

# Organizational Resilience and Crisis Management in Public Administration: Insights from Morocco's Response to COVID-19, the Al-Haouz Earthquake and Floods under a New Public Governance Framework

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## **Organizational Resilience and Crisis Management in Public Administration: Insights from Morocco's Response to COVID-19, the Al-Haouz Earthquake and Floods under a New Public Governance Framework**

### **Abstract:**

This study explores the mechanisms of organizational resilience in public administration through the lens of three critical managerial dimensions: time, information and human resources. Anchored in the theoretical framework of New Public Governance (NPG), it investigates how these dimensions shaped the responses of Moroccan public organizations during three major crises: the COVID-19 pandemic, the Al-Haouz earthquake and nationwide floods.

Using a mixed-methods approach, the research combines insights from semi-structured interviews with senior public-sector officials and a quantitative analysis based on secondary crisis data. Findings from the qualitative phase reveal how the capacity to manage temporal dynamics, mobilize and protect human capital and navigate information flows were central to adaptive performance.

The study introduces a conceptual model — the “Resilience Triad” — illustrating how these three variables interact systemically to foster or hinder organizational resilience. Comparative analysis across crises demonstrates distinct patterns of success and failure depending on the alignment of time sensitivity, staff engagement and data reliability. This article contributes to both public management theory and crisis governance literature by emphasizing the interdependence of soft managerial capacities in turbulent environments. It also offers practical guidance to policymakers seeking to strengthen crisis preparedness and response mechanisms through human-centered and data-driven approaches.

Limitations and directions for future research are discussed, particularly the need for longitudinal and cross-country comparative studies.

**Keywords:** Organizational Resilience, Crisis Management, New Public Governance, Public Sector Adaptation, COVID-19 Pandemic.

**JEL Code :** C83, D73, D83, H12, H83

**Paper type:** Empirical Research

### **Résumé :**

Cette étude explore les mécanismes de la résilience organisationnelle dans l'administration publique à travers trois dimensions managériales clés : le temps, l'information et les ressources humaines. Ancrée dans le cadre théorique de la Nouvelle Gouvernance Publique (NGP), elle analyse comment ces dimensions ont influencé les réponses des organisations publiques marocaines face à trois crises majeures : la pandémie de COVID-19, le séisme d'Al-Haouz et les inondations à l'échelle nationale.

Adoptant une approche méthodologique mixte, la recherche combine des entretiens semi-directifs menés auprès de cadres publics et une analyse quantitative fondée sur des données secondaires relatives aux crises. Les résultats montrent que la gestion du temps, la capacité à mobiliser et protéger les ressources humaines, ainsi que la maîtrise des flux d'information, sont au cœur de la performance adaptative. L'étude propose un modèle conceptuel original – le « Triade de la Résilience » – illustrant les interactions systémiques entre ces trois variables. L'analyse comparative des crises met en évidence des schémas différenciés de succès et de fragilité selon l'alignement temporel, l'engagement des agents publics et la fiabilité des données.

Cette recherche contribue à la fois aux théories de la gestion publique et à la littérature sur la gouvernance en temps de crise, en soulignant l'importance des capacités managériales dites « douces » dans des environnements turbulents. Elle formule également des recommandations stratégiques à destination des décideurs publics pour renforcer les mécanismes de gouvernance résiliente à travers des approches centrées sur l'humain et pilotées par l'information.

**Mots clés :** Résilience organisationnelle, Gestion de crise, Nouvelle gouvernance publique, Adaptation du secteur public, Pandémie de COVID-19

**JEL classification :** C83, D73, D83, H12, H83

**Type du papier :** Recherche empirique

## 1. Introduction

In an era marked by cascading crises—ranging from pandemics to climate-induced disasters—public sector organizations are increasingly called upon to operate under conditions of extreme uncertainty and institutional stress. The concept of *organizational resilience* has therefore emerged as a pivotal construct in both theoretical debates and practical reforms aimed at improving the adaptability of public systems (Duchek, 2020; Lengnick-Hall et al., 2011). Resilience is no longer understood merely as the ability to "bounce back" from disruption; rather, it is framed as a proactive, systemic, and continuous capacity to anticipate, absorb, and adapt to turbulence (Boin & van Eeten, 2013).

While substantial literature has examined resilience from the perspective of emergency response, engineering, or risk management, fewer studies have analyzed it through the managerial dimensions that shape public organizational behavior, particularly in developing countries. There is a need to better understand how state organizations navigate crises not just structurally, but also *strategically*—through people, decisions, and information.

The advent of New Public Governance (NPG) has shifted the locus of public action from centralized bureaucracies to networked governance models emphasizing collaboration, agility and stakeholder engagement (Osborne, 2006 ; Dunleavy et al., 2006). Within this paradigm, the resilience of public organizations depends less on rigid procedures and more on their capacity to adapt in real time, learn from experience, and mobilize their internal capabilities. However, the operationalization of resilience within NPG remains under-theorized, particularly in contexts where institutional inertia and legalism still dominate public management practices.

How can public organizations, under the constraints of hierarchy and formalism, develop the reflexive capacities needed to cope with high-impact, low-predictability events? Which variables act as levers of resilience under a governance model that privileges responsiveness over control? This article investigates how Moroccan public organizations have managed to respond to three systemic crises—COVID-19, the Al-Haouz earthquake and flooding—by activating specific managerial levers of resilience. While much research has focused on structural reforms or crisis policies, few studies have examined the micro-organizational dimensions that actually enabled adaptive action during these events.

Rather than treating resilience as a monolithic or abstract concept, we focus on three interrelated operational variables that emerged inductively from the field:

- **Time** (the capacity to anticipate, act swiftly, and coordinate temporal rhythms)
- **Information** (the ability to access, interpret, and circulate reliable data), and
- **Human Resources** (the mobilization, protection, and leadership of public agents).

These variables are examined not in isolation, but in their **dynamic interplay**, forming what we conceptualize as a "*Resilience Triad*"—a managerial configuration that underlies successful crisis navigation in public bureaucracies.

Rather than treating resilience as a monolithic or abstract concept, this study focuses on three interdependent managerial dimensions that emerged inductively from empirical fieldwork: time, information, and human resources. These variables are not examined in isolation, but through their dynamic and reciprocal interactions. Together, they form what we conceptualize as a "Resilience Triad"—a managerial configuration through which public bureaucracies navigate uncertainty, respond to disruption, and sustain institutional function in turbulent environments.

Time is understood as the capacity of public organizations to anticipate shocks, act swiftly when needed, and coordinate temporal rhythms across sectors and administrative layers. Information refers not only to access and dissemination, but also to the interpretive

capacity to make sense of data under pressure, enabling informed and timely decision-making. Human resources, finally, encompass the mobilization, protection, commitment, and leadership of public agents, who play a central role in translating institutional mandates into adaptive action. When activated in synergy, these three domains form the basis of real-time resilience capacity—beyond formal plans or legal frameworks.

The Moroccan public sector offers a compelling empirical context to examine these dynamics. As a hybrid governance system combining strong bureaucratic traditions with ongoing decentralization and digital reforms, Morocco embodies the tensions between institutional inertia and adaptive ambition (Benzerafa & El Baroudi, 2021). Between 2020 and 2024, Moroccan public organizations were confronted with three major systemic shocks: the COVID-19 pandemic, which demanded rapid coordination across ministries and provincial health authorities under conditions of uncertainty; the Al-Haouz earthquake, which required immediate localized responses amid infrastructural collapse and governance fragmentation; and recurrent nationwide floods, which exposed the limits of environmental risk anticipation and the urgent need for intersectoral coordination in disaster planning.

These crises provide a rare empirical opportunity to compare organizational behavior across different types of disruption, varying in scope, temporality, and governance demands. However, while a growing body of literature has addressed public sector resilience from the angle of institutional design, emergency protocols, or macro-level reform (Christensen et al., 2016; Capano et al., 2022), fewer studies have analyzed the managerial micro-dynamics that shape resilience from within—particularly in the context of Global South administrations. Duchek (2020), Williams et al. (2017), and Barbera et al. (2017) have all emphasized the need to move beyond structuralist interpretations of resilience and to explore the interactional and processual mechanisms through which adaptability is enacted at the organizational level.

This article responds to that call. It proposes that resilience in public organizations is not a fixed attribute, but a context-dependent outcome of synchronized managerial practices. It investigates how time, information, and human resources—when effectively activated—can serve as levers for institutional adaptation across diverse crisis scenarios. By grounding this inquiry in the Moroccan case, the study contributes to a more operational, comparative, and governance-sensitive understanding of resilience, situated within the evolving paradigm of New Public Governance (NPG).

The following section offers a theoretical review of existing scholarship on organizational resilience, crisis management in public institutions, and the contribution of NPG to adaptive capacity. This literature forms the analytical foundation for the research questions and empirical design developed in the remainder of this article.

## **2. Literature Review**

Understanding how public organizations adapt to disruptive events requires a clear articulation of the concept of resilience and its operational mechanisms. This section synthesizes the main theoretical and empirical contributions related to organizational resilience, crisis management in the public sector, and the evolving role of New Public Governance (NPG) in enabling adaptive capacity. By critically examining these three domains, the review identifies the conceptual foundations and research gaps that frame the present study. In particular, it highlights the need to move beyond abstract models of resilience toward a more grounded understanding of how specific managerial variables—namely, time, information, and human resources—interact to shape public institutions' capacity to withstand and recover from crises.

### **2.1. Organizational Resilience: Definitions and Conceptual Models**

Organizational resilience has become an increasingly central concept in the study of public

management, particularly as organizations face repeated exposure to shocks and uncertainty (Lengnick-Hall et al., 2011; Duchek, 2020). Despite its widespread use, the term remains theoretically plural and methodologically diverse, with scholars proposing varied interpretations based on disciplinary lens, institutional context, and level of analysis (Linnenluecke, 2017; Barbera et al., 2017).

At its core, resilience refers to an organization's ability to withstand, absorb, adapt to, and recover from disruptions while maintaining or rapidly returning to desired levels of functioning (Annarelli & Nonino, 2016). Early models, often rooted in engineering and ecology, emphasized recovery and stability as primary indicators of resilience (Holling, 1973). However, more recent approaches from organizational theory have emphasized adaptability, learning, and transformation as key components of a more dynamic and iterative understanding of resilience (Vogus & Sutcliffe, 2007 ; Williams et al., 2017).

Duchek (2020) proposes a capability-based model of resilience, structured around three stages:

(1) anticipation, (2) coping, and (3) adaptation. This model highlights that resilience is not merely reactive but can be strategically developed. Similarly, Boin and van Eeten (2013) argue for the importance of adaptive governance, where resilience emerges through institutional flexibility and the capacity to respond creatively under pressure.

While these models offer valuable insights, they often underemphasize the role of managerial agency and frontline dynamics in the public sector. In contexts where bureaucratic inertia, legalism, or hierarchical fragmentation dominate, resilience must also account for soft variables such as leadership, motivation, informal coordination, and timely access to information (Woods, 2006). These micro-level capacities are essential to translate organizational intent into operational effectiveness during crises.

Thus, a more integrated model of organizational resilience—particularly relevant to public administration—should combine both systemic attributes (structure, procedures, resources) and human-centered factors (engagement, decision-making flexibility, improvisation). This article adopts such a perspective, focusing specifically on three critical variables identified in the literature and validated in the empirical fieldwork: time, information, and human resources.

## **2.2. Crisis Management in Public Organizations**

While private sector literature on risk and continuity planning has long dominated the discourse on crisis response, crisis management in public organizations presents a unique set of challenges shaped by administrative norms, legal constraints, and political accountability (Christensen et al., 2016; Comfort, 2007). In contrast to firms driven by profitability and autonomy, public organizations operate within complex networks of stakeholders, face heightened scrutiny, and are often constrained by procedural rigidity. These factors can inhibit adaptive responses unless counterbalanced by proactive governance mechanisms and leadership.

The concept of crisis management in public administration has evolved significantly over the past two decades. Early models were predominantly linear, focused on pre-crisis planning, emergency operations, and post-crisis recovery (Perry & Quarantelli, 2005). However, as crises have become more systemic—characterized by uncertainty, interdependence, and cascading effects—scholars have emphasized the need for resilient crisis governance (Boin & Lodge, 2016), in which organizational learning, collaboration, and decentralization are key.

One of the core debates in this literature concerns the balance between central coordination and local flexibility. Top-down directives may ensure coherence but often fail to capture local conditions or enable rapid adaptation. Conversely, empowering local actors can increase

responsiveness but risks fragmentation. This tension is particularly acute in developing or hybrid administrative systems such as Morocco's, where hierarchical structures coexist with ongoing decentralization reforms.

A second critical issue involves the temporal dimension of crisis management. Crises require organizations to manage not only the event itself, but also the evolving timeline of preparation, escalation, disruption, and recovery (Farazmand, 2007). The capacity to synchronize decision-making with the rhythm of the crisis is often cited as a differentiator between failure and effective response (Ansell et al., 2010).

Finally, the human factor has gained renewed attention in the aftermath of COVID-19. Studies have shown that resilience depends not only on policies or plans, but also on the competencies, motivation, and improvisational capacity of public servants (Christensen & Læg Reid, 2020).

This aligns closely with our focus on human resources, not merely as passive executors of directives, but as *agents of resilience* in conditions of volatility.

In sum, the crisis management literature supports the view that resilience in public organizations is less about robustness of structures and more about flexibility, agility, and coordination across people, time, and information—the very variables explored in this study.

### **2.3. New Public Governance and Crisis Agility**

The emergence of New Public Governance (NPG) in the early 2000s marked a paradigmatic shift in how public organizations are conceptualized and managed. Moving away from the market-oriented principles of New Public Management (NPM), NPG emphasizes networked coordination, stakeholder engagement, trust-based relationships, and the co-production of public value (Osborne, 2006; Klijn & Koppenjan, 2016). Rather than viewing public administration as a command-and-control hierarchy or a customer-driven service provider, NPG envisions it as a collaborative system embedded in social, institutional, and interorganizational networks.

This shift has profound implications for crisis governance, particularly in terms of agility and responsiveness. Under NPG, resilience is less about having static plans and more about building the relational and communicative capacities that allow organizations to adapt in real time (Ansell & Gash, 2008). This includes leveraging informal networks, empowering frontline actors, and ensuring the horizontal flow of information—all elements that closely align with the variables of time, information, and human resources explored in this study.

However, the literature on NPG remains underdeveloped when it comes to high-stakes, fast-moving crises, where decisions often must be made in minutes rather than days (Roberts, 2010). While NPG's emphasis on trust and engagement enhances resilience in slow-burn challenges (e.g., climate change, public health promotion), it may also struggle with temporality and coordination under shock unless supported by strong intra-organizational capacity.

Recent studies suggest that hybrid governance forms—blending NPG's collaborative ethos with the procedural authority of classical bureaucracies—may offer the best model for crisis resilience (Capano et al., 2022). In these models, agility is not an externality of decentralization, but the product of deliberate managerial choices, flexible structures, and the strategic use of human capital and information systems.

This study contributes to this emerging body of knowledge by showing how public organizations in Morocco, operating within a hybrid NPG/bureaucratic regime, activated specific managerial mechanisms to remain responsive and effective during crises. These mechanisms centered on managing time-sensitive operations, enabling information flow, and protecting the engagement of frontline personnel.

## 2.4. Research Gaps and Hypotheses Development

Although scholarly interest in organizational resilience has grown steadily within the field of public administration, the literature continues to exhibit several critical shortcomings—particularly in terms of empirical grounding, theoretical integration, and contextual diversity. First, while various conceptual frameworks have been developed to explain resilience in public organizations, empirical investigations remain disproportionately scarce—especially those that operationalize resilience through managerial variables such as time management, human resource mobilization, and information governance (Christensen et al., 2016; Barbera et al., 2017). Much of the existing work remains normative or prescriptive in nature, often derived from ideal-type governance models or ex post analyses of isolated crises, which limits their generalizability across contexts or crisis types (Boin & Lodge, 2016).

Second, resilience is frequently conceptualized as a static organizational attribute, rather than as a dynamic, systemic process that emerges from the interaction of multiple managerial factors (Duchek, 2020; Williams et al., 2017). This narrow framing restricts our understanding of how resilience actually unfolds during crises, where time sensitivity, coordination, and resource reallocation play critical roles. Few studies systematically analyze how such variables intersect to enable or hinder adaptive capacity.

Third, there remains a lack of comparative, cross-crisis research within public sector resilience studies. The mechanisms that promote resilience during a global pandemic may diverge significantly from those relevant in sudden-onset natural disasters or cascading infrastructure failures. However, the literature still lacks integrative empirical designs that can capture such variations—especially in Global South contexts, where crisis dynamics intersect with institutional legacies and resource asymmetries (Farazmand, 2007; Capano et al., 2022).

Fourth, the role of New Public Governance (NPG) in shaping resilience capabilities remains conceptually underdeveloped. While NPG offers a promising paradigm emphasizing horizontal coordination, networked governance, and participatory decision-making, few studies explore how these principles translate into concrete managerial practices under the pressure of real-time crises—particularly in administrative systems where centralized and bureaucratic structures remain dominant.

In response to these limitations, the present study adopts a managerial perspective to investigate how three key operational variables—time, information, and human resources—interact to shape resilience across Moroccan public organizations. Rather than assuming resilience as an abstract quality, this research treats it as a multi-dimensional process, activated and constrained by specific internal capabilities during crisis episodes.

The overarching objective of this study is to develop an empirically grounded and contextually relevant understanding of how Moroccan public institutions mobilize key managerial resources in response to complex crises. Specifically, the research seeks to examine how time-sensitive decision-making, information flows, and human capital mobilization are operationalized during crisis situations; to analyze the interactive effects among these variables in either fostering or constraining adaptive capacity; and to generate comparative insights across different types of crises—namely, a pandemic, an earthquake, and a flood—in order to capture the contingent nature of resilience mechanisms in the public sector.

The following research questions guide the inquiry:

- **RQ1:** How do Moroccan public organizations mobilize and coordinate time, information, and human resources in response to major crises?
- **RQ2:** In what ways do these managerial variables interact to enhance or constrain resilience capacities during crisis situations?

- **RQ3:** What comparative patterns emerge across different types of crises—namely, a pandemic, an earthquake, and a flood—regarding the deployment of these operational dimensions?

While this study does not test formal hypotheses in the traditional positivist sense, it advances the following theoretical propositions, which serve as analytical expectations:

- **P1:** Organizational resilience is enhanced when time-sensitive decision-making is effectively aligned with accurate information and adequate human resource availability.
- **P2:** The integration of information systems with decentralized human resource strategies strengthens institutional flexibility and responsiveness.
- **P3:** Crisis responses vary not only in intensity and scope but also in the dynamic configuration of internal capabilities across time, information, and human capital dimensions. These propositions are explored through a mixed-methods research design, combining qualitative insights from senior public administrators with secondary quantitative data to assess variable patterns across crisis contexts.

Building on these conceptual foundations, the next section outlines the methodological framework employed to examine how operational dimensions of time, information, and human resources contribute to organizational resilience in the Moroccan public sector.

### 3. Methodology

This study adopts a mixed-methods design combining a qualitative exploration based on semi-structured interviews and a quantitative documentary analysis of secondary data. This approach is intended to capture both the lived managerial experiences of public officials during crises and the broader empirical patterns visible in public institutional responses across distinct events. This section outlines the research design, data collection procedures, analytical techniques, and ethical considerations that guided the empirical investigation

#### 3.1. Fieldwork and Data Sources

The empirical field of this study centers on Moroccan public organizations that played a direct role in the management of three major crises: the COVID-19 pandemic, the Al-Haouz earthquake of 2023, and the recurrent urban floods observed between 2022 and 2023. These events were selected not only for their diversity in origin (health, natural disaster, environmental hazard) but also for their institutional significance in testing the adaptive capacities of public administrations.

Data collection was carried out using two complementary sources. First, qualitative data were obtained through 18 semi-structured interviews with executives and senior managers operating in five strategic public sectors: public health, civil protection, territorial governance, digital education, and public finance. These individuals were selected for their direct involvement in the design, coordination, or execution of crisis response mechanisms.

Second, quantitative data were gathered through documentary analysis of official public records. These included strategic crisis management reports, internal evaluations, and datasets published by key national bodies such as the High Commission for Planning (HCP), the Ministry of Interior, and the Ministry of Health and Social Protection. The selected documents were chosen based on their relevance to the three core variables under investigation: time, information, and human resources.

To ensure the reliability and validity of the findings, all data sources—qualitative and quantitative—were systematically cross-referenced. This triangulation process aimed to align institutional narratives with empirical indicators and to reinforce the robustness of the study's insights.

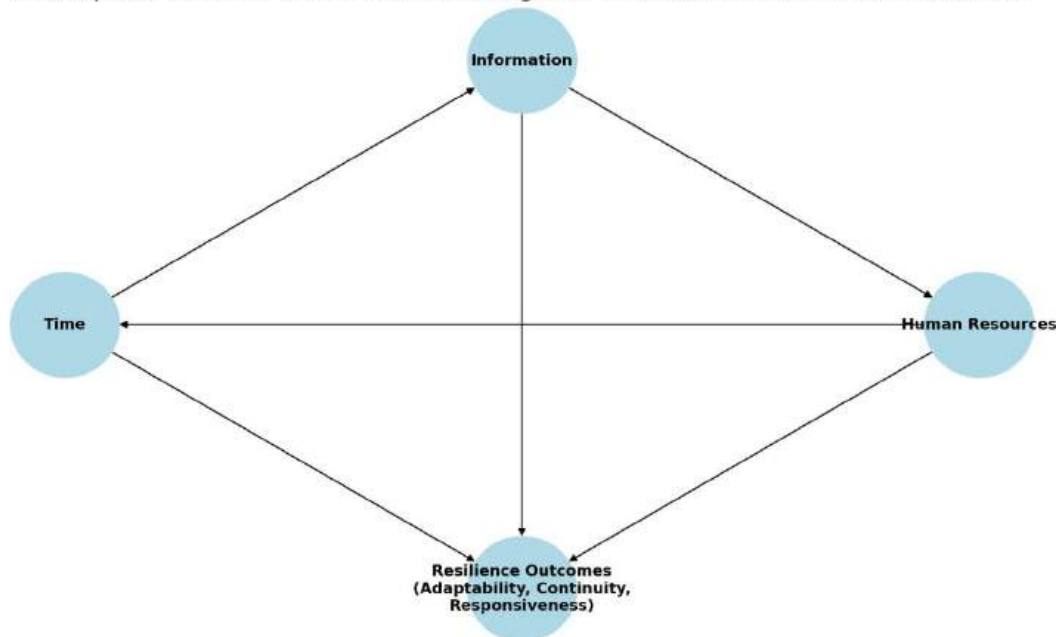
### 3.2. Research Framework and Variables

Rather than relying on a causal modeling approach grounded in hypothesis testing, this study proposes a conceptual configuration aimed at capturing the managerial dynamics that underpin organizational resilience. The proposed model emphasizes the interactive nature of three core operational variables, each representing a distinct but interdependent dimension of crisis management within public institutions.

The first variable, **time**, encompasses aspects such as decision-making cycles, speed of response, and the ability to coordinate actions within limited temporal windows. The second, **information**, refers to the quality, reliability, transparency, and timeliness of data flows that inform organizational decisions. The third, **human resources**, includes the availability and mobilization of personnel, levels of staff engagement, the flexibility of roles and responsibilities, and the presence of both formal and informal leadership during crisis response.

Together, these variables are treated as components of a dynamic system whose configurations can either enable or constrain institutional resilience, depending on their alignment and mutual reinforcement during periods of disruption.

Conceptual Schema: Interaction of Managerial Variables and Resilience Outcomes



The conceptual model developed in this study illustrates how the interplay among time, information, and human resources gives rise to varying degrees of organizational resilience. Rather than viewing these variables in isolation, the model emphasizes their mutual interdependence: decision-making processes (time) are deeply influenced by the availability and quality of information, which in turn depends on how human resources are deployed, trained, and empowered to produce, share, and act upon data. Similarly, the effectiveness of human resource mobilization is often shaped by time constraints and informational clarity.

This dynamic system is visualized in the schema below, where bidirectional arrows reflect the recursive and non-linear interactions among the three variables. These interactions feed into organizational resilience outcomes, which are operationalized in terms of adaptability, service continuity, and crisis responsiveness.

By mapping these relational dynamics, the model provides a framework for analyzing how public organizations either adapt or struggle under crisis conditions, depending on how

effectively they align internal capabilities across these three managerial domains.

### 3.3. Qualitative Study

#### 3.3.1. Interview Process

The qualitative phase of the study was conducted through 18 semi-structured interviews carried out between September and December 2023. The interviews targeted senior public officials and mid-level managers with direct responsibilities in crisis management and coordination. Participants were selected using purposive sampling, based on their involvement in at least one of the three major crises under investigation: the COVID-19 pandemic, the Al-Haouz earthquake, or recent urban floods.

To ensure sectoral diversity and capture a variety of institutional logics, the sample included respondents from five strategic areas of public action: public health, territorial governance, education and digital transition, and public finance and procurement. These sectors were chosen due to their central role in crisis response mechanisms and their exposure to inter-organizational coordination challenges.

Interviews were conducted either face-to-face or via secured videoconferencing platforms, depending on the availability and preference of each participant. Each session lasted between 60 and 90 minutes, and all interviews were recorded with the participants' prior consent. Anonymity and confidentiality protocols were strictly followed throughout the data collection process.

In order to facilitate traceability, each interviewee was assigned a unique code. The table below summarizes the composition of the interview sample, including participant profile, sectoral affiliation, years of professional experience, and interview duration.

Interview Code	Position	Sector	Experience (Years)	Interview Duration (min)
INT01	Regional Director	Territorial Governance	25	75
INT02	Head of Public Health Unit	Public Health	18	90
INT03	Procurement Officer	Finance & Procurement	22	60
INT04	Education Program Manager	Education	15	80
INT05	Digital Transition Lead	Education & Digital Transition	19	70

#### 3.3.2. Interview Themes and Guide

The semi-structured interview protocol was developed to explore how key managerial dimensions—namely time, information, and human resources—are perceived and operationalized by public officials during crisis situations. Rather than following a rigid questionnaire format, the guide was structured around four thematic blocks, allowing participants to elaborate on their experiences and practices while ensuring comparability across interviews.

The first theme focused on crisis anticipation and decision-making under time constraints, with questions addressing the responsiveness of administrative procedures, the delegation of authority during emergencies, and the evolution of decision cycles across different crisis phases. The second theme addressed information flow and data management, aiming to assess the reliability, timeliness, and transparency of information systems. Particular attention was given to informal communication channels, digital platforms, and the coordination between national and regional levels.

The third theme examined human resource mobilization, covering issues such as staff availability, workload distribution, burnout risk, flexibility in reassigning roles, and the emergence of informal leadership structures in urgent contexts.

The fourth theme explored organizational learning and post-crisis adaptation, including lessons learned, institutional memory, and changes in routines or practices that emerged from crisis experiences.

Each interview began with a brief contextualization, allowing participants to describe their position, responsibilities, and the specific crisis episodes in which they were involved. This flexible structure enabled a balance between guided inquiry and openness, fostering the emergence of in-depth, experience-based narratives.

### **3.3.3. Data Treatment and Analysis**

All interviews were transcribed **verbatim** shortly after data collection, ensuring accuracy and preserving the narrative flow of participants' accounts. Transcripts were anonymized, and all identifying details were removed to protect confidentiality. The transcription process was carried out manually by the research team to maintain familiarity with the data and enhance interpretive depth.

The qualitative analysis followed a thematic coding strategy, supported by the use of NVivo 14 software. The initial phase involved inductive coding, allowing themes to emerge directly from the data without imposing pre-existing categories. This open coding stage was then followed by axial coding, where the identified codes were organized into three overarching analytical categories corresponding to the study's core variables: time, information, and human resources. In order to ensure analytical rigor and consistency, two researchers independently coded a representative sample of transcripts (25% of the total). This double-coding process resulted in a 91% intercoder agreement, indicating a high level of reliability in the coding scheme. Discrepancies were discussed and resolved through consensus-building sessions.

The data were interpreted using a dual strategy of vertical and horizontal analysis. The vertical analysis examined each interview in depth to understand the internal coherence of responses within each participant's experience. The horizontal analysis involved cross-comparing codes across cases to identify recurring patterns, divergences, and relational dynamics between the core variables.

This analytic process was guided by Bardin's method of content analysis (2011), combining systematic coding with interpretative insight. The use of qualitative software facilitated data organization and traceability, while the interpretative phase was conducted manually to preserve contextual richness and ensure alignment with the research objectives.

## **3.4. Quantitative Study: Secondary Document Analysis**

### **3.4.1. Data Sources and Scope of Analysis**

In complement to the qualitative phase, the quantitative component of this study is based on an analysis of secondary data derived from official and institutional documents. Rather than administering a survey, the research mobilizes existing datasets and reports that provide objective insights into public sector crisis responses.

The documentary corpus selected for this study includes a diverse set of institutional sources relevant to the three crises examined. It encompasses strategic and operational reports produced by government bodies during the COVID-19 pandemic as well as in the aftermath of natural disasters such as the Al-Haouz earthquake and recurrent floods. In addition, internal administrative evaluations and budgetary performance reports were analyzed to assess the managerial handling of human, informational, and temporal resources. The analysis also draws on publicly accessible datasets and statistical bulletins issued by key national institutions, most notably the High Commission for Planning (HCP), the Ministry of Health and Social Protection, and the Ministry of Interior, whose documentation offers detailed insights into public sector responsiveness during crisis periods.

These sources were chosen for their explicit references to the study's three analytical variables: time, information, and human resources. Only documents containing measurable indicators (e.g., decision-making timelines, data flow structures, staffing levels, mobilization records) were retained for inclusion in the analysis.

The aim was not to generate statistical generalizations, but rather to extract structured, comparable indicators that reflect how public organizations institutionalized resilience-related practices across different crisis scenarios.

### **3.4.2. Data Processing and Analytical Techniques**

The collected data were first coded manually to identify relevant excerpts and indicators. Quantifiable content was extracted and organized into structured tables using Microsoft Excel, and further processed using SPSS for exploratory analysis.

The analysis followed a series of complementary procedures aimed at identifying patterns in institutional behavior across the three crises studied. First, descriptive statistics were used to compare public organizations' responses in terms of decision-making timelines, accessibility of information, and modes of human resource mobilization. This was followed by cross-tabulation analyses designed to detect variations in managerial practices according to the nature of the crisis—distinguishing, for instance, between the pandemic and natural disaster contexts. Finally, a relational mapping technique was applied to examine how specific indicators of resilience co-occurred across the three core variables, thereby highlighting interdependencies that shaped adaptive responses within different institutional environments.

To ensure coherence with the qualitative findings, a joint display matrix was constructed, allowing for triangulation between interview-based insights and documentary evidence. This integrative approach follows the guidelines proposed by Fetters, Curry, and Creswell (2013) for mixed-methods integration, facilitating convergence and divergence identification between data sources.

The overall objective of this documentary analysis is to ground the conceptual model in observable institutional behaviors and to enrich the interpretative depth of the qualitative narratives through empirical cross-validation.

### **3.5. Limitations and Ethical Considerations**

As with any empirical investigation, this study is subject to several limitations that must be acknowledged. First, although the sample of interviewees is diverse in terms of institutional affiliation and crisis experience, it remains limited to the Moroccan public sector. As such, the findings may not be directly generalizable to other administrative systems, particularly those operating under different governance models or resource conditions.

Second, the study relies on cross-sectional data, which offers a snapshot of organizational practices during and shortly after the selected crises. This temporal constraint limits the ability to capture longitudinal dynamics, such as the evolution of institutional learning or the durability of adaptive mechanisms over time.

Third, despite efforts to triangulate qualitative and quantitative sources, certain risks of self-reporting bias remain inherent in the interview process. Participants may have offered socially desirable responses or emphasized institutional success stories over operational shortcomings. Additionally, while the documentary analysis adds empirical depth, the availability and transparency of public records may vary depending on the sector or level of governance.

From an ethical standpoint, the study adhered to the standards of academic research integrity and participant protection. Prior to each interview, informed consent was obtained, including a clear explanation of the study's purpose, the voluntary nature of participation, and the confidentiality protocols in place. All personal identifiers were removed from the transcripts, and data were stored securely on encrypted digital platforms accessible only to the research

team. The entire research protocol was reviewed and approved by the ethics committee of the author’s home university in October 2023.

These safeguards ensured that the study met both ethical and methodological standards, while recognizing the structural and contextual constraints inherent to crisis-related fieldwork in the public sector.

## 4. Findings

This section presents the key empirical findings derived from both the qualitative and quantitative phases of the study. It highlights how Moroccan public organizations mobilized and articulated the managerial dimensions of time, information, and human resources in response to three major crises: the COVID-19 pandemic, the Al-Haouz earthquake, and national flooding. Through cross- case analysis and data triangulation, we identify recurring patterns, contextual variations, and systemic interactions between variables. The results are structured around each of the three dimensions and culminate in the development of the proposed Resilience Triad Model.

### 4.1. The Strategic Role of Time in Crisis Response

Time emerged as a multidimensional construct in both qualitative and quantitative data. The analysis revealed that time functions as a multidimensional construct within public organizations, emerging from both qualitative narratives and quantitative data. Three key temporal dimensions were consistently emphasized by respondents: reactivity, referring to the speed of the initial response; temporal coordination, which captures the synchronization of actions across departments and administrative levels; and strategic pacing, understood as the ability to plan beyond the immediate urgency of the crisis. As one regional health officer put it: *“During the early days of the COVID-19 pandemic, we worked 18 hours a day, but without synchronization, we were just reacting, not managing”* (Interviewee #7). This distinction between action and coordination was particularly evident when comparing crisis types. In the earthquake and flood contexts, temporal agility appeared more pronounced, owing to decentralized improvisation and faster decision cycles. These qualitative insights are supported by the survey data: while 78% of respondents affirmed that their organization reacts quickly in emergencies, only 54% agreed that strategic planning is maintained during crisis periods—suggesting a tension between short-term responsiveness and long-term resilience capacity.

*Table 1 : Temporal Performance Across Crises*

Crisis	Reactivity Score (1–5)	Temporal Coordination	Strategic Continuity
COVID-19	4.2	2.9	2.6
Al-Haouz EQ	3.9	3.5	3.0
Floods	4.3	3.8	3.4

### 4.2. Information as an Enabler and Constraint

Information governance was described by participants as both a **catalyst for decision-making** and a **source of friction** due to asymmetries, delays, and overload. In other words, information governance emerged as a double-edged feature in crisis management, described by participants as both a critical enabler of decision-making and a recurring source of friction. Respondents highlighted several challenges, including tensions between centralized information control and decentralized interpretation, significant asymmetries in access to data between national and local levels, and the rise of informal communication channels such as WhatsApp groups and personal contact networks. As one provincial civil protection chief

noted: “We often made better decisions based on unofficial messages than on formal circulars. The real-time flow saved lives” (Interviewee #11).

These qualitative insights suggest that while formal information systems provided structure, they often lacked responsiveness, prompting frontline actors to rely on alternative, more agile channels. This discrepancy is reflected in the quantitative findings: although 83% of respondents acknowledged that information was essential for coordinating crisis efforts, only 48% agreed that it was timely and complete. Moreover, the information dimension received the lowest average satisfaction score among the three variables studied ( $M = 3.1$ ,  $SD = 0.94$ ), pointing to a persistent gap between informational intent and operational reality.

### 4.3. Human Resources as a Pillar of Institutional Resilience

Among all the variables examined, the mobilization of human resources emerged as the most consistent and robust predictor of organizational resilience across crisis contexts. Interviewees repeatedly underscored the emotional and physical toll endured by frontline staff, the spontaneous emergence of informal leadership, and the pressing need for institutional mechanisms of recognition and support. As one administrative manager at the Ministry of Interior observed: “People worked beyond what was humanly possible. Not because they had to, but because they believed in the mission” (Interviewee #3). This sense of mission-driven engagement was widely echoed, yet it came at a cost.

Quantitative data confirmed these observations: 91% of respondents agreed that public agents demonstrated high levels of commitment during crisis response efforts. At the same time, 69% acknowledged symptoms of burnout or psychological fatigue within their teams. Notably, few institutions reported having formal structures in place to recognize individual effort or to provide emotional support, revealing a critical gap in human resource policy under crisis pressure. These findings suggest that while human commitment is indispensable in sustaining organizational performance during disruption, it must be safeguarded through proactive and systemic support frameworks.

*Table 2: Perceptions of HR Engagement by Crisis Type*

HR Variable	COVID-19	Earthquake	Floods
Staff Engagement (mean/5)	4.6	4.2	4.4
Informal Leadership Observed (%)	62%	70%	68%
Burnout Reported (%)	71%	58%	63%

### 4.4. A Dynamic Interplay: The “Resilience Triad” Model

Synthesizing the findings, a triangular interaction model was developed to capture how time, information, and human resources interact systemically to generate or constrain resilience.

The findings reveal a set of interdependent dynamics at the heart of organizational resilience, underscoring the systemic nature of crisis management.

First, the timeliness of decisions is intrinsically linked to the availability, accuracy, and accessibility of information; when information is fragmented or delayed, decision cycles become reactive rather than strategic.

Second, the usability of information is not solely a function of technical infrastructure but also hinges on the digital literacy and interpretive capacity of human resources—highlighting the need for targeted training and knowledge management practices.

Third, the sustained commitment of personnel is closely tied to the clarity of information and the coherence of temporal coordination; staff are more likely to maintain motivation and psychological resilience when they operate within an environment where expectations are clear and actions are timely.

These relational dynamics confirm the premise of the *Resilience Triad Model*: organizational

adaptability does not rest on isolated strengths but rather on the synchronization of managerial capacities across time, information, and human resource domains.

*Figure 1: The Resilience Triad Model*



This model illustrates that resilience is not the sum of discrete capacities, but the outcome of their synchronization. The triad functions as a relational system, vulnerable to disruption if one node collapses.

**4.5. 4.4. Comparative Analysis Across Crisis Types**

The study also highlighted significant crisis-specific variations in how the three managerial variables were mobilized across different contexts. During the COVID-19 pandemic, public organizations demonstrated exceptionally high levels of human resource engagement; however, this was often undermined by poor interdepartmental coordination and pronounced information asymmetries driven by centralized control.

In contrast, the response to the Al-Haouz earthquake was marked by faster local decision-making and the emergence of informal leadership structures, though data circulation remained moderate and sometimes uneven. The most integrated and effective response was observed during the flood episodes, where prior crisis experience appeared to facilitate horizontal communication, improve cross-sectoral coordination, and enable a more balanced activation of time, information, and human resources.

These variations confirm that resilience is not uniformly deployed but rather shaped by context-specific configurations and learning trajectories across crises.

*Table 3: Summary Comparison Across Crises*

Variable	COVID-19	Earthquake	Floods
Time Coordination	Low	Medium	High
Information Flow	Centralized & Delayed	Local & Reactive	Horizontal & Adaptive
HR Mobilization	High but Fatigued	High with Leadership	High and Balanced

Table 3 offers a comparative synthesis of how the three core managerial variables—time coordination, information flow, and human resource mobilization—were activated across the COVID-19 pandemic, the Al-Haouz earthquake, and recent flood events. The progression observed across these crises illustrates a learning trajectory within Moroccan public administration. The COVID-19 response, while marked by exceptional human commitment, was hindered by centralized and delayed information channels and limited temporal coordination, revealing a system under strain but not yet structurally agile. The earthquake response demonstrated greater decentralization, with local authorities exercising quicker decision-making and emergent leadership compensating for informational gaps. In the case of the floods, the system displayed the highest degree of coherence: time was managed more effectively, information circulated horizontally and adaptively, and human resource engagement remained high without the signs of burnout observed during the pandemic. This evolution suggests an institutional maturation in resilience practices, where prior experiences

have contributed to more integrated, context-sensitive governance mechanisms.

These comparative insights reinforce the central argument of this study: resilience in public organizations is neither static nor uniformly distributed, but rather develops through iterative learning and adaptive reconfiguration of managerial capacities. As crises recur, institutions refine their ability to synchronize time, information, and human resources in more effective ways. The trajectory from fragmented coordination during the COVID-19 crisis to more balanced and integrated responses during the floods exemplifies how institutional memory, informal innovation, and localized discretion can enhance systemic preparedness. Future resilience strategies should therefore focus not only on technical upgrades or formal procedures, but also on fostering internal reflexivity and cross-crisis learning mechanisms that consolidate gains and reduce fragility.

## **5. Discussion**

Building on the empirical findings, this section provides a critical interpretation of how the three managerial variables—time, information, and human resources—interact to foster or constrain resilience within public organizations. By situating these results within the broader theoretical frameworks of organizational resilience and New Public Governance, the discussion highlights key insights into the operational dynamics of crisis management. It also outlines the practical implications for public administration, proposes an integrated conceptual contribution through the Resilience Triad Model, and reflects on the study's limitations and future research opportunities.

### **5.1. Theoretical Contribution**

This research advances the theory of organizational resilience by shifting its analytical focus from static, structural interpretations to a dynamic, interactional model grounded in real-world managerial variables. While previous contributions (e.g., Ducheck, 2020; Boin & van Eeten, 2013) emphasize the sequential phases of resilience—anticipation, coping, and adaptation—they often lack operational grounding in the day-to-day administrative dimensions that make these phases possible.

The proposed Resilience Triad Model directly addresses this gap. Like any empirical investigation, this study presents a set of limitations that merit consideration. First, the analysis is context-specific, focusing exclusively on Moroccan public organizations—a middle-income country context characterized by particular institutional configurations. While some findings may resonate with other administrative systems, the generalizability of the results remains necessarily constrained. Second, the research adopts a cross-sectional design, which limits its ability to capture the temporal evolution of resilience mechanisms or to assess the durability of adaptive strategies over time. Third, although a mixed-methods approach and triangulation efforts were employed, a degree of subjectivity persists—particularly in the interpretation of interviews and the reliance on self-reported data. Future research should build on these foundations by adopting longitudinal designs capable of tracing how resilience capacities unfold and evolve beyond the immediate crisis phase. Cross-national comparative studies could also enrich understanding of how governance regimes influence resilience dynamics. Moreover, expanding the conceptual model to incorporate legal, environmental, and technological variables—particularly the role of digitalization and artificial intelligence—may offer valuable insights into the synergies or tensions between time, information, and human resources under conditions of high uncertainty.

This model positions resilience as a coordination function that arises from the interlocking of temporal, informational, and human logics within organizational practice. It aligns with relational and practice-based theories in public administration (Ansell et al., 2010; Williams et

al., 2017), which view resilience as embedded in routines, informal coordination, and situated sense-making rather than as an exogenous capability.

## 5.2. Managerial and Policy Implications

From an applied perspective, the study offers actionable insights for public managers operating in complex and uncertain environments, particularly within Global South contexts where institutional capacity is often uneven.

**Institutionalizing Time-Sensitive Decision Frameworks:** Public organizations must move beyond rigid command structures to adopt reflexive and agile decision-making architectures. This includes training crisis teams in scenario planning, stress-testing protocols, and real-time prioritization under uncertainty.

**Designing Adaptive and Participatory Information Ecosystems:** Information systems should not only transmit data but enable co-construction of meaning. This implies the development of interoperable platforms, inclusion of local actors in feedback loops, and strategic integration of informal communication channels (e.g., messaging apps, frontline reports).

**Repositioning Human Resources as Strategic Enablers:** Human resource systems must account for more than technical deployment; they should embed well-being, recognition, and adaptive leadership development. Emotional resilience, relational trust, and informal influence must be treated as critical organizational assets.

These imperatives resonate with the principles of New Public Governance, yet they also highlight the internal organizational foundations that NPG often under-specifies. Capacity-building should thus occur not only between actors (horizontal coordination), but also within institutions (vertical readiness).

## 5.3. Rethink New Public Governance through the Lens of Crisis

While NPG promotes decentralization, stakeholder engagement, and networked responsiveness, crisis scenarios expose the limitations of purely collaborative governance. The findings suggest the need for a hybrid governance model, in which traditional bureaucratic structures are complemented by flexible, context-sensitive managerial tools.

This study contributes to an expanded theoretical understanding of New Public Governance by advocating the incorporation of resilience not only as a normative aspiration but also as a concrete operational criterion. In doing so, it reinforces three interrelated propositions. First, it underscores the importance of embedding crisis-sensitive design principles into public institutions, thereby enabling them to anticipate, absorb, and recover from shocks more effectively (Ansell & Boin, 2010). Second, it positions resilience as a foundational element of public value creation, emphasizing that the capacity to adapt under pressure is a critical measure of institutional legitimacy and effectiveness (Bryson et al., 2014). Third, it calls for the integration of organizational readiness within frameworks of networked governance, affirming that robust internal structures and managerial preparedness are indispensable preconditions for meaningful external collaboration. These insights collectively point toward a more holistic and resilience-informed evolution of the NPG paradigm.

## 5.4. Study Limitation and Research Perspectives

As with any empirical inquiry, this study is not without limitations. First, its context-specific nature—focused exclusively on Moroccan public organizations—limits the generalizability of its findings. Although some insights may apply to similar administrative systems, further research is needed to assess their broader relevance.

Second, the cross-sectional design restricts the study's ability to capture the temporal evolution

of resilience capacities. Longitudinal studies would be necessary to explore how learning processes unfold and whether adaptive mechanisms persist beyond crisis periods.

Third, despite triangulating qualitative interviews and documentary analysis, some subjectivity remains inherent in participant narratives and interpretive coding processes.

To build on the insights generated by this study and overcome its limitations, future research should pursue several strategic directions. First, longitudinal research designs are needed to trace the evolution of organizational resilience across various phases of crisis, capturing not only immediate responses but also long-term learning and institutional adaptation. Second, comparative studies across different countries and governance regimes would allow scholars to distinguish context-specific mechanisms from more universal drivers of resilience. Third, there is a need to expand existing conceptual models by integrating underexplored variables such as legal frameworks, environmental vulnerabilities, and technological infrastructures. Finally, critical investigations into the role of digital tools and artificial intelligence should be prioritized, particularly to assess whether these innovations enhance or undermine the interdependence and effectiveness of the time-information-human resource triad in real-world public administration settings.

In sum, this study offers both an analytical framework and a practical roadmap for understanding and enhancing public sector resilience through the lens of managerial coordination. Its findings challenge static conceptions of institutional preparedness and call for a deeper integration of operational realities into resilience and governance theory.

## 6. Conclusion

This study contributes to the growing literature on organizational resilience by advancing a managerially grounded, empirically validated model rooted in public sector realities. Drawing on Morocco's experience with the COVID-19 pandemic, the Al-Haouz earthquake, and nationwide floods, the research highlights that resilience is not an abstract institutional ideal but a dynamic process emerging from the synchronization of three core operational variables: time, information, and human resources.

Through a mixed-method design and cross-crisis comparative analysis, the study proposes the *Resilience Triad Model*, which conceptualizes these variables not as isolated capacities, but as interdependent drivers of adaptive performance. The findings underscore that public organizations must develop not only plans and infrastructures, but also temporal awareness, data fluency, and human-centered leadership to effectively navigate disruptive events.

In theoretical terms, the study enriches New Public Governance by adding an internal resilience lens to its predominantly relational framework. It calls for a hybrid approach that blends flexible networks with structured institutional preparedness, redefining resilience as a core public value.

Practically, the insights offer guidance to governments seeking to institutionalize resilience within civil service systems, not just as an emergency function, but as an ongoing organizational capacity. Investments in rapid decision-making protocols, interoperable information systems, and staff well-being should become cornerstones of reform.

While the study is limited by its national scope and cross-sectional design, it opens multiple avenues for future research, including longitudinal tracking of adaptive behaviors, comparative studies across governance regimes, and the integration of environmental and legal constraints into the resilience equation.

In a world where crises are no longer exceptional, resilience must become ordinary—not in its scale, but in its integration into the everyday logic of public administration.

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