



Dynamic capabilities and sustainability performance of NGOs in Lebanon: The moderating role of environmental uncertainty

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ABSTRACT

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The purpose of this study is to examine how dynamic capabilities influence the sustainability performance of non-governmental organizations operating in Lebanon under conditions of environmental uncertainty. The study addresses the need to understand how NGOs in fragile and crisis-affected contexts can sustain their organizational, social, economic, and environmental performance despite all political instability, economic pressure, donor dependency, and institutional uncertainty. The methodology uses a quantitative explanatory research design, based on the Dynamic Capabilities Theory, focusing on sensing, seizing, and reconfiguring capabilities. Survey data were collected from 407 NGO managers and senior personnel in Lebanon, and Partial Least Squares Structural Equation Modeling was applied to assess the measurement model, test the direct effects, and examine the moderating role of environmental uncertainty. The findings show that seizing and reconfiguring capabilities have significant positive effects on sustainability performance, while sensing capabilities do not have a significant direct effect. Environmental uncertainty has a significant positive direct effect on sustainability performance, but it does not moderate the relationships between dynamic capabilities and sustainability performance. The structural model accounts for 53.9% of the variance in NGOs' organizational sustainability performance ($R^2 = 0.539$), with environmental uncertainty emerging as a primary direct driver with a medium effect size ($F^2 = 0.181$). The practical implications suggest that NGO managers should prioritize resource mobilization, partnership development, operational restructuring, and adaptive planning rather than relying only on environmental scanning. The results also guide policymakers and donors in designing support mechanisms that would strengthen NGO resilience and long-term sustainability in uncertain environments.

Contribution/Originality: This study contributes to the existing literature by extending Dynamic Capabilities Theory to NGOs in Lebanon. This study is one of the very few studies that have investigated how sensing, seizing, and reconfiguring capabilities affect sustainability performance while examining environmental uncertainty in a fragile and crisis-affected context.

1. INTRODUCTION

Non-governmental organizations (NGOs) play an essential role in humanitarian assistance, social development, and community resilience, particularly in countries experiencing political instability, economic decline, and institutional weaknesses. In crisis-prone areas, NGOs are essential for providing humanitarian aid and promoting sustainable development (Besiou, Pedraza-Martinez, & Van Wassenhove, 2021). Political unrest, economic collapse,

and one of the highest refugee-to-population ratios in the world have all combined to make NGO operations in Lebanon more difficult (Kraft & Smith, 2019; Nassar & Stel, 2019). These conditions have increased the demand for NGOs' services, while placing pressure on their financial, human, and operational resources (Kraft & Smith, 2019; Nassar & Stel, 2019). According to the Sustainable Development Goals, these organizations oversee fostering long-term resilience in addition to providing disaster relief (United Nations, 2020). However, strategic adaptation is necessary to preserve sustainability and efficacy in such uncertain situations.

Sustainability performance is a multidimensional concept that extends beyond financial performance to include social, environmental, and organizational outputs (Baumgartner & Ebner, 2010; Elkington, 1997). In the NGO sector, sustainability performance is critical since NGOs should balance the donors' requirements, beneficiary needs, resource limitations, and long-term community impact. Unlike profit-oriented companies, NGOs are evaluated based on their ability to sustain themselves financially in addition to their ability to create social value, protect vulnerable communities, and continue delivering services during crises (Corbett, Barratt, & De Leeuw, 2022). Hence, investigating the factors that support NGOs' sustainability performance is an important milestone for researchers, managers, donors, and policymakers.

The dynamic capabilities theory provides a useful theoretical lens for comprehending organizational flexibility under challenging situations (Teece, Pisano, & Shuen, 1997).

Dynamic capabilities refer to the organization's ability to sense opportunities and risks, seize available opportunities, and reconfigure operations to maintain resilience (Eisenhardt & Martin, 2017; Teece, 2007). Sensing capabilities allow organizations to identify modifications in all stakeholders' needs, donors' priorities, and relevant external risks. While seizing capabilities enable organizations to use available resources and impel strategic responses. Last, the reconfiguring capabilities assist organizations in restructuring internal processes and adapting operational models to changes in external conditions (Eisenhardt & Martin, 2017; Helfat & Peteraf, 2009). Those capabilities relate to NGOs that operate in fragile environments, where uncertainty and resource scarcity require continuous adaptation.

Although the Dynamic Capabilities Theory has been excessively used in businesses and corporate strategy formulation, its application in the humanitarian sector remains limited (Besiou et al., 2021; Kyambade, Nangoli, Namatovu, & Nasiima, 2026). Most of the previous studies have focused on private firms, competitive advantage, innovation, or financial performance, while less attention has been given to how dynamic capabilities influence sustainability performance in NGOs. This shows a critical research gap because NGOs operate under different conditions from business firms, which challenge their sustainability. NGOs often depend on donors, work with vulnerable populations, face accountability pressures, and respond to rapidly changing humanitarian needs (Nassar & Stel, 2019). Concluding that the way dynamic capabilities affect sustainability performance in NGOs may differ from the way they operate in commercial organizations.

Environmental uncertainty is another important aspect that influences NGOs' performance. It refers to the unpredictability of external political, economic, social, and regulatory conditions that affect the decision-making and performance of organizations (Downey, Hellriegel, & Slocum, 1975; Milliken, 1987). In Lebanon, environmental uncertainty is reflected in economic instability, changing donor priorities, political fragmentation, institutional ambiguity, and increasing social vulnerability (Bosqui, 2020; Kraft & Smith, 2019). Such uncertainty does weaken organizational performance by making planning and resource allocation more challenging. However, it may also push NGOs to become more adaptive, innovative, and resilient. Previous studies suggest that environmental uncertainty can affect the way organizations use their capabilities and the way they contribute to performance outcomes (Harun, Kamal, & Osman, 2023; McKelvie, Wiklund, & Short, 2011).

Limited research has explored the combined effect of dynamic capabilities and environmental uncertainty on the sustainability performance of NGOs, especially in crisis-affected contexts such as Lebanon. The existing literature has not deliberately explained whether sensing, seizing, and reconfiguring capabilities contribute equally to NGO

sustainability performance. Moreover, it remains unclear whether environmental uncertainty strengthens or weakens the relationship between dynamic capabilities and sustainability performance. Addressing this gap is important in contexts like Lebanon since NGOs operate in unstable environments where their ability to adapt may determine their survival, effectiveness, and long-term contribution to society.

Hence, the research problem of this study is the limited insights into how NGOs operating in uncertain environments can use their dynamic capabilities to improve their sustainability performance. In particular, the study investigates whether sensing, seizing, and reconfiguring capabilities affect the sustainability performance of NGOs in Lebanon, and whether environmental uncertainty moderates these relationships. Based on the highlighted problem, the study seeks to answer the following research questions: How do sensing, seizing, and reconfiguring capabilities influence the sustainability performance of NGOs in Lebanon? Does environmental uncertainty moderate the relationship between dynamic capabilities and sustainability performance?

The significance of this research extends theoretically in shedding light on the Dynamic Capabilities Theory by applying it to the NGO sector, where its empirical use remains underdeveloped. Empirically, this research provides evidence from Lebanon, a fragile and crisis-affected context in which NGOs face high uncertainty and resource constraints. Practically, the findings guide NGO managers, donors, and policymakers by identifying the capabilities that are required for strengthening sustainability performance. By examining both internal organizational capabilities and external environmental uncertainty, this study contributes to a deeper understanding of how NGOs can enhance resilience, maintain operations, and achieve long-term sustainability in unstable environments.

2. LITERATURE REVIEW AND HYPOTHESES

The Dynamic Capabilities Theory (DCT) serves as a theoretical cornerstone that highlights an organization's capacity to integrate, adapt, and reconfigure internal and external resources in response to shifting surroundings (Teece et al., 1997). The theory emphasizes adaptation as the major source of sustainability performance in volatile situations, in contrast to the conventional Resource-Based View (RBV), which places a strong emphasis on static resources (Eisenhardt & Martin, 2017; Helfat & Peteraf, 2009). In order for businesses to sustain, they can identify opportunities and challenges, mobilize resources, and realign processes with the help of dynamic capabilities, which are generally defined as sensing, seizing, and reconfiguring (Teece, 2007). Although DCT is frequently used in business planning, little has been explored about its application in the nonprofit and humanitarian sectors (Besiou et al., 2021). Organizations that work in unstable regimes frequently deal with a lack of funding, reliance on donors, and institutional uncertainty (Kyambade et al., 2026; Nassar & Stel, 2019). In such situations, dynamic capabilities, defined as the ability to achieve social, economic, and environmental objectives, may be important for ensuring sustainable performance (Baumgartner & Ebner, 2010; Elkington, 1997).

The study uses the idea that environmental uncertainty (Milliken, 1987) is incorporated, recognizing that the way in which organizations use their dynamic capabilities is moderated by unstable political, economic, and social circumstances (Bosqui, 2020; McKelvie et al., 2011). When combined, those theoretical stances provide a thorough framework for analyzing how NGOs handle crises in Lebanon. This study expands the use of dynamic capabilities into the humanitarian field outside of the business world by establishing a connection between dynamic capabilities and sustainability performance while taking the environmental uncertainty's moderating effect into account.

2.1. *Dynamic Capabilities Theory*

Dynamic capabilities theory, which was developed by Teece et al. (1997), describes how organizations respond to changing environments through three fundamental capabilities: sensing opportunities and threats, seizing opportunities, and reconfiguring resources. Later research has revisited and twisted these dimensions, providing different alternative classifications and interpretations, such as those proposed by Kareem and Alameer (2019).

Within the sustainability literature, dynamic capabilities have been widely used to visualize how organizations maintain performance and remain resilient under conditions of uncertainty and rapid change (Arend, 2014). Different studies have reported a positive association between dynamic capabilities and sustainability performance across different settings and periods (Dangelico, Pujari, & Pontrandolfo, 2017; Harun, Hogset, & Mwesiuno, 2023). However, much of this research has focused on large corporations, while giving limited attention to nonprofit organizations. As a result, it is still not fully developed how sensing, seizing, and reconfiguring capabilities influence the sustainability performance of NGOs. Different recent studies suggest that dynamic capabilities are not only broad strategic abilities; instead, they are routines and microprocesses that allow organizations to adapt under uncertainty.

Kadyrova and Shapira (2024) argue in a recent study that in small NGOs, dynamic capabilities are reflected in specific routines like environmental scanning, partnership building, knowledge management, and flexible service development. Their input highlights that organizations' ability to adapt often depends less on formal strategic planning and more on practical routines developed through experience, stakeholder interaction, and resource limitations. However, the literature remains divided on whether dynamic capabilities directly improve sustainability outcomes or whether their value depends on contextual conditions such as uncertainty, governance, and resource availability. This debate supports the need to examine dynamic capabilities empirically in the NGO sector rather than automatically relying on findings from private-sector studies.

2.2. *Dynamic Capabilities and Sustainability Performance*

Dynamic capabilities are known as the ability of an organization to recognize opportunities and dangers, mobilize resources to take advantage of them, and adjust processes and structures in response to shifting conditions (Teece, 2007; Teece et al., 1997). It is commonly recognized that these capacities are essential for attaining a long-term competitive edge in unstable environments (Eisenhardt & Martin, 2017; Helfat & Peteraf, 2009). The dynamic capacities are especially important for NGOs because they enable them to efficiently deliver services, obtain resources, and adjust plans in the face of unpredictability (Besiou et al., 2021). Economic, social, and environmental factors play an important role in shaping NGOs' sustainability performance, which goes beyond financial results (Baumgartner & Ebner, 2010; Elkington, 1997). According to earlier research, dynamic capacities promote resilience and flexibility in organisations, which in turn improve organizational sustainability outcomes (Harun et al., 2023; Wu, 2017).

More recent studies underline that organizations' sustainability is not achieved through a single factor but through the interaction of different factors and aspects that consider governance, funding strategy, capacities, and adaptive capabilities. Through his study, Tugyetwena (2023) shows that NGO sustainability depends strongly on effective governance, diversified funding sources, transparent financial management, and the ability to respond to changing contextual conditions. The last suggests that dynamic capabilities may contribute to sustainability performance only when they help NGOs convert limited resources into different practical organizational responses. In parallel, studies indicate that sustainability in NGOs is not as straightforward as in business organizations, in which NGOs must maintain donor confidence, beneficiary trust, program continuity, and social impact (Kadyrova & Shapira, 2024). Therefore, this study moves beyond the general description of dynamic capabilities by examining which specific capabilities are most relevant to the sustainability performance of NGOs in the Lebanese context.

2.3. *Sensing Capabilities*

Sensing capabilities allow organizations to identify opportunities and threats in unpredictable environments (Teece, 2007). For NGOs, the ability to scan and interpret changes in community needs and donor priorities is critical for ensuring sustainable interventions (Helfat & Peteraf, 2009; Simon et al., 2015). In volatile contexts such as Lebanon, the sensing capabilities allow NGOs to adapt quickly, improving their sustainability outcomes (Nassar & Stel, 2019). Therefore, it is expected that sensing capabilities positively influence the sustainability performance of NGOs.

Noting that sensing capabilities are mainly required as an important initial step in adaptation, recent research suggests that it will not be sufficient to improve organizational performance. In their study, Kadyrova and Shapira (2024) discovered that NGOs rely on knowledge networks, beneficiaries' feedback, and managerial experiences to identify social needs and opportunities. While those capabilities can assist when organizations have the capacity to transform collected information and data into concrete responses and actions. Similarly, Son, Roscoe, and Sodhi (2025) show that humanitarian organizations use sensing capabilities to detect changes in demand, supply, and beneficiary needs, but the effectiveness of sensing depends on whether these organizations can quickly mobilize resources and reconfigure operations. Hence, while sensing capabilities are theoretically important, their direct effect on sustainability performance remains open to empirical testing.

H₁: Sensing capabilities positively influence the sustainability performance of NGOs in Lebanon.

2.4. Seizing Capabilities

Seizing capabilities allow organizations to mobilize resources and take advantage of opportunities once they have been identified (Teece, 2010). NGOs rely on seizing capabilities to secure funding, build partnerships, and implement projects that strengthen community resilience (Besiou et al., 2021). Previous studies have shown that organizations with strong seizing abilities achieve higher levels of performance and adaptability in uncertain environments (Harun et al., 2023; Jantunen, Ellonen, & Johansson, 2012). Hence, seizing capabilities are expected to positively influence the sustainability performance of NGOs. Recent studies emphasize seizing capabilities since the humanitarian sector often operates in environments in which resources are scarce, and opportunities are temporary. Son et al. (2025) found that humanitarian organizations have seized opportunities by developing multi-year funding agreements, utilizing social capital, and adopting decentralized decision-making processes during crises. Their findings suggest that the seizing capabilities are not tied to using market opportunities as known in the business world but to securing donor support, building partnerships, and implementing programs quickly. However, some other studies caution that seizing capabilities may be constrained by donor restrictions, weak governance, and unsecured funding. This debate makes it important to test whether seizing capabilities significantly improve sustainability performance among NGOs in Lebanon.

H₂: Seizing capabilities positively influence the sustainability performance of NGOs in Lebanon.

2.5. Reconfiguring Capabilities

Reconfiguring capabilities reflect an organization's ability to restructure and realign resources in response to environmental changes (Eisenhardt & Martin, 2017). For NGOs in Lebanon, which face economic collapse and political instability, reconfiguring internal processes is essential for sustaining long-term impact (Herbane, 2019; Kyambade et al., 2026). Empirical evidence suggests that organizations with high reconfiguring capacity are better able to integrate sustainability practices into their operations (Karman & Savanevičienė, 2021). Thus, reconfiguring capabilities are expected to positively influence the sustainability performance of NGOs.

Reconfiguring capabilities have recently received increased attention in the humanitarian sector since they orient organizations in restructuring resources when external changes occur. Son et al. (2025) state that local and international NGOs have reconfigured their sensing and seizing capabilities during the COVID-19 pandemic by changing their procurement channels, supply chains, and decision-making procedures. Similarly, Kadyrova and Shapira (2024) suggest that small NGOs develop new services and maintain innovation by using flexible routines and creative use of limited resources. These findings show that reconfiguring capabilities may be important for NGOs operating in Lebanon, where uncertainty, economic collapse, and political instability require organizations to redesign their programs, reallocate present resources, and adjust internal processes to maintain sustainability.

H₃: Reconfiguring capabilities positively influence the sustainability performance of NGOs in Lebanon.

Thus, it is expected that NGOs' sustainability performance will be positively impacted by sensing (H1), seizing (H2), and reconfiguring (H3).

2.6. Environmental Uncertainty

Environmental uncertainty, which is defined as unpredictability in political, economic, and social conditions, considerably shapes organizational outcomes (Downey et al., 1975; Milliken, 1987). NGOs operating in Lebanon function under extreme uncertainty due to economic crises, refugee influx, and institutional fragility (Bosqui, 2020; Kraft & Smith, 2019). High levels of uncertainty are created by the external environment in Lebanon over the years, which is characterized by institutional fragility, political instability, and economic collapse (Kraft & Smith, 2019; Nassar & Stel, 2019). This degree of unpredictability in external conditions that impact an organization, such as changes in the political, economic, and regulatory landscape, is known as environmental uncertainty (Milliken, 1987). According to research, uncertainty affects how well businesses can use their dynamic capacities (McKelvie et al., 2011). As it may affect the significance of flexibility in crisis-driven situations, reinforcing the link between sustainability performance and dynamic capacities (Bosqui, 2020; Harun et al., 2023). Research also shows that uncertainty moderates how effectively organizations deploy dynamic capabilities, expanding the need for adaptive strategies (Harun et al., 2023; McKelvie et al., 2011). Accordingly, this study advocates that the association between sustainability performance and sensing, seizing, and reconfiguring capacities is moderated by environmental uncertainty (H4a, H4b, H4c). Recent literature provided two different views regarding environmental uncertainty. One view argues that uncertainty weakens the performance of organizations since it increases risk, reduces predictability, and challenges proper resource allocation. While the other view suggests that uncertainty may promote adaptation, capacities, and capabilities development. Han, Yue, and He (2023) found in their study that perceived environmental uncertainty can positively influence innovation through dynamic capabilities, showing that uncertainty is not always harmful when organizations possess the capacity to adjust strategically. In the humanitarian field, this debate is applicable since environmental uncertainty may either disturb sustainability performance or stimulate NGOs' capacities to become more adaptive and resilient. Therefore, environmental uncertainty is examined in this study not only as an external challenge but also as a possible condition that shapes the effectiveness of sensing, seizing, and reconfiguring capabilities.

H_{4a}: Environmental uncertainty moderates the relationship between sensing capabilities and sustainability performance.

H_{4b}: Environmental uncertainty moderates the relationship between seizing capabilities and sustainability performance.

H_{4c}: Environmental uncertainty moderates the relationship between reconfiguring capabilities and sustainability performance.

The proposed framework (Figure 1) conceptualizes the direct effect of dynamic capabilities (sensing, seizing, reconfiguring) on sustainability performance, while also examining the moderating role of environmental uncertainty.

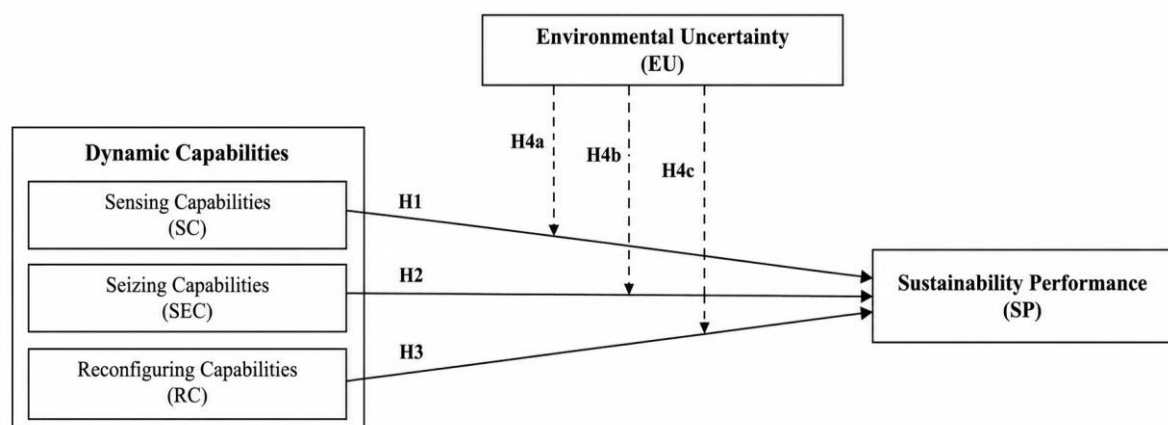


Figure 1. Framework.

3. METHODOLOGY

3.1. Research Design

A quantitative research design is suitable for systematically examining the relationship between dynamic capabilities and sustainability performance among NGOs in Lebanon, as it aligns with positivist and pragmatic research perspectives. Using a deductive approach, the study builds on established theory to empirically test hypotheses derived from Dynamic Capabilities Theory (Teece et al., 1997) and Environmental Uncertainty (Downey et al., 1975; Milliken, 1987). An explanatory research framework is adopted to explore the role of Environmental Uncertainty in shaping the relationship between dynamic capabilities and sustainability performance. This approach helps clarify how NGOs can support long-term sustainability, particularly in unstable and crisis-affected contexts (Saunders, Lewis, & Thornhill, 2019).

Although environmental uncertainty is treated in this study as the main moderating mechanism between dynamic capabilities and sustainability performance, both direct and indirect relationships are examined. On the one hand, Dynamic Capabilities Theory argues that sensing, seizing, and reconfiguring capabilities can directly enhance sustainability performance by enabling organizations to identify opportunities and threats, allocate resources effectively, and implement necessary changes (Teece, 2007; Teece et al., 1997). This suggests a direct influence of dynamic capabilities on sustainability outcomes. On the other hand, environmental uncertainty theory emphasizes how effectively organizations deploy dynamic capabilities, amplifying the need for adaptive strategies (Harun et al., 2023; McKelvie et al., 2011). Under such conditions, environmental uncertainty serves as a moderator in the link between dynamic capabilities and sustainability performance.

This study uses Partial Least Squares Structural Equation Modeling (PLS-SEM) because it fits examining complex models with multiple latent constructs, direct and moderating effects. Unlike covariance-based SEM, which is mostly used for theory confirmation and model-fit assessment, PLS-SEM is more prediction-oriented and suitable for explaining variance in an endogenous construct like sustainability performance. This approach is different from previous NGOs' sustainability studies that focused more on descriptive statistics, regression analysis, or qualitative discussion. By using PLS-SEM, this study provides a more comprehensive assessment of both the measurement model and the structural relationships among all constructs, dynamic capabilities, environmental uncertainty, and sustainability performance. Consistent with recommended PLS-SEM practice, this model makes it possible to determine whether environmental uncertainty moderates the relationship between dynamic capabilities and sustainability performance, or whether dynamic capabilities also exert an additional direct effect in the NGO context.

3.2. Data Collection and Measures

Data were collected through a survey method in which standardized questionnaires were directed to NGOs' managers. The survey has relied on Likert-scale items to measure the main constructs, including dynamic capabilities, uncertainty, and sustainability performance indicators (Hair, Hult, Ringle, & Sarstedt, 2022). Senior-level personnel were selected as respondents because of their direct contribution to organizational leadership and to sustaining NGO performance over time. The convenience sampling technique was adopted to improve access to participants and encourage wider representation. The final data used consisted of 407 NGO managers, with the size determined according to Cochran's formula to confirm adequate statistical power. In order to overcome practical constraints and to facilitate wide participation, the online survey format was used. The questionnaire was pilot-tested and refined based on expert comments to improve the clarity and reliability of information. Measures of dynamic capabilities (Teece, 2007), sustainability performance indicators (Elkington, 1997), environmental uncertainty (Downey et al., 1975; Milliken, 1987), as well as demographic information, were all covered.

Organizational sustainability (OS) was operationalized as a multidimensional construct comprising three complementary dimensions: environmental performance (ENP), economic performance (EP), and social performance (SP). Environmental performance was measured using items ENP1–ENP3, economic performance using items EP1–

EP3, and social performance using items SP1–SP4. These indicators were analysed collectively as measures of the broader organizational sustainability construct rather than as separate dependent variables. This operationalization reflects the multidimensional nature of organizational sustainability.

The questionnaire was distributed to 500 potential respondents, while 407 valid responses were retained for analysis, resulting in a response rate of 81.4%. Responses with incomplete answers, straight-line patterns, or missing key information were excluded before conducting the final analysis.

3.3. Data Analysis

Lebanon was reported to have more than 11,000 registered NGOs by 2014, including local organizations, youth initiatives, and international non-governmental organizations (Lebanese Development Network, 2024). Other resources provide slightly different figures, such as 10,472 organizations by mid-2023 (Aleph-Lam, 2023), at a time when earlier academic estimates suggested that the total number of NGOs could reach 15,000 (Salem, 2023). Most of the NGOs operating in Lebanon are categorized as small- to medium-sized organizations, and available surveys suggest that approximately 20% to 25% of their personnel occupy managerial positions (Salem, 2023; Scholar Works AUB, 2023).

Knowing the fact that no official statistics specify the exact number of NGO managers in Lebanon, these estimates offer a reasonable basis for approximating the managerial population within the humanitarian sector. At the same time, this study follows PLS-SEM methodological recommendations, which place greater emphasis on statistical power and model complexity than on the total size of the population. The proposed model includes four exogenous constructs and one moderating construct, with a maximum of four structural paths directed toward a single endogenous variable. Hair et al. (2022) suggest that the minimum required sample should be at least ten times the largest number of structural paths, meaning that at least 40 observations would be sufficient in this case. Relying on 407 valid responses, the study clearly exceeds this threshold by providing adequate statistical power, stable parameter estimates, and strong support for the robustness of the PLS-SEM analysis. Hence, the sample size used can be considered appropriate for testing the proposed hypotheses and theoretical framework.

By combining population estimates, statistical sampling procedures, and practical field considerations, the sample was determined accordingly. The calculation was based on a 95% confidence level and a 5% margin of error based on Cochran (1977) standard sample size approach. The surveys gathered were intended to reflect a broad range of NGO types, organizational sizes, and sectors. The participation by managers was based on their willingness and availability to respond, allowing the study to balance methodological soundness with practical feasibility. This approach supports the representativeness of the findings in relation to managerial practices within Lebanese NGOs, despite the absence of an exact nationwide count of NGO managers.

Representativeness was supported by collecting responses from NGO managers working in different organizational sizes, operational areas, and fields of activity. Since the respondents were managers and senior-level personnel directly involved in decision-making, resource allocation, and program implementation, they were considered suitable informants for assessing organizational capabilities and sustainability performance. However, since convenience sampling was used, the findings should be analyzed with caution and may not fully represent all NGOs operating in Lebanon.

For surveys using probability sampling with a known and finite population, sample size can be estimated using the following formulas:

$$n = n_0 / (1 + (n_0 - 1) / N)$$

$$n_0 = (1.96 \times 1.96 \times P \times (1 - P)) / (E \times E)$$

Where:

P = Probability of the parameter of interest, E = Margin of sampling error.

N = Population size.

In the above-presented formula, n_0 represents the initial sample size for a large or unknown population, while n represents the adjusted sample size after accounting for a finite population. The value 1.96 corresponds to the z-score for a 95% confidence level. The probability value P was set at 0.5 because this assumption produces the maximum sample size and is commonly used when the actual population proportion is unknown. The margin of error E was set at 0.05 to reflect the accepted 5% sampling error. The population size N was based on available estimates of registered NGOs in Lebanon. Therefore, the formula was used to ensure that the selected sample was statistically sufficient and appropriate for the study context.

Assuming maximum population heterogeneity, P was set at 0.5, with a margin of error of 5% and a population size of 11,000. Based on these assumptions, the required sample size was calculated at 371 respondents. This number was later increased to 407 to strengthen statistical power and support a more rigorous implementation of the SEM model.

In survey research, two main categories of error are generally recognized: sampling error and non-sampling error. Sampling error, often referred to as Type I error, is incorporated into the sample size calculation. The Type II non-sampling error may be because of different causes, among which are interviewer bias, poorly designed questionnaires, or respondents providing inaccurate answers due to mood, misunderstanding, or intentional misreporting. In the absence of a precise theoretical model for calculating the extent of non-sampling error, it is not possible to assign it a fixed percentage. However, efforts were made to minimize such errors by using validity and reliability checks, along with simplifying and clarifying questionnaire items.

Despite the mentioned procedure, several sampling limitations should be highlighted. First, the study has relied on convenience sampling, which might limit the generalizability of the findings. Second, the surveys collected focused on manager and senior posts only, and that means that the input of field staff or other relevant stakeholders was excluded. Third, the collected data were obtained through a self-reported questionnaire, which may introduce response bias. Last, since the study has used a cross-sectional design, the results may show perceptions at one point in time without capturing changes in NGOs' capabilities or sustainability over time.

3.4. Outer Model and Measurement Model Validation

3.4.1. Indicator Reliability and Convergent Validity

To evaluate the psychometric properties of the latent constructs, a reflective measurement model assessment was conducted. This involved examining indicator loadings, internal consistency reliability, convergent validity, and lateral collinearity (variance inflation factors). The empirical results for these diagnostic parameters are summarized in Table 1. Convergent validity assesses the degree to which the manifest items accurately represent their underlying latent construct. According to the criteria established by Hair et al. (2022), convergent validity is confirmed when outer loadings exceed the threshold of 0.708, and the Average Variance Extracted (AVE) for each construct is greater than 0.50. As detailed in Table 1, the standardized factor loadings for almost all items surpass the 0.708 benchmark, displaying strong item-to-construct alignment. A few indicators, specifically ENP2 (0.670), EP3 (0.677), and SC1 (0.657), exhibited loadings slightly below 0.70, but still well above the absolute, conservative retention cut-off of 0.40. These items were systematically retained because their respective constructs preserved an AVE well above the critical 0.50 threshold. Specifically, the AVE values range from 0.519 for Environmental Uncertainty (EU) to 0.675 for SEC, demonstrating that each latent variable captures more than 50% of its indicators' variance. Consequently, robust convergent validity is confirmed across all constructs.

3.4.2. Internal Consistency Reliability

The internal consistency and scale reliability of the constructs were evaluated using Composite Reliability (CR). In structural equation modeling, CR provides a more nuanced assessment than Cronbach's alpha, as it accounts for the varying weights of the indicators.

The CR values for all five latent constructs exceed the widely accepted threshold of 0.70 (Hair et al., 2022), ranging from 0.877 for SC to 0.915 for Environmental Uncertainty (EU). These high values signify excellent internal consistency, indicating that the measurement scales are highly reliable and free from random errors.

3.4.3. Collinearity Assessment

To evaluate the potential presence of common method bias (CMB), two post hoc statistical remedies were applied. First, Harman's single-factor test was conducted by entering all measurement items into an unrotated factor analysis. The first extracted factor accounted for 40.422% of the total variance, falling safely below the critical 50% threshold (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Second, a full collinearity assessment was examined; the variance inflation factors (VIFs) (see Table 1) for all primary latent constructs remained below the standard structural threshold of 5.0 (Kock, 2015; Kock & Lynn, 2012). Consistent with these combined criteria, common method bias does not pose a significant threat to the validity of the model's estimations.

Table 1. Constructs and items reliability and validity, VIF values.

Constructs and measurement items	Loadings	Composite Reliability (CR)	AVE	VIF
OS		0.888	0.665	
ENP1	0.701			
ENP2	0.670			
ENP3	0.746			
EP1	0.693			
EP2	0.714			
EP3	0.677			
SP1	0.777			
SP2	0.704			
SP3	0.780			
SP4	0.735			
EU		0.915	0.519	1.463
EU1	0.816			
EU2	0.781			
EU3	0.906			
EU4	0.752			
RC		0.895	0.632	3.009
RC1	0.811			
RC2	0.762			
RC3	0.821			
RC4	0.721			
RC5	0.852			
SC		0.877	0.588	2.867
SC1	0.657			
SC2	0.760			
SC3	0.808			
SC4	0.794			
SC5	0.806			
SEC		0.912	0.675	3.398
SEC1	0.826			
SEC2	0.795			
SEC3	0.865			
SEC4	0.816			
SEC5	0.803			

Discriminant validity was assessed to confirm that each construct in the model is empirically distinct. This ensures that every latent variable measures a unique phenomenon not captured by other constructs. Using the Heterotrait–Monotrait (HTMT) ratio with a conservative threshold of 0.90, the analysis revealed that all values fell

safely below this limit (see Table 2). These results confirm established discriminant validity. Consequently, the model's reliability, convergent validity, and discriminant validity are all statistically established.

Table 2. Discriminant validity matrix.

Constructs	EU	OS	RC	SC
EU				
OS	0.678			
RC	0.598	0.711		
SC	0.510	0.512	0.735	
SEC	0.588	0.686	0.872	0.793

Note: EU = Environmental Uncertainty; OS = Organizational Sustainability; RC = Reconfiguring Capabilities; SC = Sensing Capabilities; SEC = Seizing Capabilities. All reported HTMT values are below 0.90.

4. RESULTS

4.1. Descriptive Statistics

77% of respondents are female, and 21% are male, with only a small proportion choosing not to disclose their gender. The demographic profile of the sample also indicates that the majority are in the 35–54 age bracket (60%), while 36% are between 18 and 34, and only 4% are 55 or older. At the educational level, 48% hold a bachelor's degree, 27% a master's, and 6% a doctorate, with an additional 14% possessing a technical university diploma.

As a profession, 74.7% occupy team leader or project management roles, and experience levels are notably strong, with 62% reporting more than eleven years of practice. More than half (52.1%) of participants work primarily in program implementation, while other smaller proportions are involved in strategy (13.8%) or grants and fundraising (9.8%).

All NGOs participating in the sample are formally registered, and 58% of which are international organizations. Most of them are small to medium in size, with 58% employing fewer than 101 staff members. As for their presence in Lebanon, 54.8% have operated in the country for 6–10 years, and 41% for more than a decade. 54.5% serve both refugees and host communities, while 26.5% focus solely on refugees.

The NGOs that participated operate in different sectors, with the strongest representation in education (37.1%) and livelihoods (35.1%). While others are indulged in protection (32.9%) and food and nutrition (30%). As for the remaining sectors, like environment (26.3%), health (25.5%), and advocacy (25.6%), show moderate levels of activity, while fields including WASH (20.8%), legal affairs (19.7%), research (17.9%), safety (17.7%), and trade and finance (12.5%) exhibit lower but still notable engagement.

4.2. Structural Model Robustness (Out-of-Sample Predictive Power)

Following contemporary PLS-SEM guidelines, the structural model's integrity was evaluated using the “PLSpredict” procedure to assess out-of-sample predictive relevance and guard against model overfitting. A 10-fold cross-validation manifest was executed.

The evaluation relies on comparing the Root Mean Square Error (RMSE) and Mean Absolute Error (MAE) values generated by the PLS-SEM execution against a naive linear model (LM) baseline for the endogenous construct indicators (ENP1 through SP4). As a systematic rule of thumb, if most of the indicators yield lower PLS-SEM values compared to the LM baseline, robust predictive power is established.

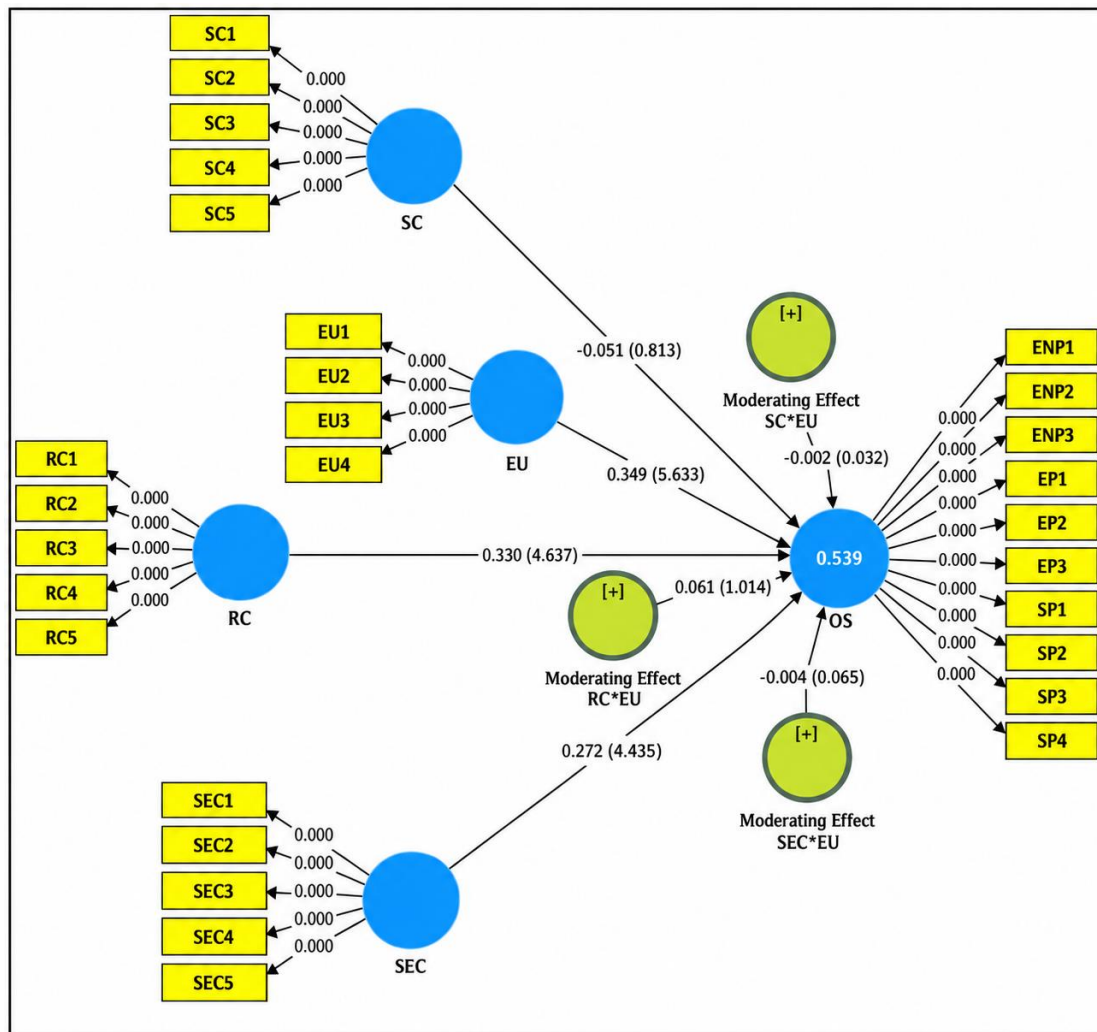
The analysis revealed that for many of the indicators, the PLS-SEM framework outperformed the naive LM baseline across both RMSE and MAE metrics (see Table 3). This systematically demonstrates that the structural model possesses robust predictive power, ensuring that the identified behavioral relationships are stable and generalize beyond the immediate sample.

Table 3. RMSE and MAE values for the PLS-SEM model, Manifest Variables, and Naive Linear Model baseline.

Construct	MV		LM	
	RMSE	MAE	RMSE	MAE
ENP1	0.793	0.614	0.837	0.615
ENP2	0.799	0.628	0.821	0.638
ENP3	0.780	0.613	0.801	0.600
EP1	0.933	0.666	0.963	0.665
EP2	1.143	0.807	1.180	0.846
EP3	1.102	0.791	1.133	0.819
SP1	1.133	0.818	1.152	0.840
SP2	0.944	0.688	0.959	0.690
SP3	0.951	0.673	0.964	0.692
SP4	0.939	0.680	0.967	0.688

4.3. Structural Model and Hypothesis Testing

The PLS-SEM structural model (Figure 2) explains approximately 53.9% of the total variance observed in the organizational sustainability (OS) of NGOs (R-square = 0.539). This indicates robust explanatory power within the context of macro-level organizational performance. To evaluate the structural hypotheses, path coefficients (Beta), t-statistics, and p-values were derived via a bootstrapping procedure.

**Figure 2.** PLS-SEM model.

4.4. Direct and Moderating Effects

Table 4 presents the results of the structural model analysis, including the estimated path coefficients, t-values, p-values, and the moderating effects among the study constructs.

The structural relationships and hypothesized paths influencing Organizational Sustainability (OS) were evaluated using a path-analytical approach. Statistical significance was determined using a baseline threshold of $p < 0.050$.

The empirical findings show that Organizational Sustainability (OS) is significantly and positively impacted by Environmental Uncertainty (EU) (Beta = 0.349, $t = 5.564$, $p = 0.000$). This suggests that as external environmental uncertainty increases, organizational sustainability performance tends to improve.

Additionally, there is a significant, positive, direct path from Reconfiguring Capabilities (RC) to Organizational Sustainability (OS) (Beta = 0.330, $t = 4.680$, $p = 0.000$), reinforcing the notion that the capability to reshuffle and restructure internal resources is essential for advancing sustainability. Similarly, Seizing Capabilities (SEC) exhibit a significant, positive, direct impact on OS (Beta = 0.272, $t = 4.266$, $p = 0.000$), implying that NGOs adept at identifying and capitalizing on new opportunities are more capable of enhancing their sustainability outcomes.

Conversely, Sensing Capabilities (SC) demonstrate no discernible direct impact on Sustainability Performance (OS) (Beta = -0.051, $t = 0.826$, $p = 0.409$). This indicates that, while sensing abilities are theoretically crucial for tracking changes in the external environment, they do not directly drive variations in sustainability performance within this structural configuration.

Furthermore, none of the hypothesized moderating interaction effects reached statistical significance. The interaction terms for Reconfiguring Capabilities (RC*EU->OS; $p = 0.302$), Sensing Capabilities (SC*EU->OS; $p = 0.974$), and Seizing Capabilities (SEC*EU->OS; $p = 0.948$) all fail to meet the significance threshold. These results indicate that Environmental Uncertainty (EU) does not condition or moderate the relationships between an NGO's dynamic capabilities and its overall organizational sustainability.

Table 4. PLS-SEM results for direct paths and moderating effects.

Direct Effect	Based Sample	Mean	St. Dev.	T	P
EU -> OS	0.349	0.347	0.063	5.564	0.000
Moderating Effect RC*EU-> OS	0.061	0.057	0.059	1.032	0.302
Moderating Effect SC*EU-> OS	-0.002	0.001	0.048	0.032	0.974
Moderating Effect SEC*EU-> OS	-0.004	-0.008	0.062	0.066	0.948
RC -> OS	0.330	0.327	0.070	4.680	0.000
SC -> OS	-0.051	-0.039	0.061	0.826	0.409
SEC -> OS	0.272	0.266	0.064	4.266	0.000

Note: * denotes the interaction term used to test the moderating effect (e.g., RC*EU = RC $\times$ EU, SC*EU = SC $\times$ EU, SEC*EU = SEC $\times$ EU).

4.5. Effect Size (F-Square) and Practical Significance

Table 5 presents the effect size (f-squared) results for the structural model, illustrating the practical significance of the relationships among the study constructs.

To address the practical significance of these paths beyond mere statistical significance, Cohen's f-squared effect sizes were computed. Standard Cohen thresholds were applied to interpret the values: 0.02 (small), 0.15 (medium), and 0.35 (large). These values quantify the change in R-squared when a specific predictor is omitted, indicating its unique contribution to the explained variance of the endogenous construct.

Except for Environmental Uncertainty (EU), all predictors predominantly fall within the "small" or "none" effect size categories. Specifically, the moderating interaction terms (RC*EU, SC*EU, and SEC*EU) exhibit f-squared values of 0.005, 0.000, and 0.000, respectively. These exceptionally low values indicate a negligible unique contribution to the explained variance, mathematically reinforcing the earlier observation from the nonsignificant p-values that these interaction effects hold no practical relevance in the model.

Conversely, Environmental Uncertainty (EU) yields an f-squared value of 0.181, which represents a medium effect size. This indicates that the EU accounts for a noteworthy, substantial proportion of the variance in the outcome variable. This finding, paired with its highly significant p-value (0.000), confirms that the EU is a primary structural predictor with practical impact.

Reconfiguring Capabilities (RC) and Seizing Capabilities (SEC) demonstrate small f-squared effect sizes of 0.078 and 0.047, respectively. While these values confirm a unique contribution to the explained variance, their modest scale implies that, despite their high statistical significance ($p = 0.000$), their isolated practical leverage on the dependent variable is bounded. Finally, Sensing Capabilities (SC) recorded an f-squared value of 0.002, which aligns with its non-significant p-value (0.409) and denotes a practically baseline role in explaining endogenous variance.

Table 5. Cohen's f-squared and effect sizes.

Construct	F-square	Effect size
EU	0.181	Moderate
Moderating Effect RC*EU	0.005	Small
Moderating Effect SC*EU	0.000	Small
Moderating Effect SEC*EU	0.000	Small
RC	0.078	Small
SC	0.002	Small
SEC	0.047	Small

Note: * denotes the interaction term used to test the moderating effect (e.g., RC*EU = RC $\times$ EU, SC*EU = SC $\times$ EU, SEC*EU = SEC $\times$ EU).

4.6. Synthesized Analysis of Relationships Between Variables

Analyzing the path coefficients alongside their corresponding effect sizes (F-squared) provides a comprehensive picture of how internal capabilities and external forces shape sustainability outcomes in the NGO sector.

Environmental Uncertainty (EU) emerges as a critical direct driver, demonstrating both a strong path coefficient and a medium effect size (F-squared = 0.181). This indicates that NGOs operating under volatile, rapidly shifting conditions are actively compelled to adapt their operational models to secure and maintain institutional sustainability. This direct path aligns with contingency theory, which asserts that an organization's performance is optimized when its strategic choices match the demands of its external environment.

In contrast, internal dynamic capabilities exhibit a highly nuanced, sequential pattern of influence. Reconfiguring Capabilities (RC) show a statistically significant, small-to-moderate practical effect (F-squared = 0.078), confirming that the capacity to restructure assets and adjust programs provides vital structural support for sustainability goals. Seizing Capabilities (SEC) also contributes meaningfully but modestly (F-squared = 0.047), highlighting the importance of capitalizing on new funding windows or operational slots.

Crucially, Sensing Capabilities (SC) demonstrate no statistical or practical effect (F-squared = 0.002). This strongly suggests that open environmental scanning and threat identification are insufficient on their own; sensing does not automatically translate into organizational sustainability unless it is deliberately translated into concrete seizing and reconfiguring behaviors.

Finally, the complete statistical absence of moderation across all interaction terms holds major theoretical implications. The negligible effect sizes (F-squared between 0.000 and 0.005) and non-significant path coefficients reveal that Environmental Uncertainty does not condition the effectiveness of an NGO's dynamic capabilities. Whether the operating environment is highly stable or highly volatile, the underlying return on developing, reconfiguring, and seizing capabilities remains constant.

Consequently, external environmental conditions and internal dynamic capabilities operate via two parallel, complementary strategic pathways rather than interdependent ones. To maximize organizational sustainability, practitioners must balance external contingency planning alongside the independent development of core internal execution capabilities.

5. DISCUSSION

The goal of this study was to investigate the relationship between environmental uncertainty and dynamic capabilities, and how they relate to the sustainability performance of NGOs in Lebanon. The findings provide different significant disclosures.

First, it was realized that the sustainability performance was greatly improved by both reconfiguring and seizing capabilities. The result supports the views of Eisenhardt and Martin (2017) and Teece (2007), who contend that organizational resilience is mainly reliant on adaptation and resource mobilization. In the humanitarian field, the reconfiguring capabilities assist NGOs in responding to crises and utilizing new funding and collaboration opportunities in the long run. The importance of adopting adaptive resource management in non-profit organizations was emphasized by Harun et al. (2023), whose current empirical findings are also supported by these findings.

While results did not reveal a discernible direct impact of sensing capabilities on sustainability performance. Recent research indicates that awareness might not be enough in extremely variable contexts like Lebanon, despite the literature's emphasis on the value of environmental scanning (Helfat & Peteraf, 2009; Simon et al., 2015). The sensing capabilities may not link directly to measurable performance outcomes if the NGOs are unable to exploit and reorganize in the presence of risks and possibilities in their surroundings. The question of whether sensing skills produce direct or indirect value is still up for debate, and this intricacy adds to it (Wu, 2017).

Second, environmental uncertainty demonstrated a significant and positive direct effect on sustainability performance, which is an insightful result. It suggests that uncertainty may act as a push for NGOs to innovate, adapt, and optimize their operations in order to survive and thrive. This concept was visited by Milliken (1987), who emphasized that uncertainty forces organizations to adopt adaptive behaviors, and by Bosqui (2020), who described how Lebanon's crisis conditions have triggered NGOs to become more resourceful.

Last, in contrast to expectations, environmental uncertainty did not moderate the relationship between dynamic capabilities and sustainability performance. While the result reached contrasts with other research (Kafetzopoulos, 2021; McKelvie et al., 2011) that emphasized the influence of external instability on capabilities' efficacy. Rather than increasing or decreasing the influence of capabilities, uncertainty seems to have its own independent effect on sustainability in the Lebanese environment. The last suggests that while NGOs must use their dynamic capabilities to follow sustainable plans, they also need to directly confront uncertainty as a challenge.

These results demonstrate how both external forces (environmental uncertainty) and internal adaptive mechanisms (seizing, reconfiguring) influence NGOs' sustainability in precarious situations. On the other hand, the sensing capabilities and moderating effects are less significant, highlighting the difficulty of strategic adaptation in harsh environments.

5.1. Theoretical Implications

This study promoted the application of the Dynamic Capabilities Theory to NGOs and the humanitarian sector. Although DCT has been widely used in commercial settings (Eisenhardt & Martin, 2017; Teece, 2007), little is known about how applicable it is to NGOs operating in vulnerable circumstances. This research expands the theoretical scope of DCT beyond corporate strategy by showing how sensing, seizing, and reconfiguring capabilities improve sustainability performance. Additionally, the study enhances the literature on strategic management by demonstrating how external volatility affects the efficacy of dynamic capacities by including environmental uncertainty as a moderating element (McKelvie et al., 2011; Milliken, 1987). By doing so, it contributes to scholarly conversations about organizational sustainability and resilience in crisis-driven environments.

5.2. Practical Implications

For policymakers and NGO managers working in unstable regions like Lebanon, the findings provide practical insights. NGOs should first make investments to improve their sensing capacities by bolstering community feedback

systems, stakeholder involvement, and risk early-warning systems. Second, localizing assistance distribution, forming donor alliances, and implementing resource-mobilization techniques can all improve seizing capabilities (Besiou et al., 2021). Third, NGOs can be flexible and adaptable in times of crisis by reorganizing internal procedures and governance frameworks (Herbane, 2019). Furthermore, acknowledging the significance of environmental unpredictability motivates non-governmental organizations to use flexible tactics and backup plans, guaranteeing the continuation of activities even in the face of significant political or economic disruptions. These insights can be used by funders and policymakers to create support initiatives that improve the long-term viability and flexibility of NGOs.

To make the implications discussed more actionable, NGOs' decision makers should translate collected findings into strategic managerial practices. Starting with the seizing capabilities, since they improve the sustainable performance of organizations, NGOs should launch resource mobilization departments, diversify their funding resources, and build long-term partnerships. And develop a more rapid proposal writing mechanism to respond efficiently to emerging funding opportunities. Second, as the reconfiguring capabilities also have a significant effect, NGOs should regularly review their internal structures, reallocate resources and budgets as per community needs, and lastly adopt flexible project management systems that allow programs to be redesigned during a crisis. Third, even if the sensing capabilities were not statistically significant, NGOs should still focus on environmental scanning and connect the sensing activities directly to decision-making by using the beneficiary's feedback, stakeholders' input, and risk monitoring reports to guide resource allocation. Finally, since environmental uncertainty has a direct effect on sustainability performance, NGOs should prepare contingency plans, emergency budgets, alternative supplier lists, and scenario-based strategies to maintain operations during political, economic, or funding disruptions.

5.3. Academic Contribution

This study has contributed three significant additions to scholarly literature. First, it experimentally validates the connection between dynamic capacities and sustainable performance in the NGO sector, which fills a glaring research vacuum (Kyambade et al., 2026; Nassar & Stel, 2019). Second, it suggests that environmental uncertainty is a boundary condition, illustrating its moderating influence and providing a sophisticated comprehension of how strategic outcomes are shaped by context. Third, the study contributes to a wider discussion on organizational sustainability in fragile and crisis-affected nations by focusing on Lebanon, a nation dealing with compounding crises. This helps to produce knowledge that is both internationally applicable and context-specific.

6. CONCLUSION

Through this study, Dynamic Capabilities Theory (DCT) is applied to the humanitarian sector in Lebanon, a nation characterized by complex social, political, and economic challenges. The findings demonstrate that while sensing capabilities by themselves are not sufficient, seizing and reconfiguring capabilities greatly improve sustainability performance. Furthermore, environmental uncertainty has a direct positive impact on sustainability performance, while it does not have a moderating effect on the relationship between sustainability performance and dynamic capabilities.

Theoretically, these results challenge presumptions on the ubiquitous role of sensing and moderation while also enhancing DCT by demonstrating how capabilities function in delicate and resource-constrained environments. Practically speaking, the study offers NGO management useful insights that highlight the necessity of bolstering mechanisms for resource mobilization and restructuring while directly addressing environmental unpredictability through adaptive tactics.

Several limitations should be considered. First, the study has used a cross-sectional research design, meaning that the data were collected at one point in time. Therefore, the findings cannot fully elaborate on how dynamic capabilities and sustainability performance could change over time. Second, the study has relied on self-reported survey data from NGO managers and senior personnel; the following may introduce response bias or social

desirability bias. Third, although the sample size was sufficient for PLS-SEM analysis, the use of convenience sampling may limit the generalizability of the findings to all the NGOs operating in Lebanon. Fourth, the study has focused only on NGOs in Lebanon, during a specific crisis-affected context, so the results may not be directly transferable to NGOs in other more stable countries or different humanitarian settings. Finally, the study has examined sensing, seizing, and reconfiguring capabilities and environmental uncertainty, but not other factors that may have an impact on sustainability performance, such as leadership style, donor dependency, digital transformation, and institutional support.

Future potential studies can address those limitations by using longitudinal research designs to examine how NGO capabilities develop over time and how they affect sustainability performance during different stages of crisis. Additionally, more studies may also compare NGOs across different countries or humanitarian fields and contexts to determine whether the findings are specific to Lebanon or applicable to other fragile environments. In addition, future research could include other stakeholders, like field workers, volunteers, beneficiaries, donors, and policymakers, to provide a broader and deeper understanding of NGO sustainability. Further studies may also examine additional variables, including leadership, governance practices, donor dependency, digital capabilities, and organizational learning, to provide a more comprehensive explanation of sustainability performance in the humanitarian sector.

In conclusion, NGOs in Lebanon can achieve sustainable performance by strategically leveraging their sensing and reconfiguring capabilities while embracing environmental uncertainty as a driver for adaptation and resilience.

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Informed Consent Statement: Informed verbal consent was obtained from all participants prior to their participation in the study. All data were anonymized to ensure participant confidentiality.

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

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