partners, or technical capability of reintroducing the recycled materials. Reality of circular intentions into performance thus is dependent on organisational capability (Valtere *et al.*, 2023). The recycling capability, in the sense of plastic waste, denotes the infrastructure, expertise, monitoring solutions, alliances and process adaptability necessary in converting waste to reusable, recyclable or recoverable forms of material streams.

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Another critical condition is leadership. Circular projects tend to have investments which are not directly generating production output. They might need new equipment, training of employees, data systems, coordination with suppliers, amendments of contracts, and trial of alternative material. These actions can be opposed when administrators are oriented more towards the immediate cost and output goals. Top management is able to alleviate this tension through resource allocation, priority setting, cross-functional collaboration by integrating circular objectives into formal plans, and authorizing cross-functional collaboration (Chae & Hinestroza, 2020). Management commitment can thus reinforce the impact of circular economy practices on the plastic waste management performance.

The external pressure is an important factor as well. Minimum compliance requirements can be fashioned by the environmental regulations. The international consumers may have packaging or garbage expectations. Material choices can be impacted by customers. Reputational pressure can be exerted by encouraging good practices by industry bodies and reputational pressure by communities or environmental groups. These forces can prompt organisations to go beyond passive waste disposal to more detailed circular practices. However, external pressure is best when it leads to real change in the organisation as opposed to official obedience.

Although the practical significance of these relationships is tremendous, they are frequently researched individually. Surveys of circular economy acceptance typically revolve around drivers and obstacles (Triguero *et al.*, 2023). The techniques of managing waste have been the subject of research. Sustainability practices are often considered as a large package in environmental performance studies. This distinction restricts the knowledge of what the organisational mechanism is whereby external pressure is translated into circular action, whereby, operational capability is translated into operational action and where waste-management performance is measured. It also places the role of the senior management as being inadequately incorporated in the structural process.

This paper fills that gap by creating and experimenting with an integrated model of the textile and garment industry in Bangladesh. Circular economy practices are defined as regulatory and stakeholder pressure as their antecedents. The performance of recycling capabilities and the performance of plastic waste management in the organisation are likely to increase with the application of the circular economy (Chen *et al.*, 2021). The ability to recycle is conceptualized as a mediator that describes some performance impact. The commitment of the top management is considered as a moderator that enhances the translation of circular practices into plastic waste management performance. Performance of plastic waste management is then correlated with overall environmental performance.

The research has three key contributions. First, it separates the practices of the circular economy and the ability to

recycle. This division acknowledges that the strategic and behavioural circular practices are not the same as the organisational capacity to manage, track, recover and reuse plastic waste. Second, it evaluates both mediation and moderation in a single model. This can be more fruitful in explaining how and in what organisational conditions circular economy practices generate value (Furferi *et al.*, 2022). Third, it is a narrow study on plastic waste in textile and garment organisations in Bangladesh. This industry-specific methodology enhances greater practicality and does not focus on industrial sustainability as a universal organisational phenomenon.

The rest of the paper is structured in the following way. The following chapter elaborates the conceptual framework and hypotheses logic, which is logically based on literature. The methods section provides the research design, respondents, measures, screening process, and PLS-SEM approach. Data quality, descriptive statistics, measurement-model assessment, structural-model assessment, mediation, and moderation are reported in the results section (González-Sánchez *et al.*, 2023). The last parts cover the findings, theoretical and managerial implications and limitations and conclude the study.

LITERATURE REVIEW

The idea of the circular economy calls into question the traditional linear vision of resource consumption. It does not view waste as the necessary final stage in the production process, but as materials that can be used as long as possible, technically and economically (M. Hossain & Shams, 2020). This logic can be applied in an industrial context by means of material reduction, process redesign, reuse, segregation, recycling, recovery, and cooperation among partners of the supply-chain. In the case of textile and garment companies, plastic circularity can take the form of packaging, reuse of polymer-containing materials, source-side separation, reuse collaboration, and greater consideration of recyclability in material selection (Dissanayake & Weerasinghe, 2021).

The plastic waste management performance results were measured in terms of results and not the occurrence of environmental practices (Huang, 2022). These are the reduction of waste, an increase in the reuse or recycling of materials, decreased disposal of recyclable plastic, enhanced traceability and improved operational efficiency. the main problem in the analysis then is what motivates circular practices, and what makes them generate any form of improvements (Radukić *et al.*, 2023).

Regulatory and Stakeholder Pressure and Circular Economy Practices

Organisations do not make environmental decisions on their own. Their responses are in response to formal requirements and the actors expectations that affect the legitimacy, access to markets, reputation, and resource dependence (Haq & Alam, 2023). There can be minimum environmental obligations by government rules. International customers may demand that the suppliers

enhance their material management, publicize their environmental disclosures, or adhere to the sustainability geared-up standards (Da Silva *et al.*, 2022). Demand of responsible material and packaging can be raised by customers. Normalisation of circular approaches can be done by industry associations and certification bodies, with reputational pressure done by local communities and environmental groups.

Such pressures may motivate firms to adopt circular practices in their economy since environmental inaction might result in regulatory, commercial, or legitimacy costs (Bianchi *et al.*, 2023). Factories in export-based supply chains tend to have to meet two sets of requirements: local needs and buyer-specific criteria. The constant pressure will thus promote plastic reduction, redesign, and segregation, recycling, and more circular procurement decisions (S. Hossain *et al.*, 2020).

H1: Regulatory and stakeholder pressure has a significant positive effect on circular economy practices.

Circular Economy Practices and Organisational Recycling Capability

Circular practices are able to build capability by creating organisational action through repetition. As companies start to actively decrease, separate, reuse, and recover the plastic resources, experience in classifying and measuring waste, storage and logistics, and coordination with the partners is acquired (Gupta, 2021). Investment in collection facilities, monitoring systems, knowledge of the employees, and recycling arrangements may also be justified by circular initiatives. These resources and routines grow with time to be an organisational capability as opposed to a cluster of isolated environmental activities (Damayanti *et al.*, 2021).

The ability to recycle is particularly significant since successful recovery of plastics cannot be achieved without more than goodwill. The trash should be segregated appropriately (Bernat, 2023). Numerical and kind should be tracked. Practical knowledge is required among employees. There should be reliable recycling or recovery partners. Technical flexibility might also be required in production processes to accommodate reusable or recycled materials (Aleksić *et al.*, 2022). The capabilities are designed to be built by developing new operational contexts through the practices of the circular economy that will be tested, refined, and institutionalised.

H2: Circular economy practices have a significant positive effect on organisational recycling capability.

Circular Economy Practices and Plastic Waste Management Performance

Direct performance benefits are also likely to be realized due to the practices of the circle economy. Reduction of waste will reduce the quantity of plastic that needs treatment (Liu *et al.*, 2022). Reuse preserves value of materials in the organisation. Segregation minimizes contamination and enhances recoverability. Cooperation with suppliers and buyers, and recyclers enhances the

flow of materials (Ghoreishi *et al.*, 2022). In the first place, it is better to take into account the recyclability during procurement and avoid the introduction of materials that are hard to recycle into the production and packaging systems.

These will enhance efficiency and control. They are able to decrease uncontrolled disposal, enhance the percentage of plastic collected, enhance traceability, and enhance a more organized approach (Abbate *et al.*, 2023). The anticipated correlation is direct owing to the fact that certain circular practices create performance advantages prior to a general organisational capacity building to maturity (Carpus *et al.*, 2020). An illustration of this is that plastic can be sorted upon generation, which would instantly enhance the quality of the collection, or that redesigning packaging would directly decrease the amount of waste.

H3: Circular economy practices have a significant positive effect on plastic waste management performance.

Organisational Recycling Capability and Its Mediating Role

Capability grants the process converting circular will to repeatable performance of operations (Ütebay *et al.*, 2020). Having proper facilities, skilled workers, proper monitoring, consistent recycling associations, and the flexibility of the processes help organisations to deal with plastic waste on a regular basis. These resources lessen reliance on on-the-fly choices and personal effort. They also render recovery activities more credible across the production cycles and organisations (Khairul Akter *et al.*, 2022).

This is the reason why recycling ability must have a direct positive impact on the management of plastic waste (Denić *et al.*, 2021). Improved capacity may enhance recovery levels, decrease improper disposal, enhance documentation and simplify waste flows. It must also facilitate the impact of the circular economy practices. Circular practices catalyze investment and learning which enhance capability; capability then enhances waste-management results. A mediated relationship thus provides the reasons as to why different levels of performance can be attained by firms whose circular intentions are similar (Angelova, 2020).

H4: Organisational recycling capability has a significant positive effect on plastic waste management performance.

H6: Organisational recycling capability mediates the relationship between circular economy practices and plastic waste management performance.

Plastic Waste Management Performance and Environmental Performance

Better waste management is expected to lead to a larger environmental performance since plastic waste has environmental impacts by consuming resources, leaking, uncontrolled disposal, and remaining reliant on virgin material (Wiah *et al.*, 2022). By minimising the amount of waste created and maximising the use or reuse of

materials, organisations can have lower materials to dispose of. Increased traceability and management can reduce the chances of incorrect transfer of waste or uncontrolled dumping (Juanga-Labayen *et al.*, 2022). Recovery has the potential to decrease strains on new plastic inputs as well.

Environmental performance in the given study is thus regarded as a downstream organisational performance. It secures lesser environmental impacts on plastic waste, less pollution through improper disposal, enhanced resource efficiency, less reliance on virgin plastic, enhanced environmental compliance and enhanced overall environmental performance (Niebler, 2020). These outcomes should be contributed by plastic waste management performance since it is an action-oriented operational enhancement, not an extensive environmental intention.

H5: Plastic waste management performance has a significant positive effect on environmental performance.

Moderating Role of Top Management Commitment

The commitment of top management can make or break the difference between circular practices being an isolated project, and a supported organisational routine (Velicko *et al.*, 2020). Circular activities are also more likely to be supported financially, technically, and organisationally when leaders are seen as being on board with plastic waste reduction.

The identical circular practice can consequently have variable performance results across leadership devotion. With low-commitment environment, the workers can separate waste, but there is no storage, monitoring or other good collection mechanisms (Valtere *et al.*, 2023). The practice can be reinforced by the organisation in a

high-commitment setting using budgets, review systems, formal objectives, and working with external partners. It is therefore predicted that top management commitment will enhance the positive impact of the circular economy practices on the management performance of plastic waste management (Chae & Hinestroza, 2020).

H7: Top management commitment positively moderates the relationship between circular economy practices and plastic waste management performance, such that the relationship becomes stronger when top management commitment is high.

Conceptual Framework

The theoretical framework is a sequential model that merges the relationship of the outside pressure, organisational practices, operational ability, leadership supporting behaviour and environmental consequences. External driver of the practices of the circular economy is regulatory and stakeholder pressure (Triguero *et al.*, 2023). The performance of plastic waste management is influenced by circular economy practices, both directly and indirectly through organisational recycling capability. The direct circular economy-performance relationship is transformed by the top management commitment. The then management of plastic waste is then the immediate antecedent of environmental performance.

This model goes beyond a mere practice-performance model. It describes how and what determines performance creation. Recycling capacity is the process by which the operational capacity of the recycling methods gets converted to usable capacity (Chen *et al.*, 2021). Management commitment is the organisational state that enhances implementation.

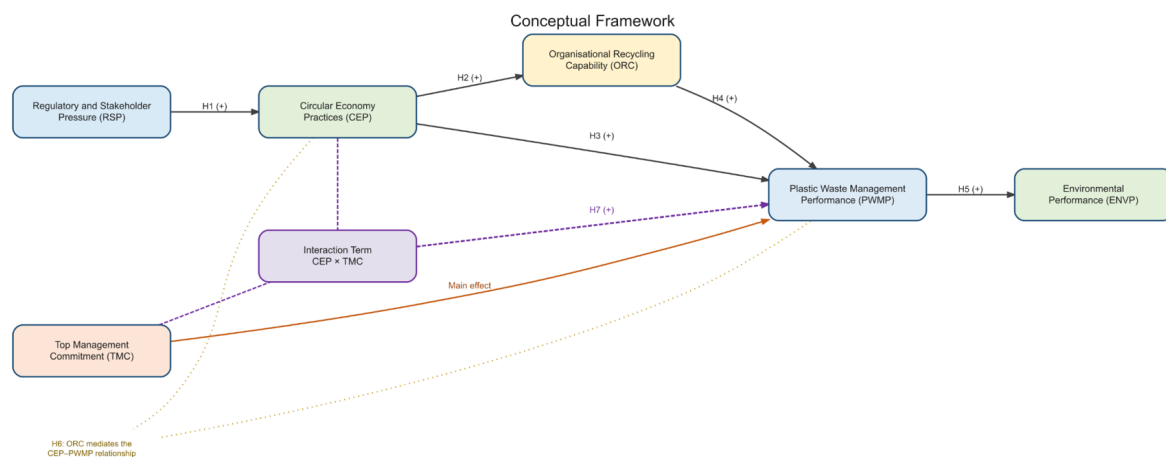


Figure 1: Conceptual Framework

MATERIALS AND METHODS

Research Design

The research design was a quantitative cross-sectional survey. This type of design was suitable since the research aim was to test a group of theoretically defined relationships between latent organisational constructs at a specific point in time. The unit of analysis was the

organisation in the eyes of the knowledgeable employees. The respondents were to assess real organisational practices and performance, and not individual environmental attitudes. Partial least squares structural equation modelling was used to estimate the empirical model.

The objectives of PLS-SEM were appropriate due to the

presence of several endogenous constructs, mediation, and moderation and the need to evaluate the quality of the measurements and structural relationships at the same time. The approach also aids prediction-based assessment by the following means: explained variance, predictive relevance, effect sizes, direct effects, indirect effects, and interaction effects (Furferi *et al.*, 2022).

Target Respondents and Eligibility

The target population was informed employees with the textile and garment industry in Bangladesh. Some of the positions that were eligible were managers, executives, sustainability officers, environmental compliance officers, production managers, waste-management personnel and other employees with knowledge of sustainable production, packaging, recycling or environmental practices within organisational production. There were three screening conditions. The respondents were required to be employed in a textile or garment related organisation in Bangladesh and they had to be conversant with organisational practices as well as possessing at least one year of industry experience.

Participation was voluntary. Respondents were also told that their responses will not be disclosed to any third party and would not be used in any other way. An item of consent was also part of the instrument (González-Sánchez *et al.*, 2023). Respondents who satisfied all screening criteria and gave permission were only eligible in the analytical sample. The survey pattern thus tried to enhance the quality of responses by eliminating those who were not likely to have enough knowledge of organisations.

Questionnaire and Measurement

Six multi-items constructs were put on the questionnaire after the respondent and organisational profile questions. All the items in the measurement were rated using a five point Likert scale which ranged between 1, strongly disagree, to 5, strongly agree. The respondents were asked to rate the organisational practices over the last three years. This period prompted the respondents to examine patterns as opposed to single occurrence (M. Hossain & Shams, 2020).

Five items were used to measure Regulatory and Stakeholder Pressure. These items reflected pressure on the environment by government, international purchasers, customers, industry or certification organizations, and local communities or environmental organizations (Huang, 2022). Circular Economy Practices had seven questions touching upon plastic reduction, redesigning process or packaging, re-use, source separation, transfer to approved recyclers, recyclability in supplier and packaging choice and cooperation in a circular material flow.

They were measured using six items on Organisational Recycling Capability. The construct reflected collection and separation plants, employee expertise, monitoring capacity, consistent recovery alliances, manufacturing flexibility to reusable or recycled materials and capacity to

transform plastic waste to recoverable material streams. Top Management commitment was assessed using six items that covered strategic priority, financial resources, employee encouragement, performance review, and integration of circular goals into strategies, and senior support of collaboration (Dissanayake & Weerasinghe, 2021).

Six items were included in Plastic Waste Management Performance. These items evaluated a lower generation of plastic waste, a higher reuse, or recycling, a lower disposal of recyclable plastic waste, a more systematic collection and transportation, a better traceability, and an efficiency in terms of management. The six items of Environmental Performance also included lower negative environmental effects, reduced pollution, increased resource efficiency, decreased reliance on virgin plastic, increased compliance, and overall environmental performance. Each of the constructs was initially defined as a reflective measure.

Data Screening and Final Sample

The first dataset comprised of 460 answers. The data screening was used to check eligibility, similarity of response identifiers, missing values of measurements, invalid values of Likert, and straight-lining. There were no ineligibility, duplicate, missing measurement-value, and invalid Likert responses, which led to the removal of no responses. One of the responses was found to be straight-lining case and was eliminated (Radukić *et al.*, 2023). The end analysis sample thus comprised 459 valid responses, which reflects a retention rate of 99.78%.

The last sample was heterogeneous in terms of the position and organisation features of respondents. Male respondents constituted 63.18 % of the sample, female respondents 34.42 % and 2.40 % of the sample preferred not to disclose their gender. The highest age range was 25-34 years, then 35-44 years. Majority of the respondents had bachelors or masters. Middle-level and junior managers were large in number and also the executives, senior managers, sustainability or compliance professionals as well as production personnel were present.

The sample was diverse, comprising various types of organisations, such as garment factories, composite factories, textile mills, washing and dyeing plants, and accessories or packaging manufacturers. It also encompassed domestic, export-based, and mix-market companies of mixed environmental certification (Haq & Alam, 2023). This offered valuable organisational heterogeneity to test the models.

Measurement-Model Assessment

The structural relationships were then tested by first having measurement model tested. Outer loadings were used to test the reliability of indicators, as well as the percentage of the variance of indicators that was explained by the allocated construct. Cronbach alpha, rho A and composite reliability were used to assess internal consistency reliability. Average variance extracted was used as a measure of convergent validity (Da Silva

et al., 2022). The Fornell-Larcker criterion, heterotrait-monotrait ratio of correlations and item cross-loadings were used to analyze discriminant validity.

The assessment was in a consecutive logic. Indicators were required to initially show sufficient level of association with their target constructs. The constructs then needed to exhibit good internal consistency and adequate shared variance between indicators. Lastly, every construct was to be empirically distinct to the other constructs (Bianchi *et al.*, 2023). This order meant that structural path estimates would not be interpreted until the quality of measurements was determined.

Structural-Model Assessment

Collinearity diagnostics, explained variance, predictive relevance, effect sizes, and path significance were used to evaluate the structural model. Predictors of each endogenous construct were analyzed based on variance inflation factors (S. Hossain *et al.*, 2020). Explanatory power was estimated using R-squared and adjusted R-squared values. Predictive relevance was assessed using the values of Q-squared. The individual contributions of predictors were established using the f-squared value.

Path coefficients and inferential statistics were used to test hypotheses based on bootstrapped inferential statistics. The standard deviations, t values, and p values along with 95% confidence intervals were reported in the analysis. The direct effect was said to be supported when the coefficient was in the direction of the hypothesis and when the bootstrap allowed concluding the statistical significance. A specific indirect effect of the circular economy practices with reference to organisational recycling capability to plastic waste management performance was assessed as the mediation. The interaction of circle economy practices and top management commitment was tested as the moderator. The proposed analytical plan thus examined direct associations, the mediating status of recycling competence and moderating role of management commitment in a single model.

RESULTS AND DISCUSSION

Data Screening and Response Quality

Table 1 demonstrates that the original dataset consisted of 460 responses and only one was dropped due to straight-lining.

Table 1: Data Screening and Response Quality

Screening Criterion	Frequency	Percentage
Initial responses	460	100
Ineligible responses	0	0
Duplicate Response ID values	0	0
Responses containing missing measurement values	0	0
Responses containing invalid Likert values	0	0
Straight-lining responses	1	0.22
Total excluded responses	1	0.22
Final valid responses	459	99.78
Final response retention rate (%)		99.78

There were no cases that were eliminated due to ineligibility, duplication of responses identifiers, missing measurement values, and invalid Likert values. The appropriate sample thus had 459 valid observations, which resulted in 99.78 % retention rate. This screening result suggests that the dataset was

more or less complete and can be further analyzed in PLS-SEM.

Demographic and Organisational Profile

Table 2 shows wide representation in the respondent and organisational characteristics.

Table 2: Demographic and Organisational Profile of Respondents.

Variable	Category	Frequency	Percentage
Gender	Female	158	34.42
Gender	Male	290	63.18
Gender	Prefer not to disclose	11	2.40
Age Group	25–34 years	170	37.04
Age Group	35–44 years	140	30.50
Age Group	45–54 years	85	18.52
Age Group	55 years or above	32	6.97
Age Group	Below 25 years	32	6.97
Education	Bachelor's degree	197	42.92

Education	Diploma	56	12.20
Education	Doctoral degree	2	0.44
Education	Higher secondary or below	12	2.61
Education	Master's degree	156	33.99
Education	Professional qualification	36	7.84
Current Position	Executive/Officer	79	17.21
Current Position	Junior manager	96	20.92
Current Position	Middle-level manager	100	21.79
Current Position	Other	9	1.96
Current Position	Owner/Director	27	5.88
Current Position	Production or operations employee	45	9.80
Current Position	Senior manager	48	10.46
Current Position	Sustainability or compliance professional	55	11.98
Functional Area	Administration	33	7.19
Functional Area	Compliance	55	11.98
Functional Area	Environmental sustainability	66	14.38
Functional Area	Other	15	3.27
Functional Area	Production	98	21.35
Functional Area	Quality assurance	55	11.98
Functional Area	Supply chain and procurement	85	18.52
Functional Area	Waste management	52	11.33
Industry Experience	1–3 years	108	23.53
Industry Experience	11–15 years	72	15.69
Industry Experience	4–6 years	125	27.23
Industry Experience	7–10 years	121	26.36
Industry Experience	More than 15 years	33	7.19
Organisation Type	Accessories and packaging manufacturer	24	5.23
Organisation Type	Buying house	17	3.70
Organisation Type	Garment manufacturing factory	152	33.12
Organisation Type	Other	6	1.31
Organisation Type	Textile and garment composite factory	116	25.27
Organisation Type	Textile mill	109	23.75
Organisation Type	Washing and dyeing facility	35	7.63
Number of Employees	1,000–2,499	158	34.42
Number of Employees	100–249	34	7.41
Number of Employees	2,500 or more	101	22
Number of Employees	250–499	66	14.38
Number of Employees	500–999	80	17.43
Number of Employees	Fewer than 100	20	4.36
Market Orientation	Both domestic and export markets	158	34.42
Market Orientation	Domestic market	46	10.02
Market Orientation	Export market	255	55.56
Environmental Certification	Both ISO 14001 and LEED	64	13.94
Environmental Certification	Do not know	33	7.19
Environmental Certification	ISO 14001	103	22.44
Environmental Certification	LEED	61	13.29
Environmental Certification	No environmental certification	135	29.41
Environmental Certification	Other environmental certification	63	13.73

There were 63.18% and 34.42% workers, respectively. The largest age category was 25–34 years (37.04%), followed by 35–44 years (30.50%). The majority of respondents (42.92% and 33.99%) had bachelor and master degrees respectively. Middle-level managers (21.79%) and junior managers (20.92%) represented were there, and production, procurement, sustainability, compliance, quality, administration, and waste-management functions were all represented. The biggest organisational category was garment manufacturing factories (33.12%) and textile

and garment composite factories (25.27%) and textile mills (23.75%). The sample was constituted by 55.56% by export-oriented organisations. The profile thus captures respondents whose experiences in the sector are varied both in operations and in management (Bernat, 2023).

Item-Level Descriptive Statistics

Table 3 shows that the entire 1–5 response range was used in all measurement's items.

Table 3: Descriptive Statistics of Measurement Items.

Item	Construct	N	Mean	SD	Minimum	Maximum	Skewness	Kurtosis
RSP1	Regulatory and Stakeholder Pressure	459	3.209	1.243	1	5	-0.100	-0.973
RSP2	Regulatory and Stakeholder Pressure	459	3.242	1.270	1	5	-0.165	-0.982
RSP3	Regulatory and Stakeholder Pressure	459	3.190	1.246	1	5	-0.084	-0.985
RSP4	Regulatory and Stakeholder Pressure	459	3.218	1.217	1	5	-0.167	-0.888
RSP5	Regulatory and Stakeholder Pressure	459	3.200	1.267	1	5	-0.096	-1.034
CEP1	Circular Economy Practices	459	3.283	1.194	1	5	-0.219	-0.850
CEP2	Circular Economy Practices	459	3.272	1.210	1	5	-0.207	-0.844
CEP3	Circular Economy Practices	459	3.246	1.237	1	5	-0.108	-1.059
CEP4	Circular Economy Practices	459	3.222	1.284	1	5	-0.128	-1.074
CEP5	Circular Economy Practices	459	3.216	1.245	1	5	-0.161	-0.935
CEP6	Circular Economy Practices	459	3.216	1.245	1	5	-0.134	-0.976
CEP7	Circular Economy Practices	459	3.242	1.268	1	5	-0.158	-1.008
ORC1	Organisational Recycling Capability	459	3.220	1.253	1	5	-0.167	-0.970
ORC2	Organisational Recycling Capability	459	3.203	1.233	1	5	-0.186	-0.906
ORC3	Organisational Recycling Capability	459	3.316	1.299	1	5	-0.223	-1.056
ORC4	Organisational Recycling Capability	459	3.237	1.244	1	5	-0.184	-0.928
ORC5	Organisational Recycling Capability	459	3.153	1.286	1	5	-0.174	-1.070
ORC6	Organisational Recycling Capability	459	3.198	1.301	1	5	-0.144	-1.042
TMC1	Top Management Commitment	459	3.235	1.285	1	5	-0.142	-1.085
TMC2	Top Management Commitment	459	3.179	1.236	1	5	-0.119	-0.977
TMC3	Top Management Commitment	459	3.355	1.296	1	5	-0.317	-0.967
TMC4	Top Management Commitment	459	3.200	1.229	1	5	-0.152	-0.903
TMC5	Top Management Commitment	459	3.168	1.222	1	5	-0.107	-0.921

TMC6	Top Management Commitment	459	3.218	1.247	1	5	-0.194	-0.971
PWMP1	Plastic Waste Management Performance	459	3.229	1.311	1	5	-0.177	-1.089
PWMP2	Plastic Waste Management Performance	459	3.248	1.295	1	5	-0.244	-0.993
PWMP3	Plastic Waste Management Performance	459	3.205	1.294	1	5	-0.208	-1.037
PWMP4	Plastic Waste Management Performance	459	3.203	1.271	1	5	-0.122	-1.031
PWMP5	Plastic Waste Management Performance	459	3.224	1.266	1	5	-0.136	-1.076
PWMP6	Plastic Waste Management Performance	459	3.211	1.297	1	5	-0.090	-1.134
ENVP1	Environmental Performance	459	3.190	1.205	1	5	-0.165	-0.863
ENVP2	Environmental Performance	459	3.244	1.299	1	5	-0.201	-1.080
ENVP3	Environmental Performance	459	3.214	1.272	1	5	-0.162	-0.989
ENVP4	Environmental Performance	459	3.198	1.260	1	5	-0.127	-1.034
ENVP5	Environmental Performance	459	3.200	1.306	1	5	-0.191	-1.070
ENVP6	Environmental Performance	459	3.214	1.287	1	5	-0.144	-1.062

Means of the items were between 3.153 (ORC5) and 3.355 (TMC3) indicating moderate to moderate levels of positive evaluation without strong ceiling effects. The standard deviation was between 1.194 and 1.311, and there was adequate response dispersion. Skewness ranged from -0.317 to -0.084 and kurtosis from -1.134 to -0.844. The distributions were slightly negatively skewed and somewhat flat, and no item had an extreme univariate

distribution that would invalidate the following analysis based on latent variables.

Construct-Level Descriptive Statistics and Correlations

Correlations of the standardised latent construct scores are reported in Table 4; thus, the mean of the constructs is zero and the standard deviation is 1.

Table 4: Construct-Level Descriptive Statistics and Correlations

Construct	Mean	SD	RSP	CEP	ORC	TMC	PWMP	ENVP
RSP	0	1	1	0.483	0.287	0.112	0.245	0.227
CEP	0	1	0.483	1	0.574	0.229	0.533	0.484
ORC	0	1	0.287	0.574	1	0.239	0.600	0.472
TMC	0	1	0.112	0.229	0.239	1	0.286	0.232
PWMP	0	1	0.245	0.533	0.600	0.286	1	0.657
ENVP	0	1	0.227	0.484	0.472	0.232	0.657	1

All the correlations are positive, which can be supported by the conceptual direction proposed. Plastic waste management performance and environmental performance ($r = 0.657$) have the highest level of correlation, then organisational recycling capabilities and plastic waste management performance ($r = 0.600$).

The correlations are significant to allow the theoretical relationships, though they are not very high to indicate construct redundancy.

Indicator Reliability and Convergent Validity

Table 5 indicates that none of the 36 indicators were dropped.

Table 5: Indicator Reliability and Outer Loadings

Construct	Item	Outer loading	Indicator reliability	Decision
RSP	RSP1	0.830	0.688	Retained
RSP	RSP2	0.869	0.755	Retained
RSP	RSP3	0.785	0.617	Retained
RSP	RSP4	0.858	0.736	Retained
RSP	RSP5	0.806	0.650	Retained

CEP	CEP1	0.851	0.725	Retained
CEP	CEP2	0.845	0.714	Retained
CEP	CEP3	0.810	0.656	Retained
CEP	CEP4	0.837	0.700	Retained
CEP	CEP5	0.759	0.576	Retained
CEP	CEP6	0.847	0.717	Retained
CEP	CEP7	0.800	0.640	Retained
ORC	ORC1	0.858	0.736	Retained
ORC	ORC2	0.821	0.674	Retained
ORC	ORC3	0.833	0.694	Retained
ORC	ORC4	0.833	0.694	Retained
ORC	ORC5	0.856	0.733	Retained
ORC	ORC6	0.845	0.715	Retained
TMC	TMC1	0.847	0.718	Retained
TMC	TMC2	0.820	0.672	Retained
TMC	TMC3	0.818	0.670	Retained
TMC	TMC4	0.840	0.705	Retained
TMC	TMC5	0.808	0.652	Retained
TMC	TMC6	0.849	0.721	Retained
PWMP	PWMP1	0.861	0.740	Retained
PWMP	PWMP2	0.872	0.760	Retained
PWMP	PWMP3	0.846	0.716	Retained
PWMP	PWMP4	0.853	0.728	Retained
PWMP	PWMP5	0.837	0.701	Retained
PWMP	PWMP6	0.825	0.681	Retained
ENVP	ENVP1	0.852	0.725	Retained
ENVP	ENVP2	0.868	0.753	Retained
ENVP	ENVP3	0.857	0.735	Retained
ENVP	ENVP4	0.854	0.729	Retained
ENVP	ENVP5	0.837	0.700	Retained
ENVP	ENVP6	0.857	0.735	Retained

Outer loadings range from 0.759 to 0.872. CEP5 has the lowest loading (0.759), and PWMP2 the highest (0.872). The values of reliability of indicators are between 0.576 and 0.760. The homogenous high loadings suggest that

the items that were observed are good measures of their respective latent constructs and no item needed to be dropped due to reliability considerations.

Table 6: Internal Consistency Reliability and Convergent Validity.

Construct	Cronbach's alpha	rho A	Composite reliability	AVE	Reliability Decision	Convergent Validity Decision
RSP	0.887	0.892	0.917	0.689	Acceptable	Established
CEP	0.919	0.922	0.936	0.675	Acceptable	Established
ORC	0.917	0.918	0.936	0.708	Acceptable	Established
TMC	0.910	0.919	0.930	0.690	Acceptable	Established
PWMP	0.923	0.923	0.939	0.721	Acceptable	Established
ENVP	0.926	0.927	0.942	0.730	Acceptable	Established

The high internal consistency and convergent validity are affirmed by Table 6. Cronbach's alpha values range from 0.887 to 0.926, rho_A values from 0.892 to 0.927, and composite reliability values from 0.917 to 0.942. The internal consistency of all constructs is high. The values of the AVE lie between 0.675 and 0.730, which is an indication that each of the constructs explains more than

a half of the variance of the indicators of the construct. Measurement model therefore meets the reported reliable and convergent-validity standards.

Discriminant Validity

Table 7 is a support of the Fornell-Larcker criterion of discriminant validity.

Table 7: Fornell-Larcker Discriminant Validity Assessment.

Construct	RSP	CEP	ORC	TMC	PWMP	ENVP
RSP	0.830	0.483	0.287	0.112	0.245	0.227
CEP	0.483	0.822	0.574	0.229	0.533	0.484
ORC	0.287	0.574	0.841	0.239	0.600	0.472
TMC	0.112	0.229	0.239	0.830	0.286	0.232
PWMP	0.245	0.533	0.600	0.286	0.849	0.657
ENVP	0.227	0.484	0.472	0.232	0.657	0.854

The square root of AVE on the diagonal is greater than the inter-construct correlations of each construct. As an illustration, the diagonal value of PWMP is 0.849, higher than its correlation with ENVP of 0.657 and its correlation with ORC of 0.600. This trend shows that every construct has more variance with its indicators than with the other constructs. In Table 8, additional

evidence of discriminant validity is given. HTMT values range from 0.127 to 0.709. The greatest ratio is found between PWMP and ENVP at 0.709, then ORC and PWMP at 0.651. The values are all below typically accepted conservative values, which means that the six latent constructs are empirically different even with their theoretically linked content.

Table 8: Heterotrait-Monotrait Ratio of Correlations

Construct	RSP	CEP	ORC	TMC	PWMP	ENVP
RSP	1	0.531	0.318	0.127	0.270	0.248
CEP	0.531	1	0.622	0.245	0.576	0.523
ORC	0.318	0.622	1	0.259	0.651	0.512
TMC	0.127	0.245	0.259	1	0.307	0.249
PWMP	0.270	0.576	0.651	0.307	1	0.709
ENVP	0.248	0.523	0.512	0.249	0.709	1

Table 9: Cross-Loadings of Measurement Items

Item	Assigned Construct	RSP	CEP	ORC	TMC	PWMP	ENVP
RSP1	RSP	0.830	0.390	0.202	0.094	0.144	0.147
RSP2	RSP	0.869	0.445	0.264	0.052	0.216	0.225
RSP3	RSP	0.785	0.364	0.239	0.127	0.200	0.166
RSP4	RSP	0.858	0.428	0.275	0.093	0.222	0.218
RSP5	RSP	0.806	0.369	0.205	0.109	0.233	0.181
CEP1	CEP	0.401	0.851	0.464	0.194	0.425	0.380
CEP2	CEP	0.406	0.845	0.474	0.198	0.439	0.358
CEP3	CEP	0.423	0.810	0.480	0.169	0.418	0.428
CEP4	CEP	0.421	0.837	0.512	0.183	0.456	0.436
CEP5	CEP	0.356	0.759	0.387	0.138	0.377	0.364
CEP6	CEP	0.418	0.847	0.491	0.252	0.487	0.452
CEP7	CEP	0.346	0.800	0.480	0.174	0.455	0.356
ORC1	ORC	0.194	0.501	0.858	0.222	0.542	0.432
ORC2	ORC	0.232	0.445	0.821	0.274	0.495	0.407

ORC3	ORC	0.296	0.474	0.833	0.201	0.484	0.352
ORC4	ORC	0.277	0.469	0.833	0.200	0.479	0.381
ORC5	ORC	0.206	0.491	0.856	0.175	0.538	0.440
ORC6	ORC	0.251	0.512	0.845	0.141	0.487	0.369
TMC1	TMC	0.085	0.177	0.202	0.847	0.224	0.187
TMC2	TMC	0.102	0.151	0.151	0.820	0.196	0.159
TMC3	TMC	0.110	0.167	0.190	0.818	0.197	0.169
TMC4	TMC	0.082	0.203	0.219	0.840	0.255	0.189
TMC5	TMC	0.040	0.217	0.170	0.808	0.246	0.220
TMC6	TMC	0.138	0.208	0.243	0.849	0.285	0.219
PWMP1	PWMP	0.232	0.498	0.495	0.237	0.861	0.557
PWMP2	PWMP	0.213	0.459	0.547	0.255	0.872	0.569
PWMP3	PWMP	0.176	0.413	0.523	0.228	0.846	0.536
PWMP4	PWMP	0.210	0.473	0.513	0.240	0.853	0.584
PWMP5	PWMP	0.222	0.401	0.479	0.236	0.837	0.525
PWMP6	PWMP	0.193	0.465	0.498	0.263	0.825	0.571
ENVP1	ENVP	0.219	0.432	0.409	0.209	0.567	0.852
ENVP2	ENVP	0.193	0.415	0.432	0.210	0.571	0.868
ENVP3	ENVP	0.202	0.436	0.395	0.179	0.576	0.857
ENVP4	ENVP	0.188	0.369	0.380	0.219	0.576	0.854
ENVP5	ENVP	0.178	0.417	0.409	0.192	0.519	0.837
ENVP6	ENVP	0.183	0.411	0.398	0.181	0.552	0.857

The same conclusion is confirmed in Table 9 at the indicator level. Each of the items loads most onto its designated construct, as compared to all non-target constructs. This can be observed in every six blocks of measurements (Aleksić *et al.*, 2022). The pattern of cross-loading thus offers a further validation that the content

of items is congruent with the desired latent variables and is not swamped with rival constructs.

Structural Model Assessment

According to table 10, structural collinearity is not a major issue to worry about.

Table 10: Collinearity Assessment of the Structural Model

Endogenous Construct	Predictor	VIF	Decision
CEP	RSP	1	No critical collinearity
ORC	CEP	1	No critical collinearity
PWMP	CEP	1.510	No critical collinearity
PWMP	ORC	1.519	No critical collinearity
PWMP	TMC	1.084	No critical collinearity
PWMP	CEP × TMC	1.011	No critical collinearity
ENVP	PWMP	1	No critical collinearity

VIF values range from 1.000 to 1.519. The greatest VIF is in the case of ORC as a predictor of PWMP, but that is much less than traditional alert thresholds. The association between CEP and TMC has a VIF of 1.011. Without any indication that serious multicollinearity overstated standard errors or skewed the estimated relationships, the structural coefficients can be interpreted.

Table 11 indicates that RSP and CEP explain 23.3% and 32.9% of the variation in CEP and ORC respectively. The

predictors of PWMP cover 43.4% of its variance, and PWMP covers 43.1% of ENVP. The results of the analysis put the explanatory power of CEP in the category of very weak and the other endogenous constructs in the category of weak. However, all the values of Q² are positive with the range of 0.223 to 0.425. Predictive relevance is thus determined each of the endogenous constructs.

Table 12 explains the substantive contribution of individual structural paths. RSP → CEP has a medium

Table 11: Explanatory Power and Predictive Relevance

Endogenous Construct	R ²	Adjusted R ²	Q ²	R2 Interpretation	Q2 Interpretation
CEP	0.233	0.231	0.223	Very weak	Predictive relevance established
ORC	0.329	0.328	0.320	Weak	Predictive relevance established
PWMP	0.434	0.429	0.422	Weak	Predictive relevance established
ENVP	0.431	0.430	0.425	Weak	Predictive relevance established

Table 12: Effect Size Assessment

Structural Path	f ²	Effect Size
RSP → CEP	0.304	Medium
CEP → ORC	0.490	Large
CEP → PWMP	0.081	Small
ORC → PWMP	0.206	Medium
TMC → PWMP	0.029	Small
CEP × TMC → PWMP	0.010	Negligible
PWMP → ENVP	0.758	Large

effect size ($f^2 = 0.304$), while CEP → ORC has a large effect ($f^2 = 0.490$). The direct CEP → PWMP effect is small ($f^2 = 0.081$), whereas ORC → PWMP is medium ($f^2 = 0.206$). TMC is also a small direct contribution to PWMP ($f^2 = 0.029$) and the interaction effect is also small ($f^2 = 0.010$). The model shows the most significant effect between PWMP and ENVP ($f^2 = 0.758$), which results in a strong environmental impact downstream.

Direct Effects and Hypothesis Testing

Table 13 indicates that five direct hypotheses are all accepted. RSP positively affects CEP ($\beta = 0.4827$, $t = 13.5227$, $p < 0.001$), supporting H1. CEP positively affects ORC ($\beta = 0.5736$, $t = 16.8904$, $p < 0.001$), supporting H2. CEP also has a significant direct effect on PWMP ($\beta = 0.2635$, $t = 5.4530$, $p < 0.001$), supporting H3. ORC positively affects PWMP ($\beta = 0.4209$, $t = 9.4206$,

Table 13: Direct Effects and Hypothesis Testing

Hypothesis	Structural Path	Path Coefficient	Bootstrap mean	SD	t value	p value	2.5% CI	97.5% CI	Decision
H1	RSP → CEP	0.483	0.484	0.036	13.52	<0.001	0.413	0.552	Supported
H2	CEP → ORC	0.574	0.575	0.034	16.89	<0.001	0.506	0.639	Supported
H3	CEP → PWMP	0.264	0.262	0.048	5.453	<0.001	0.166	0.356	Supported
H4	ORC → PWMP	0.421	0.422	0.045	9.421	<0.001	0.335	0.510	Supported
H5	PWMP → ENVP	0.657	0.658	0.027	24.59	<0.001	0.603	0.708	Supported

$p < 0.001$), supporting H4. Finally, PWMP strongly predicts ENVP ($\beta = 0.6566$, $t = 24.5865$, $p < 0.001$), supporting H5. The respective confidence limits do not contain zero.

Mediation and Moderation Results

Table 14 shows the support of both the mediation and moderation hypothesis. For H6, the indirect effect of CEP on PWMP through ORC is 0.2415 ($t = 7.6475$, $p < 0.001$), with a 95% confidence interval of 0.1831

to 0.3075. Since the immediate CEP → PWMP effect is positive and meaningful, the outcome is considered as a complementary partial mediation. For H7, the CEP × TMC interaction coefficient is 0.0748 ($t = 2.1080$, $p = 0.035$), and the 95% confidence interval ranges from 0.0042 to 0.1437. The coefficient value is positive, which shows the strengthening effect. The interaction f^2 of 0.010 however indicates that the moderation effect is statistically significant but substantively small.

Table 14: Mediation and Moderation Results

Panel A. Mediation Analysis										
Panel	Hypothesis	Indirect Path	Indirect Effect	Bootstrap mean	SD	t value	p value	2.5% CI	97.5% CI	Direct Effect
Panel A: Mediation Analysis	H6	CEP → ORC → PWMP	0.241	0.243	0.032	7.647	<0.001	0.183	0.307	0.264
										Decision
										Mediation Type
										Supported
Panel B. Moderation Analysis										
Panel	Hypothesis	Interaction Path	Interaction Coefficient	Bootstrap mean	SD	t value	p value	2.5% CI	97.5% CI	Moderation Direction
Panel B: Moderation Analysis	H7	CEP × TMC → PWMP	0.075	0.074	0.035	2.108	0.035	0.004	0.144	Positive strengthening effect
										Decision
										Supported

Discussion

The results clarify the way plastic circularity is created and generates environmental value within the textile and garment industry of Bangladesh. The emergence of performance follows a chain that starts with an external pressure, traverses circular practices and organisational capability, and ends with waste-management and environmental results. Implementation is also enhanced by leadership commitment (Liu *et al.*, 2022).

The substantial impact of regulatory and stakeholder pressure on the practice of the circular economy invites to believe that an environmental behaviour is closely linked with institutional and market expectations. The value is quite significant (0.4827) and the effect size is medium. This suggests that government demands, expectations of international buyers, customer taste and preferences, industry agencies and social pressure are all significant stimulus in the context of the circular action (Ghoreishi *et al.*, 2022). In the case of the companies that work in global supply chain networks, the environmental expectations thus seem to be able to influence the internal operational behaviour.

But the value of the R-squared of 0.233 of circular economy practices also demonstrates that external pressure is not a singular source of circular action. A significant part of the variance is left unexplained. Adoption may also be influenced by internal strategy, technological preparedness, cost expectations, organisational culture, supplier capability and market positioning. This finding should then be taken to indicate that external pressure matters, but not alone. Companies have the ability to react to pressure depending on the resources available and priorities of managers (Abbate *et al.*, 2023).

Of special interest is the connection between the practice of circular economy and the organisational recycling capability. One of the strongest path coefficients in the model is 0.5736 and the effect size is high. This is because circular practices are not just about enhancing the short-term waste performance (Carpus *et al.*, 2020). They seem to develop an organisational potential to recycle and recover in the future. Repeated processes like separation, re-use, monitoring, supplier-coordination, and recycling partnering may generate knowledge, infrastructure and routines that render waste management more methodical. The immediate impact of recycling capability on the performance of plastic waste management supports this ability-enhancing meaning of recycling. The direct coefficient of circular economy practices to performance is lower than the coefficient of 0.4209, which is the direct coefficient of the practice to the performance. Recycling capability with a medium effect size and the direct circular-practice with a small effect size. The implication in practice is obvious. Companies are not to consider circularity as just a number of visible practices (Ütebay *et al.*, 2020). They ought to enquire whether the practices are establishing trustworthy operation potential.

Further evidence is the mediation outcome. The indirect impact via recycling capacity is 0.2415, which is extremely

important. Meanwhile, the direct impact of the practice of a circular economy is prominent. The pattern of complementary partial mediation thus implies that circular practices enhance plastic waste management performance in two pathways. One path is straight and straightforward (Khairul Akter *et al.*, 2022). The second pathway is by developing organisational recycling ability. The two routes have a common, positive direction.

The outcome provides a valuable mechanism to the performance performance-circular economy relationship. It describes why certain organisations might report a high level of environmental activity yet they might attain moderate performance enhancement. Practices do not necessarily become capabilities (Denić *et al.*, 2021). As an illustration, a production facility can separate plastic waste, yet the facility lacks proper monitoring, skilled workers, or consistent recycling collaborators, the advantages might not be as extensive. On the other hand, circular practices that are integrated into systems and resources can be repeated, scaled, and not so reliant on short-term projects.

The best downstream relationship is between the performance of plastic waste management and environmental performance. The coefficient 0.6566 is high and $f\text{-squared} = 0.758$ indicates a high contribution. This supports the fact that there are positive links between operational benefits and broader environmental consequences of plastic waste management (Angelova, 2020). The reduction of waste, increased recovery, less improper waste disposal, better traceability, and more organized management can be translated into not only less pollution, but also better resource utilization, less reliance on virgin plastic, and enhanced environmental compliance.

Top management commitment had a large positive moderating effect. This helps to argue that a leadership influences the effectiveness of transitioning circular practices into waste-management outcomes (Wiah *et al.*, 2022). Circular practices have a higher chance of impacting measurable outcomes when the senior leaders do not only distribute resources but also review performance, motivate workers, and make circular goals a part of the formal plans. The positive interaction can thus be logically interpreted organisational wise.

Meanwhile, the magnitude of the moderation effect should be interpreted cautiously. The coefficient of interaction is 0.0748 and its $f\text{-squared}$ is 0.010. The effect is large in statistical significance, but in terms of effect-size classification is negligible as reported. Management commitment ought not to be demonstrated thus as a sovereign driver (Juanga-Labayen *et al.*, 2022). It can be more appropriately viewed as a supportive circumstance that slightly reinforces an already positive circular economyperformance relationship.

The model also has a moderate, but not complete, explanatory power. The $R\text{-squared}$ of plastic waste management performance is equal to 0.434 and the environmental performance $R\text{-squared}$ is equal to

0.431. These values indicate that the model describes a significant amount of the variation in organisations, yet most of the variations can be ascribed to other factors beyond the framework. This would occur in complicated industrial systems (Velicko *et al.*, 2020). Technology, material composition, availability of the infrastructure, market strength of the recyclers, regulatory enforcement, supplier behaviour, cost structures and volume of production can also be relied upon in waste management. However, the $Q\text{-squared}$ positive values of all the endogenous constructs demonstrate that the model is predictively relevant. The findings thus prove the theoretical rationale and the practical feasibility of the framework. Notably, the model is not based on one high coefficient. It demonstrates a relationship pattern that is closely linked in the sense of explaining the interaction of pressure, practices, capability, leadership, waste performance and environmental performance in the organisational system.

Theoretical and Practical Implications

Theoretical Implications

The research adds to the literature on circular economy by disaggregating the practices and the capability. This difference is theoretically critical since an organisation will be able to embrace circular activities without the need to build a stable capacity to handle plastic waste. The study highlights that capability is an element of the process wherein circular practices create the performance, as it demonstrates a strong mediation pathway (Valtere *et al.*, 2023). Circular economy studies may thus take advantage of the difference in identification of the visible activities and the underlying organisational systems that render their activities trustworthy.

Outside and inside explanations are also incorporated in the study. External environment is regulatory and stakeholder pressure. Circular economy practices are organisational responses. Recycling capacity is internal operating capacity. Management commitment is a leadership situation. The environmental performance and plastic waste management are consecutive results. This stratified approach provides a better explanation as compared to a direct relationship between environmental practice and environmental performance.

The moderation outcome, too, is fine-tuning. The commitment of top management is important, and its interaction effect is insignificant in the form of increment (Chae & Hinestroza, 2020). This implies that leadership cannot be theorised as an alternative to operation capability. Circularity can be fostered by managers, yet performance remains largely reliant on the systems, knowledge, facilities, monitoring and partnership that are necessary to handle plastic waste. The roles of leadership and capability thus differ in the model.

Managerial Implications

Plastic circularity is a capability-building programme that managers ought to treat as an operational programme as

opposed to a group of discrete environmental activities. Measurable systems should be related to waste segregation, redesigning of packaging, reuse, and involvement of recyclers. The businesses are advised to invest in their collection infrastructure, personnel expertise, tracking of wasted materials, trusted recovery providers, and process adaptability (Chen *et al.*, 2021). Such investments will most probably enhance the transformation of circular practices into quantifiable performance.

Circular goals should also be institutionalised by the senior management. Implementation can be enhanced through budgetary allocation, performance assessment, employee motivation and supplier partnership. Nevertheless, the small moderation effect shows that leadership statements do not seem to yield significant performance improvements. Management commitment must be translated into systems, resources, accountability and technical capability.

The high RSP -CEP relationship implies that external requirements can stimulate circular behaviour to policymakers, buyers and industry bodies (M. Hossain & Shams, 2020). The pressure that augers positively in implementation is most likely to be effective. Guidance, reporting standards, recycling infrastructure, technical support and incentive can therefore be used to supplement requirements and to help firms transition to capability.

Lastly, the environmental performance programmes ought to have particular plastic waste indicators. As leading indicators of larger environmental performance, firms are able to track waste production, recycling and reduction of disposal, traceability and efficiency of handling. This renders sustainability management more quantifiable and more tangible in linking factory level action to environmental impacts.

Limitations and Future Research

There are a number of limitations to the study. To begin with, cross-sectional design will only capture relationships at a single broad period and thus does not exhibit time causality. Longitudinal designs could be applied in future studies to understand how circular capabilities will evolve with time, and whether the performance gains would be sustained (Huang, 2022). Second, the analysis is based on organisational perceptions which are reported by informed employees. Future research may involve a combination of survey data and objective data of plastic waste volumes, recycling percentage, disposal data, recovery income, or virgin-material replacement.

Third, the model describes something significant yet unaccounted performance variance. Other constructs could enhance explanation power. The next studies may investigate the digital waste tracking, green supply-chain integration, environmental competence of employees, waste recycling technology, cost pressure, supplier circularity, buyer assistance, or regulatory enforcement. Fourthly, the research is both sector specific and country specific. Duplication of the manufacturing industries in other emerging economies would aid in measuring the

generalisability of the framework.

Future research might also explore whether the model varies according to the size of the organisation, certification, and export orientation or type of the factory. Multi-group analysis could show in which certified, export-oriented or larger organisations circular practices produce greater benefits (Haq & Alam, 2023). Nonlinear or configurational relationships could also be researched, as very high amounts of circular investment can result in varying cost-benefit configurations between firms.

CONCLUSION

The paper has explored the impact of practices of a circular economy on the management of plastic waste and environmental outcomes in the textile and garment sector of Bangladesh. The findings are in favour of a compounded process where regulatory and stakeholder pressure triggers organisational recycling capacity, circular practices enhance organisational recycling capacity and the reverse is also true of both circular practices and recycling capacity in enhancing plastic waste management performance. An enhanced performance in plastic waste management in turn generates a good positive impact on environmental performance.

Recycling ability in organisations is particularly significant. It partly mediates the influence of cyclic economy actions where performance is affected not just on what companies strive to achieve, but also on whether they construct the facilities, knowledge, monitoring, partnerships, and process flexibility needed to achieve successful recycling and recovery. There is also a positive correlation between circular practices and performance, which is also supported by top management commitment, but with a small incremental interaction effect.

The key point of implication is that plastic circularity must be approached as a system within an organisation. Change may be brought in by outside forces but sustainable performance demands working capacity and managerial reinforcements. Garment and textile industries that align circularity with calculable recycling capacity are in a better place to increase the efficiency of waste-management and gain wider environmental benefits.

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