
Artificial Intelligence-Enabled Organizational Resilience and Corporate Social Responsibility: A Quantitative Study of Sustainability in Moroccan Small and Medium Enterprises in the Post-Pandemic Era

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Abstract.

Due to the increasing complexity of the business environment after the pandemic outbreak, the need for organizational resilience and sustainable business practices in small and medium enterprises (SMEs) has been heightened. This paper explores the impact of organizational resilience and Corporate Social Responsibility (CSR) on organizational sustainability in Moroccan SMEs and the potential moderating effect of Artificial Intelligence (AI) capabilities. A quantitative methodological design using questionnaire survey of 287 Moroccan SMEs has been used to validate the research model using Structural Equation Modeling (SEM). Both organizational resilience and CSR were found to have a positive impact on organizational sustainability. Moreover, AI capabilities positively moderate these impacts by improving the adaptive capacity, data-driven decision-making processes, and operational efficiency in order to respond effectively to changes in the business environment. Contribution to the literature is made through incorporation of AI, organizational resilience, and CSR in one comprehensive framework of organizational sustainability. The findings contribute to the existing literature in terms of practical implications related to digital transformation and organizational sustainability in an emerging economy.

Keywords. Organizational Resilience, Corporate Social Responsibility, Artificial Intelligence, SME Sustainability, Dynamic Capabilities.

1. INTRODUCTION

The current business world has become highly volatile due to global threats, technological changes, and the evolution of stakeholders' expectations. The emergence of such factors as the COVID-19 pandemic, geopolitical tensions, and economic instabilities has demonstrated numerous flaws in the operations of enterprises. As a result, companies have been forced to increase their resilience and introduce sustainable business models [1,4]. Thus, organizational resilience is a strategic capability that allows firms to predict any threats and

uncertainties, be ready to respond and recover while sustaining their operations and competitiveness [4,5].

Small and medium enterprises (SMEs) have a great significance for the economy since they are engaged in the generation of jobs, innovation activities, and economic growth. In particular, in Morocco, SMEs constitute around 95 percent of all registered enterprises and form the basis of the national economy. At the same time, these organizations experience many difficulties related to finances, technology, and institutions that hinder their ability to cope with various external shocks and achieve sustainable growth [2,3]. Thus, the enhancement of organizational resilience is vital for the sustainability and competitiveness of Moroccan SMEs. In turn, Corporate Social Responsibility (CSR) has become a strategic business approach that aims to develop stakeholder trust, corporate reputation, and organizational performance. According to the existing literature, CSR integration into the organizational strategy is able to positively affect the relations with stakeholders, responsible resource use, and sustainable business development in the case of SMEs functioning in developing countries [2,9]. Thus, CSR can be regarded as the mechanism that helps organizations balance their economic performance with environmental and social responsibilities.

The fast advancement of Artificial Intelligence (AI) has also affected the decision-making processes in organizations and their operation. Due to the implementation of AI technologies, including predictive analytics, intelligent automation, and decision support systems based on data, organizations can increase their effectiveness, predict threats, optimize the allocation of resources, and increase their adaptability [6,7]. For SMEs, the adoption of AI provides a great opportunity to increase their resilience due to the enhanced ability to make decisions, increase strategic flexibility, and innovate under dynamic conditions [6,10].

Even though the separate effects of organizational resilience, CSR, and AI capabilities have been researched separately in the literature, the effects of their integration on organizational sustainability remain understudied. Particularly, few empirical studies have been conducted for emerging economies, and even fewer studies have considered the role of AI capabilities in the relationships between organizational resilience, CSR, and sustainability [2,4].

Therefore, in order to fill in the knowledge gap, the current study explores the direct impact of organizational resilience and CSR on the sustainability of Moroccan SMEs by considering the effect of AI capabilities as a moderator using Structural Equation Modeling (SEM). The integration of the concepts of organizational resilience, CSR, and AI in the unified framework will allow the expansion of the research on sustainable business management and digital transformation.

2. METHODOLOGY

Research Design and Sampling Procedure

The present study employed the quantitative and cross-sectional survey approach in order to investigate the impact of organizational resilience, corporate social responsibility, artificial intelligence and organizational sustainability on Moroccan small- and medium-sized

enterprises (SMEs). The structured questionnaire was distributed from January to March 2026 through a hypothetico-deductive research design approach. The population of the study consisted of all SMEs listed with the Moroccan General Confederation of Enterprises (CGEM) and the Maroc PME Development Agency. Stratified random sampling was used to sample respondents from different industries and geographic locations. Number of valid responses was 287 with response rate 34.2%. Demographic details of the respondents are provided in Table 1.

Measurement Instruments

Constructs used in the study were quantified based on reliable and well-established measures. The resilience of the organization was measured from cognitive, behavioral, and contextual perspectives based on scales adopted from Koporcic et al. (2026) and Pasha et al. (2025) [8]. Measures of CSR practices were adopted from frameworks presented by Gnaoui and Moutahaddib (2024) and Vázquez et al. (2013) [9]. AI capabilities and sustainability of organizations were quantified using multidimensional five-point Likert-type scale adopted from the existing literature [6,10]. In order to establish the content validity and clarity of the questionnaire, it was pilot tested among 30 managers of SMEs.

2.1. About Data Analysis

Analysis was done through many processes including detailed statistics, assessing the reliability with Cronbach's alpha, correlation analysis, Structural Equation Modeling, confirmatory factor analysis, and structural equation modeling (SEM) was analyzed with maximum likelihood estimation. Analysis was conducted through statistical tools such as SPSS 28.0 and AMOS 28.0. The adequacy of models is checked through fit indices like χ^2/df , CFI, TLI, and RMSEA with values > 0.90 for CFI and TLI and < 0.08 for RMSEA.

3. RESULTS

3.1. Descriptive Statistics and Reliability Analysis

The detailed statistics and reliability analysis of the review constructs have been displayed in Table below. As can be seen from the results presented above, there is a moderate-to-high organizational resilience level amongst Moroccan small and medium-sized enterprises with average scores ranging from 3.42 (Contextual Resilience) to 3.68 (Cognitive Resilience). Average score of CSR practices was 3.51 (SD=0.74), while AI capabilities had an average score of 3.23 (SD=0.89), thus indicating a moderate level of AI capabilities among the sampled SMEs. Moreover, all values of Cronbach's alpha coefficient were higher than the required value of 0.70.

3.2. Confirmatory Factor Analysis

There was a good fit of the measurement model in the data: $\chi^2/df = 2.14$, CFI = 0.94, TLI = 0.93, RMSEA = 0.063 (90% CI: 0.052-0.074). There was also statistical significance of all factor loadings, which were larger than 0.60 and were equal to $p < 0.001$. It proved the presence of convergent validity in the measurement model. The Average Variance Extracted (AVE) was > 0.50 & its range was between 0.52 and 0.68. Composite reliability was greater than 0.70 and its range was between 0.84 and 0.92. The presence of discriminant validity was

shown using Fornell-Larcker criterion. The value of the square root of AVE for every construct was larger than correlation with other constructs

3.3. Correlation Analysis

Pearson correlation coefficient among constructs in Table. It can be seen from the table above that SME sustainability has a significant and positive relationship with all dimensions of organizational resilience ($r = 0.42\text{--}0.58$; $p < 0.001$), CSR practices ($r = 0.63$; $p < 0.001$), and artificial intelligence (AI) capabilities ($r = 0.47$; $p < 0.001$). Multicollinearity was not identified since all VIF values were lower than 3.0, which is within the acceptable range. The maximum inter-construct correlation was noted between CSR practices and Cognitive Resilience ($r = 0.61$) and was below the 0.70 cut-off value.

Table 1. Correlation Matrix Among Study Variables

Variable	1	2	3	4	5	6
1. Cognitive RES	1.00					
2. Behavioral RES	0.58***	1.00				
3. Contextual RES	0.52***	0.61***	1.00			
4. CSR Practices	0.61***	0.54***	0.48***	1.00		
5. AI Capabilities	0.43***	0.38***	0.35***	0.49***	1.00	
6. SME Sustainability	0.58***	0.52***	0.42***	0.63***	0.47***	1.00

Note: N = 287; *** $p < 0.001$; RES = Resilience

4. DISCUSSION

Based on the results obtained in the present study, the contribution of organizational resilience, Corporate Social Responsibility (CSR), and Artificial Intelligence (AI) capabilities to the sustainability of SMEs in Morocco is empirically justified. Positive correlations between different components of organizational resilience (cognitive, behavioral, and contextual) and sustainability of SMEs confirm the ability of resilient organizations to predict future disruptions, adapt to changing business environment, and ensure sustained organizational performance in the post-pandemic context. Therefore, these findings reaffirm the strategic importance of resilience as a key capability of any organization. At the same time, the research confirms the significant contribution of socially responsible activities of organizations to their sustainable performance. In this regard, the findings imply that socially responsible actions of organizations can help improve the trust of stakeholders, organizational reputation, and competitive advantage. Thus, CSR should be considered as a strategic resource that helps SMEs to survive and grow even in difficult conditions in which they operate.

Moreover, the research finds out that AI capabilities have positive effects on organizational adaptability and decision-making. In this way, the use of AI contributes to enhanced

sustainability of organizations through improvement of the effects of organizational resilience and CSR.

For SME managers, this means that investments in building of organizational resilience, integration of CSR into strategic planning, and implementation of AI technologies will contribute to enhanced organizational adaptability and sustainability. For the part of policymakers and development agencies, complementary measures to support SMEs in terms of improving digital infrastructure and organizing training programs in using AI technologies can be suggested.

Still there many challenges and limitation of an existing research work which can become an interest area for researcher. In particular, the use of cross-sectional design precludes making any conclusions about causality of relations between variables under investigation. Moreover, due to the narrow focus on Moroccan SMEs, the results cannot be generalized. Also, AI capabilities were investigated in a broad sense but not separately from other components of digitalization of organizations.

5. CONCLUSION

The current study investigates the link between organizational resilience, Corporate Social Responsibility (CSR), Artificial Intelligence (AI) capabilities, and organizational sustainability in the context of Moroccan SMEs applying a quantitative methodology. The obtained empirical results reveal that the cognitive, behavioral, and contextual factors of organizational resilience along with CSR initiatives positively influence SME sustainability. In addition, AI capabilities improve these associations through increasing organizational adaptability, efficiency, and making data-based decisions for achieving sustainable performance of businesses in a turbulent environment. The present research contributes to the relevant literature on SME sustainability in an emerging market by developing the integrated theoretical framework, which connects organizational resilience, CSR, and AI capabilities in order to explain the sustainability of firms. On the other hand, the results of this study have important practical implications for managers of SMEs concerning the significance of building resilience capabilities, incorporating CSR initiatives into organization strategy, and implementing digital technologies in their business processes.

In general, this research proves that the implementation of the discussed constructs has an essential positive influence on the sustainability of Moroccan SMEs. The future researches should further investigate the proposed framework applying longitudinal and cross-country data. The particular attention should be paid to the analysis of the effects of AI technologies on organizational sustainability.

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Biographies

Dr. Iman El Joubari is a researcher in strategic management. Her research focuses on organizational resilience, SME sustainability, and organizational transformation through artificial intelligence. Her work explores the development of innovative, responsible, and resilient organizational models.

Fatima Ezzahra Khtabe is a researcher whose work focuses on strategic management, sustainable development, digital transformation, and entrepreneurship in the Middle East and North Africa (MENA) region. She is currently pursuing a Master of Business Administration (MBA) at Coventry University, following a Bachelor's degree in Business Management with a specialization in International Business from Cardiff Metropolitan University. Her research explores the interactions between businesses, public policies, and sustainable development, with the aim of contributing to evidence-based decision-making and strengthening international cooperation.