

ORIGINAL CONTRIBUTION

Exploring the Mediating Role of Market and Technological Turbulence in the Relationship between Corporate Social Responsibility and MSME Performance: The Moderating Influence of Environmental Volatility and Uncertainty

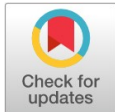
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Abstract— Corporate social responsibility is important for business, although its concept is still unclear. Corporate social responsibility also contributes to MSME performance. This study investigates how perceived environmental volatility and environmental uncertainty influence the performance of MSMEs in terms of technological and market turbulence. However, a longitudinal survey was used, and data were collected from 305 MSMEs operating in various industries. The findings show a positive relationship between corporate social responsibility and MSME performance, which is mediated by technological and market turbulence. Also, perceived environmental volatility and uncertainty moderated among CSR and MSME performance. Therefore, this study offers future directions and theoretical and practical implications.

Index Terms— Corporate Social Responsibility (CSR), MSME performance, Technological turbulence, Market turbulence, Perceived environmental volatility, Perceived environmental uncertainty

Received: 24 May 2024 ; **Accepted:** 26 July 2024 ; **Published:** 23 September 2024



Introduction

In recent markets, corporate social responsibility has been a critical component of medium and small business performances (Achi, Adeola, & Achi, 2022; Rodriguez-Gomez, Arco-Castro, Lopez-Perez, & Rodríguez-Ariza, 2020; Wirba, 2024). The most interesting factor is that micro, small, and medium enterprises (MSMEs) owners and managers concentrate on the personal accountability of staff members, employees, and subordinates; they use their abilities to improve MSME performance (Salim, Susilastuti, Rafiqah, et al., 2020; Tumiwa, Tuegeh, & Nagy, 2020). Corporate social responsibility is proposed as a component that may be used to improve business performance and make more adaptability, particularly in the COVID-19 and post-pandemic era (Latifah, Setiawan, Aryani, & Rahmawati, 2021). Managers, scholars, and policymakers are explaining how corporate social responsibility affects micro, small, and medium enterprises' performance (Aulia, Lubis, Effendi, et al., 2023; Purwanto, Nashar, Jumaryadi, Wibowo, & Mekaniwati, 2022; Utami & Sudarmiatin, 2022).

CSR is the most crucial method for business and innovation, as well as helpful for organizational performance (Achi et al., 2022; Rodriguez-Gomez et al., 2020). Enterprises that make investments in corporate business are supported to interact with knowing about environmental changes (Carroll, 2021). These kinds of organizations are more equipped to adopt changes and use disruptive technological methods to handle these changes. Major examples like Samsung Electronics have developed highly effective green products and

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implemented corporate social practices (such as setting up CSR meeting programs), leading to technological turbulence in present data storage in the market (Fukuda & Ouchida, 2020). Therefore, prior studies on corporate social responsibility have shown insignificant results that show how CSR influences MSME performance (Achi et al., 2022; Carroll, 2021; Rodriguez-Gomez et al., 2020). Fukuda and Ouchida (2020) and Velte (2022) state how businesses give benefits to their employees working with social practices. Corporate social responsibility requires different activities to be involved in improving MSME performance (Rodriguez-Gomez et al., 2020).

Researchers are being investigated how corporate social responsibility affects business operations in developing nations (Achi et al., 2022; Carroll, 2021). Environmental factors affect corporate social responsibility according to Lin (2023); and Utami and Sudarmiatin (2022). As a result, MSMEs' CSR initiatives "tend to be born out of necessity in the developing world" (Purwanto et al., 2022). Given that many MSME businesses operate in unstable and resource-constrained environments in developing economies, there appears to be a lack of knowledge regarding how and when CSR affects MSME performance, as indicated by these identified gaps in the literature Shatem and Abou-Moghli (2024); Wirba (2024).

While a perceived unstable environment offers insight into the transformative capacity of company governance and strategic management, success depends on the combination of good corporate governance and efficient strategy implementation in the whirlwinds of uncertainty (Ahammad, Basu, Munjal, Clegg, & Shoham, 2021; Darvishmotevali, Altinay, & Köseoglu, 2020). The implementation phase, which transforms established plans into beneficial actions and outcomes, is an important part of strategic management. It could be more challenging to carry out plans and get desired outcomes, so businesses need to employ proactive implementation. This means continuously monitoring and accessing the external environment, identifying new trends and responsibilities, and adjusting policies to implement plans (Chen & Tian, 2022; Shakil, 2022). There are three main significant aspects of the present study. Firstly, it calls for a paper on social responsibility in developing nations and how CSR affects MSME performance. Achi et al. (2022) state that corporate social responsibility influences MSME performance, which is implemented by technological and market turbulence. Second, the important role of moderating variables like perceived environmental volatility and uncertainty how effects corporate social responsibility and MSME performance, as well as the mediating role of technological and market turbulence, add significant impact on it (Afshar Jahanshahi & Brem, 2020; Wang, Qureshi, Guo, & Zhang, 2022). Lastly, evaluating the micro, small, and medium enterprises concept in Nigeria, a developing country that receives less attention. By expanding the empirical scope of the relationship between corporate social responsibility (CSR) and MSME performance, our work contributes to a more balanced view of CSR, which has hitherto only been found in advanced nations (Darvishmotevali et al., 2020). The final format of the paper outlines the theoretical foundations and development of hypotheses. The next part is research methodology with sample, measurements, and validity or reliability or variables. Lastly, discussing the findings of the study, limitations, future research, and implications.

Theoretical Approach

Stakeholder theory

In the literature on corporate social responsibility, stakeholder theory has taken center stage (Rodriguez-Gomez et al., 2020). While CSR practices are centered on stewardship towards employees, they are also focused on stewardship towards external stakeholders, such as the community, environment, or customers (Afshar Jahanshahi & Brem, 2020). Managers must overcome cognitive inertia to meet the needs of nonmainstream consumers, which could result in the emergence of disruptive innovation. CSR also encourages businesses to devote corporate resources to learning about their emerging customers (Carroll, 2021). CSR encourages employees to proactively implement technology and market turbulence and gives them the opportunity to enhance their creativity (Ch'ng, Cheah, & Amran, 2021), both of which may have a good impact on MSME performance. According to Achi et al. (2022), technological turbulence produces unstable technological settings that could present new business growth prospects. Businesses that engage in corporate social responsibility (CSR) have the potential to boost MSME performance by altering managers' prior cognitive rigidity and enhancing perceived environmental volatility and uncertainty. However, environmental volatility significantly impacts market turbulence and technological turbulence (Aftab et al., 2024; Fukuda & Ouchida, 2020; Shakil, 2022). Enterprises that encounter corporate social responsibility may find it difficult to meet the demands of new employees and overcome cognitive scenarios, which could make MSME performance be implemented. Because corporate social responsibility (CSR) involves a range of stakeholders, stakeholder theory provides a useful means of understanding how companies achieve strategic innovation goals (Shatem & Abou-Moghli, 2024; Wang et al., 2022). Stakeholder theory is the management of a business's relationships with a variety of stakeholders, such as customers, communities, shareholders, and the environment, claims Shakil (2022). Stakeholder theory helps organizations achieve better outcomes, especially MSME performance, by pursuing beneficial stakeholder hyperlinks (Haarhaus & Liening, 2020). Scholars have lately connected stakeholder theory to both performance and turbulence (Afshar Jahanshahi & Brem, 2020; Chen & Tian, 2022).

CSR and MSME performance

According to Rodriguez-Gomez et al. (2020), the environment serves as the foundation for businesses' CSR initiatives. Corporate Social Responsibility (CSR) is described as "actions that appear to further some social good beyond the interests of the firm and that which is required by law" (Velte, 2022). Accordingly, CSR is seen as the activities of businesses that transcend just financial gain. Additionally, the dynamic capabilities framework, according to Wirba (2024), recommends that firms recognize the environmental challenges currently facing their community before integrating CSR initiatives with the potential to promote pro-environmental behavior. However, scattered and ambiguous empirical evidence has been presented in previous studies regarding the link between CSR and firm performance in the literature (Fukuda & Ouchida, 2020). Rodriguez-Gomez et al. (2020), reported a positive connection; other studies found no association and found a negative or null relationship between CSR and firm performance. This approach adapts the company to external changes Utami and Sudarmiatin (2022) and runs the business in an eco-friendly manner that not only helps the company to succeed but also brings the social actors closer (Aulia et al., 2023; Latifah et al., 2021). This is so, as a result of their closeness to society, MSME operations are viewed as levers to create positive social and environmental impacts. So, it can be argued that CSR allows industries to build environmentally safe, sustainable institutions while at the same time equipping them to solve these environmental issues effectively (Hanggraeni & Sinamo, 2021; Salim et al., 2020). On the basis of these presumptions, we contend that companies can create both technological and market disruption by implementing CSR practices (Tumiwa et al., 2020). The firm's ability to provide its performance is strengthened by its prolonged efficacy in their turbulence. We argue that CSR drives MSME success when channeled via technical and market turbulence, and we put forth the following hypothesis:

Hypothesis 1. Corporate social responsibility has a significant direct impact on MSME performance.

CSR and technological turbulence

According to Ogbeibu, Emelifeonwu, Senadjki, Gaskin, and Kaivo-oja (2020), the idea of technological turbulence is primarily examined at the macro level and also reviews a specific environmental element that organizations encounter beforehand. The external environment includes market turbulence and its intensity, which intensifies competition in the market, as well as technological turbulence, which is an uncontrollable force that affects an organization's performance (Ullah, Iqbal, & Shams, 2020). While market turbulence talks about shifting consumer demands, technical turbulence also talks about the introduction of new technologies in a short period of time, and competition intensity talks about how competitive a market is (Aulia et al., 2023). The rate of technical change and unpredictability, which is defined by the instability and quick obsolescence of technology, is reflected in technological turbulence (Dwirandra & Astika, 2020). Technological turbulence may reduce the link between CSR and MSME performance by forcing enterprises to react swiftly to technological changes throughout performance (Haarhaus & Liening, 2020; Ogbeibu et al., 2020). Refer to a situation where technological turbulence occurs with all of its practical ramifications in contemporary competitive situations, where new services and products are being generated, and where a lot of technological innovation is involved (Larbi-Siaw et al., 2022). Ch'ng et al. (2021) suggest that the first technology has the ability to create better products and services, while the second one is likely to have adverse consequences. In order to integrate new technologies in and around a highly competitive business environment, swift decisions to adopt and execute the necessary steps with consideration of the clients and competitors are critical (Aulia et al., 2023). In comparison to contexts where technology is stable, there is higher variation in performance in sectors with a higher degree of technical turbulence (Aulia et al., 2023; He & Wu, 2024). There's always uncertainty about the performance of new products and services due to market and technological changes (Hanggraeni & Sinamo, 2021; Salim et al., 2020). This is why this research expects the below-stated hypothesis.

Hypothesis 2. Corporate social responsibility has a significant direct impact on technological turbulence.

CSR and market turbulence

According to Ch'ng et al. (2021), market turbulence is a crucial environmental component that raises risk and uncertainty in business operations and further affects the relationship between strategy and performance. Companies should understand changing market trends and make appropriate business modifications in order to provide better value for customers, as a turbulent market is characterized by frequent and unpredictable changes in client preferences (Utami & Sudarmiatin, 2022). Since it raises uncertainty and risk in business processes and the causal link between performance and business approach, market turbulence is an important factor. According to three different theoretical perspectives, market volatility probably mitigates the impact of CSR on long-term success (Li, 2022). First, endowed enterprises would adjust to changing market conditions in order to appropriately respond to environmental sustainability, according to the law of necessary variety (Carroll, 2021). A firm's operational responses must adapt to the ever-changing demands of the market and household, which calls for ongoing innovation (Ogbeibu et al., 2020). Turbulent markets are characterized by uncertainty and difficulty in anticipating events (Tumiwa et al., 2020). Environmental challenges have an impact on a company's strategy and business model since they present both opportunities and risks. Second, firms' inventive capabilities allow them to combine and restructure portfolios

of tangible and intangible assets in a unique way, giving them the dynamic capabilities they need to fend off dangers and grab opportunities in volatile markets (Ch'ng et al., 2021). Therefore, it is anticipated that a company's innovativeness will be the means by which it effectively adapts to changes in the market. Because it increases the ambiguity and risk in business operations and the causal relationship between a company's approach and performance, market turbulence is a significant component. Uncertainties and unpredictable developments characterize the tumultuous corporate environment (Larbi-Siaw et al., 2022). The emergence of environmental issues creates both opportunities and risks, which in turn influences the business strategies that companies employ. According to Li (2022), one important environmental factor influencing how CSR affects MSME performance is market instability. Therefore, the following hypothesis is predicted by this study:

Hypothesis 3. Corporate social responsibility has a significant direct impact on market turbulence.

The mediating role of technological turbulence

Technological changes and unpredictability can be defined as instability and quick change in technology, which refers to technological turbulence (Ogbeibu et al., 2020). It may be a significant relationship between CSR and MSME performance by forcing businesses to react to how technologies are adopted during MSME performance (He & Wu, 2024). Unstable technological environment brought about fluctuating technologies which forces business to continuously relocate resources in response to threats and opportunities (Freeman, 2023). Enterprises with external corporate social responsibility may be better able to allocate business resources and find new employees, and take advantage of implementing MSME performance (Wang et al., 2022). However, the beneficial impact of external CSR on MSME performance is reinforced by technological turbulence. Furthermore, in a dynamic technological environment, technological turbulence makes older technological knowledge obsolete and offers new technological knowledge (Velte, 2022). This is typically accompanied by new development opportunities to create new commercial applications (Utami & Sudarmiatin, 2022). According to Li (2022), companies that engage in external corporate social responsibility (CSR) are more likely to overcome prior cognitive inertia in order to cater to the needs of nonmainstream clients, which would hasten the development of MSME performance. In order to maintain their competitive edge, businesses must constantly stay up with technology changes and create new goods because, first, a turbulent technical environment will make a firm's current technologies less useful (Bridoux & Stoelhorst, 2022; Larbi-Siaw et al., 2022). Employees in companies with internal corporate social responsibility (CSR) are more likely to become more creative in this setting, which will help to generate MSME performance. Furthermore, innovation will be seen as more important due to the quickly evolving technology landscape (Ch'ng et al., 2021). Accordingly, workers in companies with internal corporate social responsibility (CSR) are more open to adopting new practices, tools, or goods (Carroll, 2021; Ullah et al., 2020). Consequently, there is a stronger correlation between MSME success and CSR. Therefore, the following hypothesis is predicted by this study:

Hypothesis 4. Technological turbulence has a mediating impact on CSR and MSME performance.

The mediating role of market turbulence

The degree of unpredictability and volatility in a firm's marketplaces is reflected in market turbulence Tumiwa et al. (2020), which is defined by ongoing shifts in consumer demand and product preferences (Freeman, 2023). According to Wang et al. (2022), market instability raises uncertainty and risk in a company's performance, which could mitigate the impact of CSR on MSME performance. consumer wants are always changing and evolving in quickly unstable marketplaces (Lin, 2023), and the challenge of comprehending consumer demand is made more difficult by chaotic and multifold market conditions (He & Wu, 2024; Velte, 2022). The impact of external CSR on disruptive innovation is lessened in such a scenario since companies with external CSR may have a harder time locating and allocating resources to meet the demands of new clients. Furthermore, managers react to quickly shifting market situations by perceiving increased unpredictability in the external market (Utami & Sudarmiatin, 2022). It could be difficult for managers in companies with external CSR to distinguish between the demands of mainstream and nonmainstream customers in this situation. Managers find it difficult to overcome ingrained beliefs in order to apply MSME performance to meet the needs of non mainstream clients. Employees are unable to effectively suggest innovative ideas in turbulent market conditions due to the multiplication of market information (Bridoux & Stoelhorst, 2022; Larbi-Siaw et al., 2022). Employees in companies with internal CSR may find it challenging to come up with innovative ideas in such a setting in order to foster disruptive innovation. Therefore, the beneficial impact of internal CSR on MSME performance is hampered by market instability. On the other hand, market volatility will soon make the company's present understanding of the market outdated, and it will be challenging for staff members to forecast future events (Freeman, Dmytriyeu, & Phillips, 2021; Hanggraeni & Sinamo, 2021). In these situations, market volatility may make employees less confident in companies with internal corporate social responsibility (CSR) to successfully adopt market turbulence, which may lessen the possibility of MSME performance (Achi et al., 2022). In light of these claims, this analysis anticipates that:

Hypothesis 5. Market turbulence has a mediating impact on CSR and MSME performance.

The moderating role of perceived environmental volatility

Previous research has suggested that environmental circumstances influence how organizational capabilities are deployed to improve enterprises' performance and implement an environmental strategy (Aftab et al., 2024; Shakil, 2022). Environmental factors limit businesses and eventually affect their strategic approach. According to Achi et al. (2022), environmental volatility is the quantity and frequency of abrupt changes in a firm's external environment. These shifts in customers' tastes, technology, and market demand and supply may cause uncertainty, anxiety, and risk. These rapid changes make it challenging for companies to forecast organizational outcomes (Shakil, 2022). Many researchers have found an inverse relationship between environmental uncertainty and MSME performance (Velte, 2022; Wang et al., 2022). This is because firms find it challenging to evaluate change, develop practical countermeasures, and adjust organizational procedures when situations are unpredictable (Shakil, 2022; Utami & Sudarmiati, 2022). Given that many organizations fall behind, it might be challenging to identify sustainable market opportunities and environmental practices that may not have an immediate impact on an organization's short-term organizational success during stressful times (Wang et al., 2022). Consequently, companies are sometimes discouraged from participating in environmental projects, especially when they believe that the environment is unstable. They often analyze their own businesses and search for ways to boost internal efficiency as a prompt response to any environmental instability (Aulia et al., 2023). Environmental instability can make it more difficult for enterprises to prosper and grow, particularly in developing countries with inadequate legal protections and institutions that support the market by Octasyuva, Yuliati, Hartoyo, and Soehadi (2022) and Purwanto et al. (2022). These kinds of settings can pose challenges that could prevent businesses from obtaining or improving the resources they already have in order to strengthen their pro-environmental skills, like corporate social responsibility and green process innovation. Businesses in this setting are forced to invest minimal time and energy in these talents, which eventually has a negative impact on MSME performance (He & Wu, 2024; Shatem & Abou-Moghli, 2024). We anticipate that in such a volatile environment, the limited deployment of capabilities and availability of resources will reduce the presumed effects of corporate social responsibility (CSR) on MSME performance through green process innovation. This suggests that the mediated mechanism of green process innovation on the CSR/MSME performance link will be conditionally moderated by environmental volatility, with a higher moderated effect when perceived environmental volatility is low. All things considered, we contend that there is a pattern of moderated mediation relationships and formally hypothesize that:

Hypothesis 6. Perceived environmental volatility has a moderating impact on technological turbulence and MSME performance.

Hypothesis 7. Perceived environmental volatility has a moderating impact on CSR and MSME performance.

Hypothesis 8. Perceived environmental volatility has a moderating impact on market turbulence and MSME performance.

The moderating role of perceived environmental uncertainty

The most common risk in business must deal with environmental uncertainty. Wirba (2024), environmental uncertainty is the inability to forecast the effect of environmental change, the state of the environment, and the outcomes of organizations. Purwanto et al. (2022), state that MSME performance significantly responds to environmental change, particularly in the light of advancements in technological systems. Velte (2022) suggested that higher degrees of uncertainty are more likely to have non-financial, external, and supportive information. Aftab et al. (2024) and Lin (2023) state that environmental uncertainty may change the impact of corporate social responsibility on MSME performance. According to stakeholder theory, uncertainty has been a major concept for the external environment (Latifah et al., 2021; Octasyuva et al., 2022). Accordingly, environmental uncertainty is the incapacity of managers with reasonable boundaries to completely collect, interpret, and comprehend information about the organizational environment. This is frequently brought on by the environment's ambiguity and instability (Aulia et al., 2023; Utami & Sudarmiati, 2022). Consequently, if business decision-makers in charge of the company's future development are unable to precisely forecast how the environment, which includes elements like competitor behavior, cultural context views, or technologies, will change, the environment of the organization can be deemed uncertain (Afshar Jahanshahi & Brem, 2020; Darvishmotevali et al., 2020). It should be noted in this regard that conventional management methods and approaches are becoming less and less thought to be able to handle an environment that is marked by erratic behavior and quick changes (e.g., Anderson, 1999; Levy, 2000; Schwarz, 2006; Miller, 2011). Since businesses are being held responsible for their effects on the environment and society, corporate social responsibility (CSR) has grown in importance in the field of supply chain management (Dwirandra & Astika, 2020). CSR entails addressing social and environmental issues, such as community development, environmental protection, and labor rights, in addition to legal compliance (Fukuda & Ouchida, 2020).

Hypothesis 9. Perceived environmental uncertainty has a moderating impact on technological turbulence and MSME performance.

Hypothesis 10. Perceived environmental uncertainty has a moderating impact on CSR and MSME performance.

Hypothesis 11. Perceived environmental uncertainty has a moderating impact on market turbulence and MSME performance.

Methods

Sample and procedure

The unit of analysis in this study was MSMEs that operated in Algeria. Three important factors led us to select Algeria as the research location. First, approximately 45.6 million people live in Algeria, with 75% to 85% of them being culturally. Only 2.1% and 3.1% of the vote went to the two other candidates who were permitted by the government to participate in the election: Youcef Aouchiche of the Socialist Forces Front (FFS) and Abdelali Hassani Cherif, leader of the well-known Islamist group, the Movement of Society for Peace (MSP). Second, Algeria has an open economy with few to no restrictions on market entry activities, similar to many other democracies. As a result, MSMEs are now more prevalent in the economy. Over 30 million MSME companies are thought to exist at the moment, accounting for 87% of all business organizations in the nation (Ogbeibu et al., 2020).

We used a sample of 550 MSMEs selected from the Algeria Business Directory to test the research hypotheses. All of these MSMEs have 200 or fewer employees, are privately held, and work in a variety of industries (Salim et al., 2020). By implementing comparable ethical practices to meet the social and environmental needs of stakeholders, such as healthcare delivery and poverty alleviation initiatives, these businesses have cultivated personal ties with their respective societies (Purwanto et al., 2022). To get access to these companies, we used professional contacts and an introductory letter. We asked two business research specialists to proofread our survey instrument and performed pilot interviews with four MSME owners or managers to make sure respondents would comprehend it. In order to attain face and content validity, we made certain changes to the survey statements based on their input. A questionnaire was sent to 550 MSMEs' CEOs, owners, and/or managers in order to collect data on CSR, market and technology volatility, perceived environmental volatility, and uncertainty. Out of that initial mailing, 159 (28.9%) of the questionnaires were completed. We followed up with these 177 MSMEs sixteen weeks later to gather data on their performance using a different questionnaire. We found 305 correctly completed questionnaires (an overall response rate of 55.4%) for our analyses after eliminating partial replies.

Measures

For this study's poll, we used a seven-point Likert scale, where 1 represents complete disagreement and 5 represents complete agreement. An established multi-item research instrument that allows for score diversity is the Likert scale response. A typical CSR item is: "Our firm contributes to campaigns and projects that promote the well-being of the society." Achi et al. (2022), provided five items that were used to quantify CSR activities that focused on both social and non-social stakeholders. Technological turbulence was measured using four items. A sample technological turbulence item is "The technology is changing rapidly." Market turbulence was measured with four items taken from previous studies (Wang et al., 2022). A sample market turbulence item is "Customers in this market are very receptive to new products, services, or business model ideas". Perceived environmental volatility was measured with three items adopted by Achi et al. (2022). A sample perceived environmental volatility item is "It is difficult to monitor price changes for our product and/or services in our market". Perceived environmental uncertainty was measured with four items by Shatem and Abou-Moghli (2024). A sample perceived environmental uncertainty item is "It is not possible to make exact predictions about our business segment's development over the next 10 years". Lastly, MSME performance was measured by four items (Latifah et al., 2021). Using a seven-point rating system that goes from 1 (far below average) to 5 (well above average), we asked MSMEs' owners or managers to compare their performance over the previous 12 months to that of similar businesses. "We have improved our profit rate" is an example of a comparison item.

Evaluation of common method bias

We used both statistical and procedural remedies because gathering data from a single source can lead to common method bias. As part of the procedural remedies, we sourced our data from the various firms in two waves, separated by sixteen weeks, and we gave the participants the assurance that their answers would be kept private and anonymous and that there would be no right or wrong answers (Hair, Sharma, Sarstedt, Ringle, & Liengaard, 2024). Harman's single-factor test was one of the statistical remedies used, and the results indicated that the first component explained less than 25% of the variation in the data. Overall, our findings showed that the study was not in danger from a common procedure bias.

Validity and reliability

In order to examine model fit, composite reliability, convergent validity, and discriminant validity in the study, we used a CFA test to determine construct validity. Prior to doing the validity tests, we evaluated the data's sample appropriateness. Standardized factor loadings for each construct in our model above 0.60, according to the CFA results, indicating a satisfactory fit (see Table 1). For every construct, Cronbach's alpha (α) and composite reliability (CR) were higher than the suggested threshold of 0.70. Each construct's average variance

extracted (AVE) was higher than 0.50 but lower than the composite reliability values (Table 1). These validate the study variables' internal consistency and convergent validity. The findings indicate that multi-collinearity poses no harm to the study because all of the VIF values fell below the 10 criterion (Hair et al., 2024).

Table I
Measurement factor loadings, reliability, and validity

Measurement Items	FL	α	CR	AVE
Corporate Social Responsibility (CSR)		0.865	0.903	0.650
Our firm participates in the activities which aim to protect and improve the quality of the environment	0.764			
Our firm targets sustainable growth, which considers the future generations	0.824			
Our firm implement special programs to minimize negative impact on the natural environment	0.871			
Our firm always support the non-governmental organisations working in the problematic areas	0.760			
Our firm contribute to campaigns and projects that promote the well-being of the society	0.806			
Technological Turbulence (TT)		0.829	0.886	0.661
The technology is changing rapidly.	0.800			
Technological developments are rather minor.	0.761			
A large number of new products, services, or business models have been made possible through technological breakthroughs.	0.844			
Technological changes provide big opportunities.	0.845			
Market Turbulence (MT)		0.845	0.895	0.681
In this market, customers' preferences change quite a bit over time.	0.848			
We cater to much the same customer base that we did in the past.	0.828			
New customers tend to have products, services or business models- related needs that are different from those of existing customers.	0.825			
Customers in this market are very receptive to new products, services, or business model ideas.	0.799			
Perceived environmental volatility (PEV)		0.879	0.926	0.806
The demand for our products and/or services is very unpredictable	0.858			
It is difficult to monitor price changes for our product and/or services in our market	0.933			
The volume of production in our industry is unstable	0.901			
Perceived environmental uncertainty (PEU)		0.872	0.912	0.723
How our market is going to change over the next 10 years is unpredictable.	0.848			
It is impossible to foresee today how our business segment is going to change over the next 10 years.	0.881			
It is not possible to make exact predictions about our business segment's development over the next 10 years	0.881			
Over the next 10 years, there can be changes that represent a major threat to the competitiveness of our company	0.788			
MSME performance (MSMEP)		0.789	0.864	0.615
Compared to similar MSMEs, we have improved our profit rate.	0.828			
Compared to similar MSMEs, we have improved our return on sales.	0.693			
Compared to similar MSMEs, we have improved our return on investment.	0.778			
Compared to similar MSMEs, we have reached our financial goal.	0.829			

Additionally, each construct's square root of AVE values was computed, and these were greater than the constructs' inter-correlation coefficients (see Table 2). This validates the constructs' discriminant validity (Fornell & Larcker, 1981). By computing the variance inflation factors (VIF) of the primary variables, we also assessed the study's potential for multi-collinearity. By contrasting the AVE construct with oneself and others, this can be evaluated. When the value of sharing with other constructions is less than the value of sharing with oneself, it is seen as a justified separation of constructs.

Table II
Descriptive Statistics and inter-construct correlations

	Mean	SD	1	2	3	4	5	6
CSR	4.45	1.22	0.806					
MSMEP	4.21	1.09	0.709	0.784				
MT	3.85	1.01	0.630	0.458	0.825			
PEU	4.98	1.87	0.692	0.569	0.666	0.850		
PEV	4.31	1.57	0.659	0.571	0.772	0.710	0.898	
TT	4.18	1.03	0.616	0.600	0.498	0.613	0.630	0.813

Results

The study's variables' statistical characteristics and inter-correlations are shown in Table 2. To test our theories, we used a hierarchical regression analysis. To reduce multi-collinearity, all of the study's ongoing variables were mean-centered prior to analysis (Hair et al., 2024). Descriptive statistics were used in the study to check for normality and identify relevant outliers and missing data using SmartPLS 3.0. Descriptive statistics were also used to understand the frequency, percentage, and relevant average values of the respondents' demographic data. We contended in hypothesis 1 that CSR and MSME success are positively correlated. According to Table 3 direct analysis, we discovered that CSR is positively and strongly correlated ($\beta = 0.519, p < 0.01$) with MSME performance for the first condition. According to hypothesis 2, we discovered that CSR is positively and strongly correlated ($\beta = 0.616, p < 0.01$) with technological turbulence. We discovered hypothesis 3 that CSR is negatively and strongly correlated ($\beta = -0.630, p < 0.01$) with technological turbulence.

Table III
Direct analysis

Hypothesis	Path	β	<i>t</i>	<i>P</i>
H1	CSR -> MSMEP	0.519	9.628	0.000
H2	CSR -> TT	0.616	19.068	0.000
H3	CSR -> MT	-0.630	18.581	0.000

According to the mediation model put forward by Hypothesis 4, technological turbulence has a positive mediating effect on CSR impact on MSME performance ($\beta = 0.131, p < 0.01$). As a result, the mediated link will be stronger in Table 4 when technological turbulence is low. According to the mediation model put forward by Hypothesis 5, market turbulence has a negative mediating effect on CSR impact on MSME performance ($\beta = -0.086, p < 0.01$).

Table IV
Mediating analysis

Hypothesis	Path	β	<i>t</i>	<i>P</i>
H4	CSR -> TT -> MSMEP	0.131	2.948	0.003
H5	CSR -> MT -> MSMEP	-0.086	2.186	0.029

Furthermore, we investigated how CSR ($\beta = 0.131, p < 0.01$), technological turbulence ($\beta = 0.131, p < 0.01$), and market turbulence ($\beta = 0.131, p < 0.01$) affected MSME performance both at low and high perceived environmental volatility levels through conditional indirect effects. At low levels of perceived environmental uncertainty, Table 4 shows that the conditional indirect effect of CSR ($\beta = 0.131, p < 0.01$), technological turbulence ($\beta = 0.131, p < 0.01$), and market turbulence ($\beta = 0.131, p < 0.01$) on MSME performance is significant.

Table V
Moderation analysis

Hypothesis	Path	β	<i>t</i>	<i>P</i>
H6	CSR*PEV -> MSMEP	-0.083	2.508	0.012
H7	TT*PEV -> MSMEP	0.161	2.243	0.015
H8	MT*PEV -> MSMEP	-0.143	2.647	0.018
H9	CSR*PEU -> MSMEP	0.141	2.613	0.009
H10	TT*PEU -> MSMEP	-0.187	2.773	0.007
H11	MT*PEU -> MSMEP	0.178	2.603	0.010

Discussion and Conclusion

A moderated mediation model that examined the ways and times in which CSR affects MSME performance was experimentally assessed in this study. Utilizing information gathered from MSMEs in Algeria, a significant developing nation, we discovered evidence of an indirect benefit of corporate social responsibility (CSR) on MSME performance when filtered through the market and technical volatility. The indirect effect of CSR on MSME performance through technological and market turbulence was significantly moderated by perceived environmental volatility and uncertainty, according to our moderated model, which we argued and found support for. The mediated relationship was strongest when perceived environmental volatility and uncertainty were low. In light of this, our research has a number of theoretical and practical ramifications, some of which are covered below.

Policy implications

Although empirical research regarding the relationship between CSR and business performance outcomes is mostly conflicting and unclear, the available literature frequently implies that CSR can positively drive these outcomes (Achi et al., 2022; Rodriguez-Gomez et al., 2020). By demonstrating that technological and market instability moderate the association between CSR and MSME performance, our work adds to previous research by accounting for a mechanism under which CSR affects MSME performance. This can be achieved by leveraging the skills acquired from CSR initiatives to support the creation and implementation of efficient technological and market turbulence strategies. Furthermore, to the best of our understanding, this is the first study that uses technological and market turbulence as a mediator in the relationship between CSR and MSME performance; the findings should help to expand knowledge of technological and market turbulence (Fukuda & Ouchida, 2020), as well as help to unlock the "black box" surrounding the mechanism behind the effect of CSR on performance outcomes. Our study may have a unique concept of environmental volatility and uncertainty through the mediating role of technological turbulence and MSME performance. This study's findings contribute to the need of enterprises about environmental uncertainty and environmental volatility (Chen & Tian, 2022; Darvishmotevali et al., 2020). In particular, our results show that through technological and market turbulence, the perceived environmental volatility and uncertainty influence the indirect positive link of CSR on MSME performance. According to our research, this indirect association is more pronounced in settings with less volatility and uncertainty. This implies that technological and market turbulence can be used to more affordably implement the small changes needed to improve business performance and meet the demands of a volatile and uncertain environment. This may be explained by the characteristics of developing economies, where businesses feel far more at ease functioning in settings with little chance of instability and unpredictability. Since businesses in developing economies sometimes face previously unheard-of levels of volatility and uncertainty in their market environment, our findings are especially pertinent to these businesses.

Our research has a number of consequences for MSME owners and managers in addition to its theoretical ones. Finding the elements that have been shown to affect MSME performance can be helpful for managers of businesses, especially those engaged in environmental practices. Our study's conclusions support the idea that CSR practices are critical to the emergence of technological and market turbulence; managers should be aware that companies must actively participate in and utilize CSR practices in order to develop and improve the efficacy of their technological and market turbulence. Justifying their investment in market and technology volatility is one of the main challenges managers face. However, our research demonstrates that a well-thought-out and successful technological and market turbulence based on accumulated CSR-based capabilities can help businesses make sure their CSR initiatives result in improved MSME performance. To this aim, providing excellent performance for businesses depends on the potential to align and balance market and technology disruption with CSR policies. Furthermore, research on the moderating influence of perceived environmental volatility and uncertainty offers more understanding of the intricate processes by which corporate social responsibility (CSR) improves business performance. In particular, our research shows that the indirect positive association between CSR and MSME performance is moderated by perceived environmental volatility and uncertainty through market and technological turbulence, with a substantial correlation in a setting with low volatility. This implies that a proactive managerial approach is required to determine the degree to which technological and market turbulence is applied in unstable circumstances. According to this theory, managers should focus especially on the environmental factors while implementing technological and market turbulence since they may be essential to maintaining stability in firm performance outcomes during periods of low volatility and uncertainty.

Limitations and future research

The study's limitations provide up a possibility for additional research. Initially, we gathered information via a self-report survey intended to gauge how much each firm agreed with the questions; this could have introduced bias because of the participants' perceptions. It is recommended that data gathered from companies' annual reports be used in future studies to look at the connections between the study's variables.

Second, we only examined the indirect impact of market and technical volatility on the relationship between CSR and MSME success. Future research should incorporate additional constructs that could mitigate this association. Additionally, our study used the theoretical model's conditional moderator of perceived environmental volatility and uncertainty. We contend that one of the numerous explanations for the connection between CSR and MSME performance through technical and market turbulence, as examined in the study, is perceived environmental volatility and uncertainty. We propose that additional modifiers be investigated in future studies in order to support, elucidate, or expand on the results of our investigation.

Third, MSMEs that operate in the Algeria made up the sample for our study. Although we anticipate that our findings will hold true for other markets with comparable circumstances, this could restrict our capacity to generalize our findings outside of this one. We suggest that this topic be investigated further in other sectors and nations. Although we gathered information from businesses in the MSME sector with a range of industry specialties, we acknowledge that environmental initiatives like corporate social responsibility with

technological and market turbulence are highly context-dependent. Therefore, we propose that future studies might concentrate on a particular industry and use metrics appropriate to that industry's features to examine how various enterprises within the industry adopt CSR and deal with technological and market turbulence.

Lastly, a qualitative technique may be used in future studies to investigate the connections between the variables in our investigation. This would enhance the quantitative aspect of the study and offer a more thorough comprehension of the contingent process of perceived environmental volatility and uncertainty on the relationship between CSR and MSME performance when influenced by market and technical instability. Finally, we urge future scholars to keep looking at the ways that various environmental factors can affect the performance of MSMEs.

References

- Achi, A., Adeola, O., & Achi, F. C. (2022). CSR and green process innovation as antecedents of micro, small, and medium enterprise performance: Moderating role of perceived environmental volatility. *Journal of Business Research*, 139, 771-781.
- Afshar Jahanshahi, A., & Brem, A. (2020). Entrepreneurs in post-sanctions Iran: Innovation or imitation under conditions of perceived environmental uncertainty? *Asia Pacific Journal of Management*, 37(2), 531-551.
- Aftab, J., Abid, N., Sarwar, H., Amin, A., Abedini, M., & Veneziani, M. (2024). Does corporate social responsibility drive financial performance? Exploring the significance of green innovation, green dynamic capabilities, and perceived environmental volatility. *Corporate Social Responsibility and Environmental Management*, 31(3), 1634-1653.
- Ahammad, M. F., Basu, S., Munjal, S., Clegg, J., & Shoham, O. B. (2021). Strategic agility, environmental uncertainties and international performance: The perspective of Indian firms. *Journal of World Business*, 56(4), 101218.
- Aulia, M. R., Lubis, Z., Effendi, I., et al. (2023). Leveraging quality management and partnership programs for entrepreneurial success: Exploring their impact on msme performance. *Aptisi Transactions on Technopreneurship (ATT)*, 5(2), 157-168.
- Bridoux, F., & Stoelhorst, J. (2022). Stakeholder theory, strategy, and organization: Past, present, and future. *Strategic Organization*, 20(4), 797-809.
- Carroll, A. B. (2021). Corporate social responsibility: Perspectives on the CSR construct's development and future. *Business & Society*, 60(6), 1258-1278.
- Chen, H., & Tian, Z. (2022). Environmental uncertainty, resource orchestration and digital transformation: A fuzzy-set QCA approach. *Journal of Business Research*, 139, 184-193.
- Ch'ng, P., Cheah, J., & Amran, A. (2021). Eco-innovation practices and sustainable business performance: The moderating effect of market turbulence in the Malaysian technology industry. *Journal of Cleaner Production*, 283, 124556.
- Darvishmotevali, M., Altinay, L., & Köseoglu, M. A. (2020). The link between environmental uncertainty, organizational agility, and organizational creativity in the hotel industry. *International Journal of Hospitality Management*, 87, 102499.
- Dwirandra, A., & Astika, I. B. P. (2020). Impact of environmental uncertainty, trust and information technology on user behavior of accounting information systems. *The Journal of Asian Finance, Economics and Business*, 7(12), 1215-1224.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Freeman, R. E. (2023). The politics of stakeholder theory: Some future directions. In *R. Edward Freeman's selected works on stakeholder theory and business ethics* (p. 119-132). New York, NY:Springer.
- Freeman, R. E., Dmytriiev, S. D., & Phillips, R. A. (2021). Stakeholder theory and the resource-based view of the firm. *Journal of Management*, 47(7), 1757-1770.
- Fukuda, K., & Ouchida, Y. (2020). Corporate Social Responsibility (CSR) and the environment: Does CSR increase emissions? *Energy Economics*, 92, 104933.
- Haarhaus, T., & Liening, A. (2020). Building dynamic capabilities to cope with environmental uncertainty: The role of strategic foresight. *Technological Forecasting and Social Change*, 155, 120033.
- Hair, J. F., Sharma, P. N., Sarstedt, M., Ringle, C. M., & Liengaard, B. D. (2024). The shortcomings of equal weights estimation and the composite equivalence index in PLS-SEM. *European Journal of Marketing*, 58(13), 30-55.
- Hanggraeni, D., & Sinamo, T. (2021). Quality of entrepreneurship and Micro-, Small-and Medium-sized Enterprises' (MSMEs) financial performance in Indonesia. *The Journal of Asian Finance, Economics and Business*, 8(4), 897-907.
- He, X., & Wu, X. (2024). Social networks and ambidextrous innovation in SMEs: The mediating role of dynamic capabilities and the moderating role of technological turbulence. *Technology Analysis & Strategic Management*, 36(10), 2662-2675.
- Larbi-Siaw, O., Xuhua, H., Owusu, E., Owusu-Agyeman, A., Fulgence, B. E., & Frimpong, S. A. (2022). Eco-innovation, sustainable business performance and market turbulence moderation in emerging economies. *Technology in Society*, 68, 101899.

- Latifah, L., Setiawan, D., Aryani, Y. A., & Rahmawati, R. (2021). Business strategy-MSMEs' performance relationship: Innovation and accounting information system as mediators. *Journal of Small Business and Enterprise Development*, 28(1), 1-21.
- Li, L. (2022). Digital transformation and sustainable performance: The moderating role of market turbulence. *Industrial Marketing Management*, 104, 28-37.
- Lin, W. L. (2023). Corporate social responsibility and irresponsibility: Effects on supply chain performance in the automotive industry under environmental turbulence. *Journal of cleaner production*, 428, 139033.
- Octasyva, A. R. P., Yuliati, L. N., Hartoyo, H., & Soehadi, A. W. (2022). Innovativeness as the key to MSMEs' Performances. *Sustainability*, 14(11), 6429.
- Ogbeibu, S., Emelifeonwu, J., Senadjki, A., Gaskin, J., & Kaivo-oja, J. (2020). Technological turbulence and greening of team creativity, product innovation, and human resource management: Implications for sustainability. *Journal of Cleaner Production*, 244, 118703.
- Purwanto, A. H. D., Nashar, M., Jumaryadi, Y., Wibowo, W., & Mekaniwati, A. (2022). Improving medium small micro enterprise'(MSME) performance. *International Journal of Advanced and Applied Sciences*, 9(5), 37-46.
- Rodriguez-Gomez, S., Arco-Castro, M. L., Lopez-Perez, M. V., & Rodríguez-Ariza, L. (2020). Where does CSR come from and where does it go? A review of the state of the art. *Administrative Sciences*, 10(3), 60.
- Salim, M. N., Susilastuti, D., Rafiqah, I. W., et al. (2020). Determinant of MSMEs performance and its impact on province GRDP in Indonesia. *International Journal of Business, Economics and Management*, 7(1), 1-13.
- Shakil, M. H. (2022). Environmental, social and governance performance and stock price volatility: A moderating role of firm size. *Journal of Public Affairs*, 22(3), e2574.
- Shatem, M., & Abou-Moghli, A. (2024). The moderating role of perceived environmental uncertainty in the impact of corporate governance on strategy implementation: An agency theory perspective. *Uncertain Supply Chain Management*, 12(3), 1577-1588.
- Tumiwa, J. R., Tuegeh, O. D. M., & Nagy, A. S. (2020). *Factor influencing MSMEs performance measurement: A literature review* (Tech. Rep.). Oradea University Publishing House, Oradea, Romania.
- Ullah, A., Iqbal, S., & Shams, S. R. (2020). Impact of CRM adoption on organizational performance: Moderating role of technological turbulence. *Competitiveness Review: An International Business Journal*, 30(1), 59-77.
- Utami, B., & Sudarmiati, S. (2022). The impact of CRM on business or MSME performance: A literature review. *Journal of Social Science*, 3(3), 488-494.
- Velte, P. (2022). Meta-analyses on corporate social responsibility (CSR): A literature review. *Management Review Quarterly*, 72(3), 627-675.
- Wang, C., Qureshi, I., Guo, F., & Zhang, Q. (2022). Corporate social responsibility and disruptive innovation: The moderating effects of environmental turbulence. *Journal of Business Research*, 139, 1435-1450.
- Wirba, A. V. (2024). Corporate social responsibility (CSR): The role of government in promoting CSR. *Journal of the Knowledge Economy*, 15(2), 7428-7454.