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Dynamic resource configurations and organizational resilience in higher education: a configurational approach to strategic adaptation in times of economic crisis

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1. Introduction

In Higher Education Institutions (HEIs), the concept of organizational resilience has become a central theme in response to recurring economic crises, given the significant impact of these turbulences on the financial and operational sustainability of these organizations. The efficient articulation of dynamic capabilities — such as strategic planning, innovation, adaptability, and technological competence — is a critical factor for maintaining academic activities in adverse contexts (Fenech & Alpenidze, 2021; Muneeb et al., 2022). Furthermore, adaptive governance models and flexibility in resource allocation, as evidenced by Heaton et al. (2023), can substantially increase institutional performance. Such evidence reinforces the need to understand, in a more refined way, which combinations of management practices, internal resources, and dynamic capabilities are most effective in promoting organizational resilience in HEIs.

Recent literature shows that organizational resilience is one of the most critical attributes for overcoming economic shocks in the education sector, particularly in private HEIs (Delgado-Abad, 2022; Zahari et al., 2022). Several studies highlight strategic leadership, resilient organizational culture, effective financial management practices, and adaptive capabilities as fundamental elements (Mokhtar Abdullah et al., 2024; Mousa et al., 2020). However, relevant gaps persist, such as the importance of comparing different institutional types — public and private — or economic regimes, for example, liberal market economies, coordinated economies, and European peripheral economies. In addition, there is a predominance of research in Asian and North American contexts (Jayabalan et al., 2021; Ramos, 2024), which limits the generalization of the findings to other institutional realities.

Another critical aspect concerns the limited exploration of the specific mechanisms through which HEIs mobilize dynamic resources and capabilities to respond to crises. Although the literature recognizes the importance of processes such as integration, reconfiguration, and the acquisition or release of resources (Eisenhardt & Martin, 2000; Teece, 2007; Zahari et al., 2022), few studies systematically investigate how these mechanisms operate in different institutional arrangements. This limitation highlights a gap in clarification, as we still lack analyses that detail the composition and causal links between the resources mobilized and the results of organizational resilience in different institutional contexts.

Given this scenario, this study is guided by the following research problem:

What combinations of management practices, internal resources, and dynamic capabilities have been mobilized by Higher Education Institutions to promote organizational resilience in contexts of economic crises?

To answer this question, an investigation was conducted that covered 25 empirical studies on HEIs affected by economic crises, totaling 2,987 institutions, distributed in 10 countries on four continents over 27 years. The analysis was guided by the configurational perspective, focusing on the comparison between different institutional types (public and private higher education institutions, or HEIs) and different economic regimes (European peripheral economies, coordinated market economies, and liberal market economies), according to the typology proposed by Witt et al. (2018). The aim is to identify robust causal

patterns that reveal how different configurations of managerial practices, internal resources, and dynamic capabilities are articulated to sustain institutional resilience.

The methodology adopted — Qualitative Comparative Analysis (csQCA) — is particularly suitable for capturing the complexity of cyclical causality, respecting the logic of equifinality and functional substitutability between causal conditions (Fiss, 2011; Ragin, 2008). By enabling the systematic analysis of multiple cases and the identification of sufficient causal patterns, csQCA contributes to advancing the understanding of the configurational determinants of organizational resilience in crisis contexts.

2. Theoretical framework

Organizational resilience in higher education has gained increasing attention due to the exposure of HEIs to external shocks, especially of an economic nature, which directly affects their sustainability and continuity of academic activities (Delgado-Abad, 2022; Denyer, 2017). In response to these challenges, different theoretical schools have sought to understand the mechanisms that support the capacity for adaptation, response, and institutional transformation. Among them, the Resource-Based View (RBV) and the Dynamic Capabilities Theory stand out, which, when integrated, offer robust foundations for analyzing strategic combinations oriented toward resilience. Below, we outline the primary conceptual foundations that underpin this study.

2.1 Organizational Resilience

Organizational resilience is conceived as the ability to resist, absorb impacts, adapt, and recover from disruptive events (Conz & Magnani, 2020). It is a dynamic and multidimensional process that manifests itself over three temporal stages: proactive (prevention and preparation), adaptive (absorption and reaction), and reactive (recovery and transformation) (Ambulkar et al., 2015; Duchek, 2020). These stages require different combinations of management practices, resources, and dynamic capabilities, which enable organizations not only to survive crises but also to evolve from them.

In the context of HEIs, resilience assumes specific contours, given their hybrid nature, their insertion into varied regulatory regimes, and their multiple social functions. Empirical studies have demonstrated that factors such as transformational leadership, flexible governance structures, collaborative networks, and innovative organizational culture significantly contribute to institutional resilience (Jayabalan et al., 2021; Mokhtar Abdullah et al., 2024). Such attributes reinforce the understanding of resilience as a strategic competence, not just a tactical reaction, and should be promoted deliberately in conjunction with the organizational strategy.

2.2 The Resource-Based View (RBV) and Strategic Sustainability

The RBV posits that sustainable competitive advantage stems from the possession and strategic utilization of resources that are valuable, rare, imperfectly imitable, and organizationally exploitable (Barney, 1991). These resources can be tangible or intangible and include financial, physical, human, and organizational categories (Barney, 2001; Conner, 1991). In the case of HEIs, key resources include technological infrastructure, intellectual capital, institutional structures, academic networks, and institutional reputation.

In crisis contexts, organizational flexibility and timely access to critical resources become key factors in sustaining competitive advantage (Dierickx & Cool, 1989). Furthermore, the strategic value of these resources is conditioned by their integration with institutional objectives and their ability to adapt to changing environments. In this sense, the RBV provides

the conceptual basis for analyzing the nature and combination of assets mobilized by HEIs in response to environmental pressures.

2.3 Dynamic Capabilities and Turbulent Environments

The concept of dynamic capabilities was developed as an offshoot of the RBV to explain how organizations can sustain superior performance in unstable and rapidly changing environments (Teece et al., 1997). Rather than focusing solely on the possession of valuable resources, dynamic capabilities emphasize the organization's ability to modify, recombine, and renew its resource base in response to changes in the external environment (Eisenhardt & Martin, 2000).

These capabilities are operationalized through three categories: integration, reconfiguration, and acquisition or release of resources (Teece, 2007). Integration refers to the organization's ability to articulate and coordinate different internal and external resources, promoting synergies that strengthen its strategic base. Reconfiguration refers to the ability to transform, adapt, or reorganize existing resources to face changes or explore new opportunities. Acquisition and release correspond to the ability to incorporate new strategic assets—material, human, technological, or symbolic—or discontinue those that have become obsolete or dysfunctional, allowing for continuous adjustments to the institutional environment (Teece, 2007).

These categories represent distinct yet complementary forms of strategic action and are particularly relevant in contexts of high uncertainty, such as those faced by HEIs in economic crisis scenarios. For example, integrating teaching and technical skills to enable remote teaching, reconfiguring administrative and academic structures to reduce costs, and acquiring digital resources or forming external partnerships to expand institutional response capacity are concrete ways in which such capabilities manifest themselves.

In this study, the processes of integration, reconfiguration, and acquisition/release of resources constitute the theoretical and analytical foundations for identifying the causal combinations associated with organizational resilience. The configurational analysis adopted considers such capabilities as central causal conditions for sustaining institutional adaptability, allowing us to understand how different arrangements between them — combined with managerial practices and specific resources — can explain distinct trajectories of resilience in public and private HEIs.

2.4 Configurational Perspective

The configurational perspective offers an effective theoretical lens for analyzing organizational phenomena marked by causal interdependence, complexity, and multiple contingencies (Meyer et al., 1993). It assumes that organizational outcomes do not arise from isolated factors but from specific and interactive arrangements of multiple causal conditions (Fiss, 2007). This approach values equifinality—that is, different combinations can generate the same result—and recognizes the causal asymmetry between the presence and absence of outcomes (Ragin, 2008; Schneider & Wagemann, 2012). Thus, distinct causal configurations can be equally effective, especially in heterogeneous institutional contexts.

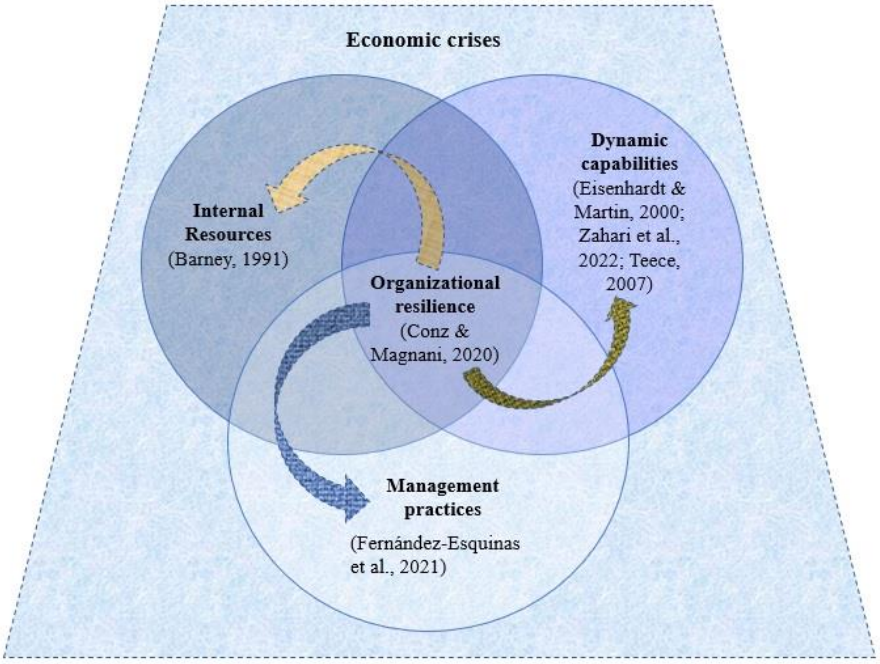
To investigate performance, innovation, and resilience in organizations, studies have adopted the configurational perspective, demonstrating that different trajectories can lead to similar results in uncertain environments (Greckhamer et al., 2013; Misangyi et al., 2017). In higher education, applied research shows that HEIs adopt different combinations of actions and resources in response to crises, reforms, or technological disruptions (Mosplan, 2023; Shaya et

al., 2023). By revealing these alternative trajectories, the configurational approach contributes to expanding the understanding of organizational adaptations in challenging contexts.

In this study, this perspective guides the identification of combinations of management practices, resources, and dynamic capabilities associated with resilience in HEIs in the face of economic crises. To operationalize this approach, Qualitative Comparative Analysis (QCA) is used, a detailed description of which will be presented in the methods section.

Figure 1 graphically summarizes the theoretical framework guiding this study, articulating the primary constructs mobilized: management practices, internal resources, dynamic capabilities, and organizational resilience, under the moderating influence of the economic crisis context.

Figure 1 – Theoretical framework



Source: Authors (2025).

The theoretical framework assumes that institutional resilience in HEIs results from contingent combinations of tangible and intangible assets mobilized through dynamic capabilities—especially integration, reconfiguration, and acquisition/release—as advocated by the Dynamic Capabilities Theory (Eisenhardt & Martin, 2000; Teece, 2007). These combinations are mediated by managerial practices and modulated by contextual factors, such as the type of institution and the economic regime, as proposed by the configurational perspective (Fiss, 2011; Meyer et al., 1993). Thus, the framework not only structures the theoretical foundation but also provides the logical framework that supports the operationalization of causal conditions in the subsequent configurational analysis.

3. Method

This study employs the crisp-set Qualitative Comparative Analysis (csQCA) approach, as it is well-suited for analyzing organizational phenomena characterized by multiple interdependent causalities and heterogeneous institutional contexts (Meyer et al., 1993; Ragin, 1987). Based on set theory and Boolean logic, csQCA allows the identification of causal

combinations sufficient for the occurrence of an outcome through the construction of truth tables and the application of minimization algorithms (Rihoux & Ragin, 2009; Schneider & Wagemann, 2012). This configurational approach is especially sensitive to equifinality and causal asymmetry, favoring analyses that capture the complexity of institutional trajectories (Fiss, 2011).

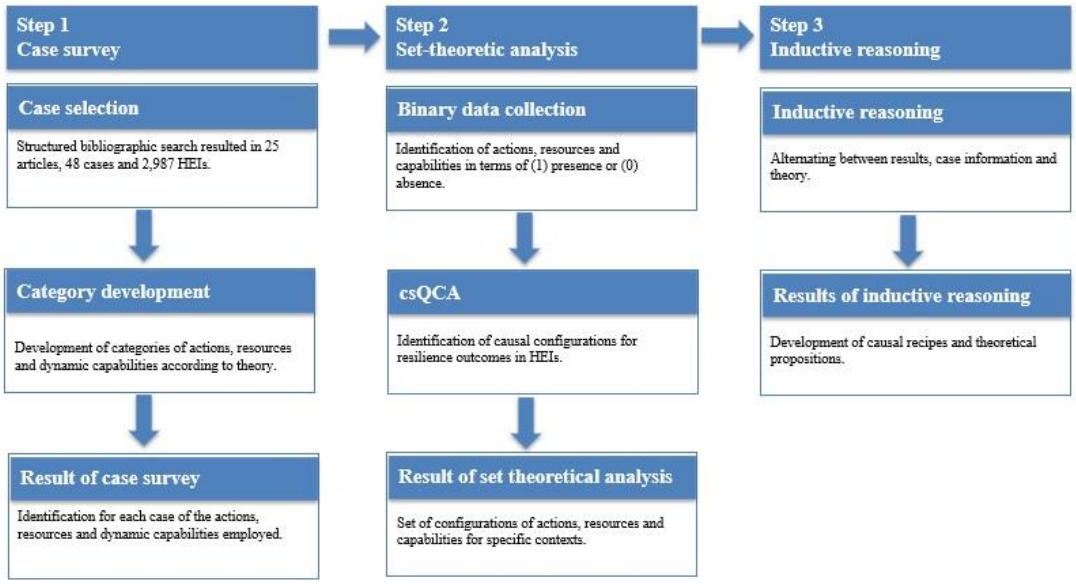
From the perspective of set theory, csQCA employs clear sets in which conditions are represented in binary form, i.e., the presence (1) or absence (0) of a given characteristic (Ragin, 2000). This coding contrasts with fuzzy-set QCA (fsQCA), which allows degrees of membership between 0 and 1 and is more appropriate when there is gradual quantitative data. In this study, the choice for csQCA is due to the secondary and qualitative nature of the data, which did not allow continuous measurement of causal conditions, requiring a dichotomous approach (Cragun et al., 2016; Schneider & Wagemann, 2012).

QCA has been consolidated in organizational studies as an effective method for investigating performance, innovation, resilience, and institutional transformation (Greckhamer et al., 2013; Misangyi et al., 2017). In educational contexts, it has been utilized to examine institutional strategies in response to external shocks, such as economic crises and regulatory reforms (Fernández-Esquinas et al., 2021; Mattke et al., 2022). By allowing the identification of logically consistent causal patterns, QCA offers a solid empirical basis for formulating configurational propositions.

The application of csQCA in this study is justified for three reasons: (i) the data were coded dichotomously based on documentary and qualitative evidence; (ii) the analytical focus falls on cases that present the outcome of organizational resilience, guiding the investigation towards causal sufficiency; and (iii) the technique makes it possible to explore how different combinations of management practices, resources, and dynamic capabilities explain resilient institutional trajectories in different types of HEIs and economic environments. Thus, causal recipes (Park et al., 2020) are developed that integrate theoretical robustness and empirical sensitivity.

The methodological sequence applied in the present study is illustrated in Figure 2.

Figure 2 – Research methodology



Source: Authors (2025).

3.1 Case study

Inspired by the configurational analysis strategy proposed by Bohnsack et al. (2021) — who combined a systematic literature review with qualitative data extraction for QCA analysis —, this study structured a three-step approach: (i) identification of empirical articles that reported crisis coping strategies by HEIs, through an SLR, with the PRISMA protocol (Annexes I and II); (ii) extraction of descriptive and analytical data to classify the managerial practices, resources, and dynamic capabilities employed by HEIs; and (iii) binary coding based on presence (1) or absence (0).

Twenty-five scientific articles that empirically reported the response of HEIs to contexts of economic crisis were selected. These studies cover a universe of 2,987 HEIs distributed across 10 countries over 27 years. The extraction and coding of causal conditions were based on constructs originating from the RBV (Barney, 1991) and Dynamic Capabilities (Eisenhardt & Martin, 2000; Teece, 2007; Zahari et al., 2022), using the content analysis technique according to Bardin (2016).

3.2 Theoretical set analysis

The data matrix was constructed based on the binary coding of the causal conditions for each case, resulting in a structured basis for the application of csQCA. According to the procedures proposed by Ragin (2008), the truth table was constructed by combining all possible configurations of the causal conditions, logically representing the arrangements and their empirical association with the analyzed outcome.

The saturation criterion adopted for including configurations in the analysis was a minimum frequency of two empirical cases per configuration based on methodological guidelines for medium-scale configurational studies (Greckhamer et al., 2013; Schneider & Wagemann, 2012). The logical analysis was conducted through Boolean minimization. The results were interpreted according to the consistency (≥ 0.85) and coverage (≥ 0.50) criteria, which assess, respectively, the internal coherence of the configuration with the outcome and its empirical relevance in explaining the phenomenon (Fiss, 2011; Misangyi et al., 2017).

3.3 Inductive reasoning

This study adopts the logic of configurational inductive reasoning, as discussed by Park et al. (2020), guided by the empirical identification of recurring causal patterns rather than the testing of deductive hypotheses. The approach, based on the observation of multiple cases of resilience, enables the construction of causal recipes that inform provisional theoretical propositions about the institutional pathways supporting organizational resilience.

This methodological strategy aligns with the (neo)configurational perspective, which recognizes the coexistence of multiple adequate arrangements and considers that causal factors act in a contextual, interactive, and contingent manner (Greckhamer et al., 2018). Thus, the application of csQCA in this study aims to contribute not only to robust empirical findings but also to theoretical construction based on systematically organized evidence.

4. Results

Causal configurations associated with organizational resilience were identified in HEIs, both public and private, and located in countries with different economic categories (coordinated market economies, liberal economies, and peripheral European economies). The analyses were conducted based on the logic of configurational causality, prioritizing the empirical consistency and theoretical robustness of the solutions. The following subsections

detail the combinations of managerial practices, resources, and dynamic capabilities that explain organizational resilience in the contexts investigated and interpreted in light of the specialized literature.

4.1 Combined Management Practices

The analysis of the causal configurations obtained through the csQCA method allowed us to identify multiple trajectories that lead to organizational resilience in HEIs. As argued by Ragin (2008) and Schneider and Wagemann (2012), configurational reasoning enables us to understand how different combinations of conditions, rather than isolated factors, lead to the same outcome. In the present study, 18 distinct combinations of management practices were thoroughly examined to explain the occurrence of resilience, all with consistency and coverage equal to 1, as shown in Table 1. These findings demonstrate the robustness of the explanatory model and confirm the presence of equifinality among the cases analyzed.

Table 1 – Causal configurations of management practices

No.	Logical configuration	Qualitative Interpretation	Cases
1	Publica*Merc_Lib* ~Perif_Euro*SusAdInst* RacEficOper	Synergy between sustainability and efficiency in non-peripheral public HEIs, articulating institutional and operational capabilities.	2a, 25a, 17, 3 e 6a
2	Publica*Merc_Lib* ~Perif_Euro~*InovExAcad* SusAdInst*~TransEngInst	Institutional sustainability replaces innovation and transparency, sustaining resilience in traditional public HEIs.	6h, 28b, 2a
3	Privada*Merc_Lib* ~Perif_Euro~*InovExAcad* SusAdInst*~TransEngInst	Private HEIs compensate for the lack of innovation through institutionality, focusing on symbolic legitimacy.	6b, 6c, 6m e 28a
4	Publica*Merc_Lib* ~Perif_Euro*RacEficOper* ~DivExpRec*~TransEngInst	Public HEIs with isolated efficiency, vulnerable due to lack of diversification and legitimacy.	6i, 23 e 6a
5	Publica*Merc_Lib* ~Perif_Euro~*InovExAcad* SusAdInst*DivExpRec	Public HEIs diversify revenues without innovating, betting on diversification and expansion of revenues as a substitute.	28b, 7 e 29
6	Privada*Merc_Lib* ~Perif_Euro~*InovExAcad* RacEficOper~*DivExpRec* ~TransEngInst	Private HEIs rely on efficiency, without diversification or legitimacy, resulting in limited resilience.	6j e 6k
7	Publica*Merc_Lib* ~Perif_Euro~*InovExAcad* ~RacEficOper*DivExpRec* ~TransEngInst	Attempt at resilience through financial diversification, but without innovation or integrated efficiency.	28b e 28c
8	Privada*Merc_Lib* ~Perif_Euro~*InovExAcad* ~RacEficOper~*DivExpRec* TransEngInst	Private HEIs prioritize institutional transparency to compensate for low management capacity.	6e e 6f
9	Publica~*Merc_Lib* Perif_Euro*InovExAcad* SusAdInst*RacEficOper* ~TransEngInst	Peripheral public HEIs with innovation, sustainability and efficiency partially combined.	15 e 18
10	Publica~*Merc_Lib* Perif_Euro*InovExAcad* SusAdInst*DivExpRec* ~TransEngInst	Replacing efficiency with diversification in an arrangement with innovation and sustainability.	4 e 15
11	Publica~*Merc_Lib* Perif_Euro*InovExAcad* ~SusAdInst*RacEficOper* DivExpRec	Replacing efficiency with diversification in an arrangement with innovation and sustainability.	27a e 27b
12	Publica~*Merc_Lib* Perif_Euro~*InovExAcad* SusAdInst*RacEficOper* DivExpRec	Robust strategy without innovation, with sustainability, efficiency and diversification of institutionalized revenues.	2a e 27c
13	Publica*Merc_Lib* ~Perif_Euro*InovExAcad* SusAdInst~*DivExpRec* TransEngInst	Innovation and transparency in public HEIs without revenue diversification, with a reputational focus.	8 e 11
14	Privada~*Merc_Lib* Perif_Euro*InovExAcad* ~SusAdInst~*RacEficOper* ~DivExpRec*~TransEngInst	Private HEIs in peripheral European economies survive through isolated innovation, in the face of structural vulnerability.	2b
15	Publica*Merc_Lib* ~Perif_Euro~*InovExAcad* ~SusAdInst~*RacEficOper* ~DivExpRec*TransEngInst	Public HEIs without active management practices, supported only by symbolic transparency.	6d
16	Publica*Merc_Coord* ~Merc_Lib~*Perif_Euro* InovExAcad*SusAdInst* ~RacEficOper~*DivExpRec* ~TransEngInst	Focus on innovation and institutional sustainability, without operational or financial support.	19
17	Publica*Merc_Coord* ~Merc_Lib~*Perif_Euro* InovExAcad*SusAdInst* RacEficOper*DivExpRec* TransEngInst	Resilience model with all core management practices activated.	14
18	Privada*Merc_Lib* ~Perif_Euro*InovExAcad* SusAdInst*RacEficOper* DivExpRec*TransEngInst	Private HEI with full mobilization of resources and capabilities, operating in a competitive context.	25 e 1

Note. The causal configurations presented were obtained through the technique of qualitative comparative analysis with neat sets (csQCA) and represent sufficient combinations of managerial and contextual conditions for the occurrence of organizational resilience in HEIs. InovExAcad = innovation and academic expansion; SusAdInst = sustainability and institutional adequacy; RacEficOper = rationalization and operational efficiency; DivExpRec = diversification and expansion of revenues; TransEngInst = transparency and institutional engagement; Merc_Lib = liberal market economy; Merc_Coord = coordinated market economy; Perif_Euro = peripheral European economy; Publica, Privada = institutional type (public or private). The operator "*" indicates logical conjunction (simultaneous presence of conditions); the symbol "~" represents negation (absence of condition); the order of the terms indicates the logical sequence of the configuration.

Source: Authors (2025).

Table 1 presents the empirical configurations of management practices observed in the analyzed HEIs based on the binary coding of the five causal conditions. Each line represents a distinct combination of the presence (1) or absence (0) of the conditions. This structure forms the logical basis for the subsequent application of Boolean minimization, as recommended by the csQCA methodology (Ragin, 2008; Schneider & Wagemann, 2012). From these 18 consistent empirical configurations, six minimized causal configurations (causal recipes) were extracted, which summarize the recurring explanatory patterns.

Table 2 presents six causal recipes derived from the application of qualitative comparative analysis with clear sets (csQCA), which represent the most diverse and theoretically relevant combinations of management practices and contextual conditions associated with the occurrence of organizational resilience in HEIs. The selection of these configurations was guided by the criterion of empirical diversity, prioritizing the coverage of different institutional types and operational environments.

Table 2 – Causal recipes derived from the combination of management practices

No.	*Causal recipe*	Descriptive theoretical interpretation
1	Publica*Merc_Lib* ~Perif_Euro*SusAdInst* RacEficOper	The combination of institutional sustainability and operational efficiency in public HEIs in non-peripheral liberal economies is sufficient for resilience, even without other conditions.
2	Privada*Merc_Lib* ~Perif_Euro~*InovExAcad* SusAdInst*~TransEngInst	In private HEIs, institutional sustainability alone can generate resilience even in the absence of innovation and transparency.
3	Publica~*Merc_Lib* Perif_Euro*InovExAcad* SusAdInst*DivExpRec* ~TransEngInst	In peripheral contexts, resilience results from the combination of innovation, sustainability and revenue diversification.
4	Privada*Merc_Lib* ~Perif_Euro~*InovExAcad* ~RacEficOper~*DivExpRec* TransEnginst	In private HEIs with low managerial complexity, institutional engagement can act as a compensatory symbolic resource.
5	Publica*Merc_Lib* ~Perif_Euro*RacEficOper* ~DivExpRec*~TransEngInst	Operational efficiency alone may be sufficient for resilience in public HEIs without diversification.
6	Privada~*Merc_Lib* Perif_Euro*InovExAcad* ~SusAdInst~*RacEficOper* ~DivExpRec*~TransEngInst	In private HEIs in peripheral economies, isolated innovation can function as a minimum safeguard for resilience.

Note: Causal configurations resulting from qualitative comparative analysis with sharp sets (csQCA), expressing sufficient combinations of managerial practices and contextual conditions associated with organizational resilience in HEIs. InovExAcad = innovation and academic expansion; SusAdInst = sustainability and institutional adequacy; RacEficOper = rationalization and operational efficiency; DivExpRec = diversification and revenue expansion; TransEngInst = transparency and institutional engagement; Merc_Lib = liberal market economy; Perif_Euro = European peripheral economy. The operator "*" indicates logical conjunction (and simultaneity between conditions); the symbol "~" represents the negation (absence) of the condition; the order of the terms indicates the logical sequence of the configuration.

Source: Authors (2025).

Configuration #1 shows that, in public HEIs located in non-peripheral liberal economies, the simultaneous presence of institutional sustainability and operational efficiency is sufficient to generate resilience, even in the absence of innovation or transparency. Recipe #2 reveals that, specifically, in private contexts, the simple presence of institutional sustainability can, by itself, ensure organizational resilience, even in the absence of other management practices. In public HEIs located in peripheral and non-liberal economies, recipe #3 points to the need for denser arrangements, combining academic innovation, institutional sustainability, and revenue diversification as necessary conditions for resilience. Configuration #4 shows that, in private HEIs marked by low managerial complexity — characterized by the absence of innovation, operational efficiency, and revenue diversification — institutional engagement acts as a compensatory symbolic resource, reinforcing the role of intangible assets in sustaining organizational stability (Barney, 1991; Peteraf, 1993). Recipe #5, in turn, highlights that, in public HEIs, operational efficiency alone may be sufficient to ensure resilience, even without revenue diversification or transparency mechanisms. Finally, configuration #6 represents a minimalist strategy. In private HEIs located in peripheral

economies, the exclusive presence of academic innovation is capable of sustaining organizational resilience, even in the absence of other institutional and managerial capabilities.

Furthermore, these configurations demonstrate that organizational resilience does not arise from a single, isolated practice or capability but rather from the cohesion and coherence between contextual elements and managerial practices that align with the institutional type. The empirical evidence reinforces the equifinal and contingent nature of resilience, revealing different possible trajectories that reflect the central principles of the configurational approach (Eisenhardt & Martin, 2000; Teece, 2007). Thus, the findings not only validate the diversity of paths toward resilience but also support the thesis that strategic adaptation is sensitive to the characteristics of the environment and the available organizational capabilities.

4.2 Combinations of dynamic resources and capabilities

The application of the csQCA method allowed us to identify twenty-one causal configurations associated with the presence of the organizational resilience outcome in HEIs, as shown in Table 3. As Fiss (2011) and Ragin (2008) point out, the logic of configurational analysis values the combination of multiple causal conditions in specific arrangements, allowing us to capture alternative outcome trajectories (equifinality). Among the configurations obtained, six demonstrated greater empirical coverage, representing recurring patterns of combination between strategic resources (financial, human, organizational) and dynamic capabilities (integration, reconfiguration, acquisition/release). These findings reinforce the idea that institutional resilience emerges from the articulation of multiple internal factors in interaction with the environmental and organizational context of each HEI.

Table 3 - Causal configurations of dynamic resources and capabilities

No.	Logical Configuration	Qualitative interpretation	Cases
1	Publica ~Privada ~Merc_Coord Merc_Lib ~Perif_Euro RecFin RecHum RecOrg IntgrRec ReconRec AqLibRec	Public HEIs in liberal economies, with a broad resource base and full activation of dynamic capabilities.	6a, 9, 10, 11, 25a, 28b e 29
2	Publica ~Privada ~Merc_Coord ~Merc_Lib Perif_Euro RecFin RecHum RecOrg IntgrRec ReconRec AqLibRec	Public HEIs in peripheral economies that intensively activate resources and capabilities to compensate for instability.	4, 18, 27a e 27b
3	~Publica Privada ~Merc_Coord Merc_Lib ~Perif_Euro ~RecFin ~RecFis RecOrg IntgrRec ~ReconRec ~AqLibRec	Private HEIs with a low resource base, but with a consolidated organizational structure and strong internal integration.	6f e 6g
4	Publica ~Privada Merc_Coord ~Merc_Lib ~Perif_Euro RecFin RecHum RecOrg IntgrRec ReconRec AqLibRec	Public HEIs in coordinated economies with a strong state presence, fully activating resources and capabilities.	14 e 19
5	Publica ~Privada ~Merc_Coord Merc_Lib ~Perif_Euro RecFin ~RecFis RecHum RecOrg IntgrRec ReconRec	Liberal public HEIs with physical shortages compensated by internal capacity for reallocation and reconfiguration.	2a, 17, 23 e 24
6	~Publica Privada ~Merc_Coord Merc_Lib ~Perif_Euro RecFin RecFis RecHum RecOrg IntgrRec ReconRec AqLibRec	Private market HEIs with full mobilization of resources and capabilities under competitive pressure.	1, 25b e 28a

Note. The causal configurations were derived from the sharp-set comparative qualitative analysis (csQCA) technique and represent sufficient combinations of contextual conditions, resources, and dynamic capabilities for the occurrence of organizational resilience in HEIs. RecFin = financial resources; RecFis = physical resources; RecHum = human resources; RecOrg = organizational resources; IntgrRec = resource integration capacity; ReconRec = resource reconfiguration capacity; AqLibRec = resource acquisition/release capacity. Merc_Lib = liberal market economy; Merc_Coord = coordinated market economy; Perif_Euro = European peripheral economy; Public, Private = institutional type. The operator "*" indicates logical conjunction (simultaneous presence of conditions); the symbol "~" represents negation (absence of condition); the order of the terms indicates the logical sequence of the configuration.

Source: Authors (2025).

The theoretical analysis of the configurations was deepened through the formulation of causal recipes, which synthesize the mechanisms underlying the empirical patterns identified through the logic of neat sets (csQCA). As argued by Park et al. (2020), the elaboration of recipes is a central component of inductive reasoning in the configurational approach, as it transforms empirical combinations into provisional theoretical propositions that can reflect the complexity of observed causal relationships. In the present study, six distinct causal recipes

were highlighted, selected based on their empirical diversity, to capture the variety of paths through which HEIs achieved organizational resilience in the face of economic crises across different institutional contexts. These combinations reveal relationships of complementarity, substitution, and compensation between organizational resources and dynamic capabilities, operating in a contingent and non-linear manner depending on the type of institution and the nature of the external environment. The inferred mechanisms are summarized in Table 4, illustrating how different forms of resilience are operationalized through the selective activation of available resources and the strategic use of dynamic capabilities.

Table 4 - Causal recipes derived from the combination of resources and dynamic capabilities

No.	Causal Recipe	Descriptive theoretical interpretation
1	RecFin * RecHum * RecOrg * IntgrRec * ReconRec * AqLibRec → Resilience	Synergistic combination of strategic resources and all dynamic capabilities; coordinated activation of the resource base.
2	RecOrg * IntgrRec → Resilience	Organizational structure and integration capacity compensate for the lack of financial, physical and human resources.
3	RecFin * RecHum * RecOrg * ReconRec * AqLibRec → Resilience	Internal reorganization combined with selective expansion of the asset base to respond to volatile environments.
4	RecHum * RecOrg * IntgrRec * ReconRec → Resilience	Intensive use of internal capacities to reallocate and recombine available resources, overcoming the absence of physical resources.
5	RecOrg * IntgrRec * ~ReconRec * ~AqLibRec → Resilience	Internal coordination based on a consolidated structure allows stability even without change or expansion of resources.
6	RecFin * RecHum * RecOrg * IntgrRec * ReconRec → Resilience	Integration and reconfiguration capabilities enable adaptation even without asset acquisition/release.

Note. Causal configurations derived from the csQCA technique represent sufficient combinations between strategic resources and dynamic capabilities that result in organizational resilience in HEIs. RecFin = financial resources; RecHum = human resources; RecOrg = organizational resources; IntgrRec = resource integration capability; ReconRec = resource reconfiguration capability; AqLibRec = resource acquisition/release capability. The operator "*" indicates logical conjunction (and simultaneity between conditions); the symbol "~" represents the negation (absence) of the condition; the arrow "→" indicates a sufficiency relationship with the outcome (organizational resilience).

Source: Authors (2025).

Overall, the results indicate that the presence of at least one active dynamic capability is a minimum common condition for the occurrence of organizational resilience, corroborating previous findings that associate these capabilities with strategic adaptation in unstable scenarios (Eisenhardt & Martin, 2000; Teece, 2007). It was also observed that the organizational structure plays a central role in private HEIs with capital constraints, acting as an internal platform for coordination and compensation in the face of scarcity of financial and physical resources. In contrast, public institutions demonstrated that they operate with broader logics of resource recombination, made possible by a more robust material base and greater institutional breadth for adaptive reconfigurations.

These findings align with the principles of the RBV (Barney, 1991; Peteraf, 1993), which emphasize that the strategic value of resources and capabilities is not intrinsic but depends on their suitability to the specific context and the way they are integrated into organizational mechanisms. In short, the results confirm that different trajectories can lead to organizational resilience, provided that coherent combinations of strategic resources and dynamic capabilities support them. Such trajectories reflect the principle of equifinality, characteristic of the configurational approach, according to which multiple causal architectures can lead to the same outcome as long as they are appropriate to the constraints and opportunities of each organizational environment.

5. Discussion

Despite recent advances in the literature on organizational resilience, there were still significant gaps in understanding the configurational conditions that support this phenomenon in HEIs during economic crises. This research advanced this debate by applying the csQCA method and the logic of configurational inductive reasoning (Park et al., 2020), synthesizing scattered empirical evidence, and identifying robust causal patterns that express different trajectories of institutional adaptation. This contribution represents an incremental advance in articulating theoretical propositions emerging from the systematic analysis of multiple cases, as summarized in Tables 5 and 6, offering new paths for consolidating the field.

The analysis revealed that organizational resilience can emerge from multiple combinations of management practices, strategic resources, and dynamic capabilities, as advocated by the logic of equifinality (Fiss, 2011; Ragin, 2008). The combination of institutional sustainability and operational efficiency has proven to be particularly effective in public HEIs in non-peripheral liberal economies, while in private institutions in the same context, sustainability alone has proven to be sufficient. In unstable environments, such as peripheral economies, resilience depends on the simultaneous presence of multiple management practices, such as academic innovation, revenue diversification, and institutional engagement. These findings are in line with the RBV (Barney, 1991) and the Dynamic Capabilities Theory (Eisenhardt & Martin, 2000; Teece, 2007) in demonstrating that resilience is achieved through the association and relational nature of strategic assets.

The formulation of the theoretical propositions presented in Table 5 was based on the mechanisms of complementarity, substitution, and compensation between management practices, resources, and dynamic capabilities, as discussed by Park et al. (2020). Symbolic practices, such as institutional transparency, emerge as compensatory mechanisms in contexts of low management complexity, while financial diversification can replace robust organizational structures in highly competitive environments. Such mechanisms demonstrate that resilient trajectories are not only built on the availability of resources but also on their coherent combination with adaptive organizational capabilities (Peteraf & Barney, 2003).

Table 5 – Theoretical propositions based on the combination of management practices.

Proposition	Description	Theoretical Basis
P1	In public HEIs in non-peripheral liberal economies, the combination of institutional sustainability and operational efficiency is sufficient for resilience, even without innovation or transparency.	RBV (sustainability as a resource); Dynamic capabilities (efficiency as reconfiguration).
P2	In private HEIs in liberal economies, institutional sustainability alone may be sufficient for resilience, even in the absence of other practices.	Dynamic capabilities (sustainability as a core capability).
P3	In public HEIs in peripheral European economies, resilience requires a combination of innovation, sustainability and revenue diversification.	Dynamic capabilities (sensing + seizing + transforming).
P4	In HEIs with low management complexity, institutional transparency can act as a symbolic resource for maintaining resilience.	RBV (intangible asset and symbolic legitimacy).
P5	In private HEIs, efficiency and diversification function as substitute strategies in the absence of sustainability or engagement.	Dynamic capabilities (reconfigurable market response).
P6	In private HEIs in peripheral economies, academic innovation can function as a minimum safeguard for resilience, even without sustainability, engagement or efficiency.	Dynamic capabilities (minimum exploratory capability).

Source: Authors (2025).

The theoretical propositions summarized in Tables 5 and 6 represent provisional configurational hypotheses that emerge from the empirical analysis carried out using the csQCA methodology. Derived from inductive reasoning, these propositions capture robust causal patterns and provide a foundation for future research on organizational resilience in HEIs. By

explaining mechanisms of complementarity, substitution, and compensation between management practices, resources, and dynamic capabilities, the formulated propositions not only consolidate the findings of this study but also outline promising paths for theoretical refinement and empirical validation in different organizational contexts. Thus, they constitute a practical conceptual framework to guide future research that seeks to deepen the understanding of strategic adaptations in crisis environments.

Table 6 – Theoretical propositions based on the combination of resources and dynamic capabilities.

Proposition	Description	Theoretical basis
P1	Public HEIs in liberal economies achieve resilience by mobilizing almost all resources (financial, human and organizational) and activating the three dynamic capabilities (integration, reconfiguration and resource acquisition/release).	Organizational ambidexterity (Teece, 2007); VRIN + Dynamic capabilities.
P2	Public HEIs in European peripheral economies achieve resilience by intensively activating resources and capabilities, overcoming environmental constraints.	Capacity for structural adaptation; Resilience in austerity.
P3	Private HEIs with few tangible resources, but with organizational resources + Resource integration, achieve resilience through efficient internal coordination.	RBV: intangible assets; Minimum carrying capacity.
P4	Public HEIs in coordinated economies achieve resilience by combining all resources and capabilities in a stable and cooperative environment.	Institutional complementarity; Full dynamic capabilities.
P5	Public HEIs in liberal economies overcome the absence of physical resources by reconfiguring and integrating human and organizational assets.	Slack + internal resource recombination.
P6	Private HEIs in liberal economies combine all three capabilities to achieve market-oriented resilience.	Sensing–Seizing–Transforming in a competitive context.

Source: Authors (2025).

Depending on the institutional type and economic regime in which HEIs operate, the combinations of management practices, resources, and dynamic capabilities assume distinct configurational patterns, reflecting contingent adaptation mechanisms. In liberal market economies, such as Australia, the United Kingdom, and the United States, public HEIs tend to mobilize strategies based on institutional sustainability and operational efficiency, supported by organizational and financial resources linked to integration and reconfiguration capabilities. Private HEIs in this same context demonstrate resilience with leaner configurations, in which institutional sustainability, combined with the reconfiguration of resources, is sufficient to compensate for the absence of more robust tangible assets.

In turn, in peripheral European economies, such as Portugal and Greece, there is a greater dependence on compensatory arrangements. Public HEIs in these environments tend to employ multiple simultaneous management practices — such as academic innovation, institutional engagement, and revenue diversification — combined with capabilities for acquiring, releasing, and integrating resources in the face of institutional instability and structural scarcity. Among private HEIs in peripheral contexts, academic innovation emerges as a central substitutive action supported by human resources and resource acquisition capabilities, operating as a symbolic and adaptive response to systemic constraints. In coordinated market economies, as exemplified by Germany, public HEIs demonstrate resilient configurations based on operational efficiency and institutional sustainability, anchored in organizational resources and reconfiguration capabilities, with strong support from stable institutional systems. Private HEIs, on the other hand, in this same regime articulate institutional engagement strategies with symbolic resources and integration capabilities, acting in a compensatory manner in more demanding regulatory ecosystems.

Table 7 - Configurational patterns of organizational resilience in HEIs according to institutional type and economic regime

Context	Prominent Management Practice	Prevalent features	Dynamic capabilities enabled	Configurational pattern
Public HEIs – Liberal market economy	Institutional sustainability + Operational efficiency	Organizational + financial resources	Integration + Reconfiguration	Complementarity between technical rationality and structural basis
Private HEIs – Liberal market economy	Institutional sustainability	Organizational resources	Reconfiguration	Replacing diversification or innovation with managerial robustness
Public HEIs – European peripheral economies	Academic Innovation + Revenue Diversification	Human + organizational resources	Integration + Acquisition/Release	Dense complementarity to compensate for structural instability
Private HEIs – European peripheral economies	Academic innovation	Human resources	Acquisition/release	Symbolic replacement of infrastructure by academic innovation
Private HEIs – Coordinated Market Economy	Institutional engagement	Symbolic resources (organizational substitutes)	Integration	Symbolic compensation in the face of a shortage of structural resources
Public HEIs – Coordinated market economy	Operational efficiency + Sustainability	Organizational resources	Integration + Reconfiguration	Functional complementarity with a focus on internal adjustments

Note: This table expands the interpretation of the theoretical propositions presented in Tables 5 and 6 by explaining how the combinations between management practices, resources, and dynamic capabilities vary according to the organizational (type of HEI) and macroeconomic (economic regime) contextual conditions.

Source: Authors (2025).

These different trajectories are summarized in Table 7, which presents the configurational patterns of organizational resilience according to the institutional type and economic regime. Based on these patterns, it is possible to identify typical configurational mechanisms described in the specialized literature. Functional complementarity (Furnari et al., 2021) describes arrangements in which multiple elements—such as management practices, resources, and dynamic capabilities—reinforce each other, promoting systemic coherence. Some variations, such as dense complementarity and complementarity between technical rationality and structural basis, indicate specific contextual nuances in public HEIs. Symbolic or structural substitution mechanisms (Fiss, 2011) are characterized by situations in which an action or resource compensates for the absence of another with similar functionality, as occurs when academic innovation replaces physical infrastructure. Finally, contingent compensation patterns (Grandori & Furnari, 2008) express adaptive strategies based on symbolic or emergent elements, especially in contexts of structural scarcity. This configurational taxonomy helps to explain the equifinality and robustness of resilient trajectories observed in different types of HEIs.

In addition to the causal interpretations derived from the combinations between managerial practices, resources, and dynamic capabilities, it becomes relevant to consider how broader institutional contexts shape or condition these configurations. In this sense, the typology of economic regimes proposed by Witt et al. (2018) offers a valuable analytical lens for understanding variations in patterns of organizational resilience across different types of national economies.

In Liberal Market Economies, such as the United States, the United Kingdom, and Australia, an institutional arrangement prevails that favors market-based coordination mechanisms with low state intervention and a high degree of inter-organizational competition. In this context, HEIs tend to mobilize resources and capabilities with greater autonomy and flexibility, as evidenced by the frequency of revenue diversification strategies and academic innovation, which are considered sufficient conditions for resilience. This institutional orientation favors the emergence of causal combinations focused on performance and efficiency, consistent with capitalist systems where competitive logic structures organizational decision-making (Witt et al., 2018).

On the other hand, in European Peripheral Economies (EPEs), such as Greece and Portugal, we observe an economic system characterized by greater institutional instability, dependence on external capital, and limited capacity for efficient state coordination. According to Witt et al. (2018), these economies operate under less coherent institutional patterns, often

classified as “mixed market economies" or "peripheral business systems," in which contradictory elements of state coordination, corporatism, and informality coexist. The causal configurations identified in this study for HEIs located in EPEs reflect this institutional ambivalence: multiple compensatory managerial practices—such as streamlining internal processes combined with institutional engagement—are necessary to achieve resilient outcomes. These findings suggest that organizational resilience in these environments depends less on robust institutional complementarities and more on the ability of HEIs to articulate adaptive strategies in the face of fragile and volatile regulatory frameworks.

The findings of this study also corroborate the theoretical framework initially proposed, in which organizational resilience is conceived as the result of a contingent combination of managerial practices, strategic resources, and dynamic capabilities moderated by institutional and economic contexts. The theoretical propositions summarized in Tables 5 and 6 detail the specific mechanisms for combining these elements, highlighting distinct configurational patterns according to the type of institution and the macroeconomic environment. Thus, the theoretical framework not only guided the investigation but was also empirically supported by the causal configurations identified, reinforcing its usefulness as an analytical framework for future research on strategic adaptation in higher education. By capturing configurational variations across different economic regimes and institutional types, the findings also respond to the guidelines proposed by the (neo)configurational perspective, which emphasizes context-sensitive explanations and complex causation (Furnari et al., 2021), as demonstrated in Figure 3.

Figure 3 – Configurational resilience model for HEIs

Source: Authors (2025).

Despite the logical robustness of the identified configurations, the results should be interpreted in light of methodological limitations inherent to the study. The binary coding of conditions necessary for the application of csQCA restricts the capture of gradations and intensities in institutional practices, potentially obscuring significant variations. The analysis focused exclusively on cases of resilient HEIs, which limits the comparison with failed

organizational trajectories. Furthermore, the secondary nature of the data prevents the direct verification of causal interactions, giving the study an exploratory and inductive character. Such limitations do not invalidate the findings but recommend caution in their generalization and suggest the need for complementary approaches, such as in-depth case studies and longitudinal analyses.

In addition to its theoretical contributions, the study also presents practical implications of relevance. In unstable contexts, managers of HEIs can benefit from adopting adaptive arrangements that combine symbolic and operational management practices. Strategies such as institutional transparency, revenue diversification, and academic innovation have proven effective in various contingent contexts. Thus, the findings of this study contribute to the design of strategic guidelines aimed at organizational resilience in the face of crisis and instability.

6. Final Considerations

This study analyzed, using the crisp-set Qualitative Comparative Analysis (csQCA) methodology, the causal configurations that explain how HEIs mobilize dynamic resources and capabilities to sustain organizational resilience in contexts of economic crisis. From a configurational perspective, the results revealed that multiple strategic arrangements — involving both tangible and intangible assets, combined with capabilities such as integration, reconfiguration, and acquisition or release — can generate resilient outcomes. The identified configurations were interpreted in light of the proposed theoretical framework and the taxonomy of configurational mechanisms discussed, revealing patterns of complementarity, substitution, and compensation as influenced by institutional and economic constraints. The diversity of the observed trajectories thus reinforces the relevance of approaches that are sensitive to complex causality and institutional heterogeneity. In this way, the study contributes to a more refined understanding of how HEIs face adversities in uncertain and turbulent scenarios.

6.1 Limitations of the Study

Although the methodological limitations have already been discussed in the context of interpreting the findings, it is worth reiterating some restrictions that impact the scope of this study. The use of secondary data and the absence of negative cases restricted the analysis to the logic of sufficiency, making it impossible to draw inferences about the conditions necessary for resilience. Additionally, the dichotomous coding required by csQCA limited the analytical sensitivity to intermediate gradations. These limitations do not compromise the validity of the results but reinforce the need for complementary approaches in future investigations.

6.2 Theoretical Contributions

From a theoretical perspective, this research advances the literature on organizational resilience by proposing a configurational typology of combinations between management practices, internal resources, and dynamic capabilities in contexts of instability. In addition to integrating the RBV and Dynamic Capabilities Theory from a (neo)configurational perspective, the study applies the logic of causal sufficiency and equifinality to demonstrate that different internal architectures can support strategic adaptation in HEIs. The causal configurations identified also incorporate the influence of organizational (public and private HEIs) and environmental (coordinated market economies, liberal market economies, and European peripheral economies) contextual aspects, providing greater robustness to the inferences. Thus, it contributes to the deepening of the (neo)configurational perspective in organizational sciences (Furnari et al., 2021; Misangyi et al., 2017; Park et al., 2020), reinforcing the

usefulness of csQCA as a legitimate instrument for theoretical construction based on empirical patterns and inductive reasoning.

6.3 Management Contributions

In practical terms, this study offers a repertoire of strategic combinations that serve as configurational roadmaps to guide managers and policymakers in HEIs. By associating specific managerial practices, resources, and dynamic capabilities with distinct organizational contexts, guidelines are proposed, such as strengthening external fundraising programs to foster acquisition and/or release capabilities or curricular reorganization as an institutional reconfiguration strategy. Such guidelines enable the alignment of managerial practices with organizational reality and environmental constraints, thereby respecting the plurality of educational contexts. Institutions with financial constraints, for example, can focus their efforts on selectively activating acquisition and reconfiguration capabilities. At the same time, those with greater accumulation of assets can invest in synergistic and integrative organizational structures. In this way, the study contributes to the design of adaptive institutional policies that increase the responsiveness of HEIs to external shocks.

6.4 Agenda for Future Research

In light of the methodological limitations identified, future research should utilize primary and triangulated data, enabling greater refinement in the coding and evaluation of the analyzed cases. The application of complementary configurational approaches, such as fuzzy-set QCA (fsQCA), is recommended to capture the gradations of causal conditions, thereby increasing the explanatory sensitivity of the model. Longitudinal research is also relevant, as it can illuminate how resilient trajectories are constructed and evolve, expanding the understanding of the adaptive role of dynamic capabilities. In addition, comparative studies that consider different financing regimes and institutional arrangements can enrich the analysis of how governance structures influence the construction of organizational resilience in higher education.

Additionally, the propositions formulated in this study have the potential for empirical validation since they specify observable causal combinations between managerial practices, resources, and dynamic capabilities in HEIs under defined institutional contexts. These arrangements can be operationalized as configurational propositions in future studies that adopt comparative case studies or configurational analysis (QCA). Such an approach would not only allow for the assessment of the internal consistency of the propositions but also the investigation of their external validity and applicability in different educational systems, thereby consolidating their theoretical and managerial contributions to the analysis of organizational resilience in higher education.

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Annex I – Selection of articles

Database search terms	Web of Science	Scopus	Total
(("financial cris?s") OR ("economic cris?s") OR ("uncert* environment*") OR ("volatile environment*") OR ("shifting environment*" OR "changing environment*")) and ("higher education" OR "higher education* institution*")	347	875	1.222
number of unique articles per database	347	875	1.222
number of unique articles		911	
number of articles after reading the abstracts		49	
number of articles after full reading		29	
number of articles selected for analysis		25	

Note. The search was conducted on 08/20/2024. The search terms were applied in the 'Topic' field in the Web of Science and its equivalent in Scopus. Of the 29 articles, four were not selected for analysis. Two of them are because they portrayed several countries located in different economic regimes without individualizing the data, so it was not possible to classify each HEI by economic regime. Additionally, the other two articles, as they represented a single country each and fell into different economic regimes, did not meet the criterion of a minimum frequency of two empirical cases per configuration.

Annex II – List of articles and cases

No.	Case	Article title	Year	Country	HEI	Qty.	Nature	Economic crisis	Reference
1	1	Financial Crisis Management in Higher Education: Responses by 20 Private Colleges and Universities to the 2007-2009 Financial Crisis	2016	USA	The study analyzed 20 private higher education institutions (HEIs). These institutions were members of either the Pacific Consortium of Liberal Arts Colleges (Pacific Consortium) or the Consortium of Liberal Arts Colleges (CLAC). Of these 20 institutions, 14 (70%) were located in California and 6 (30%) were located outside of California. The institutions included regional universities, national universities, and national liberal arts colleges.	20	Private	2007/2009	Dorantes & Low (2016)
2	2a	Comparing university performance by legal status: a Malmquist-type index approach for the case of the Spanish higher education system	2017	Spain	47 public universities (does not specify resources and capacities per HEI).	47	Public	2007/2009	de la Torre et al. (2017)
	2b	Comparing university performance by legal status: a Malmquist-type index approach for the case of the Spanish higher education system	2017	Spain	22 private universities (does not specify resources and capacities per HEI).	22	Private	2007/2009	
3	3a	Public no more universities: subsidy to self-reliance	2012	USA	Public universities, the analysis is for the public sector of universities as a whole, but cites the following HEIs: University of Michigan, Ohio State University, University of Florida and Iowa State University.		Public	2007/2009	Fethke & Policano (2013)
	3b	Public no more universities: subsidy to self-reliance	2012	USA	University of Michigan	1	Public	2007/2009	
	3c	Public no more universities: subsidy to self-reliance	2012	USA	Ohio State University	1	Public	2007/2009	
	3d	Public no more universities: subsidy to self-reliance	2012	USA	University of Florida	1	Public	2007/2009	
	3e	Public no more universities: subsidy to self-reliance	2012	USA	Iowa State University	1	Public	2007/2009	
4	4	The niche institute strategy - the way out of economic crisis for Greek higher educational institutions: the case of the Technological Educational Institute of Western Greece	2013	Greece	Technological Educational Institute (TEI) of Western Greece, which was formed from the merger between the TEI of Patras and the TEI of Messolongi.	1	Public	2007/2009	Kabouridis (2013)
5	5	Performance management practices, employee attitudes and managed performance	2010	Uganda	Kyambogo University, Makerere University, Mbarara University and Gulu University (does not detail actions, resources and capacities by HEI).	4	Public	2007/2009	Kagaari et al. (2010)
6	6a	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	The article analyzed 49 member universities of the Association of American Universities (AAU) in the United States.	49		2007/2009	Vitullo & Johnson (2010)
	6b	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	New York University		Private	2007/2009	
	6c	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	Harvard University		Private	2007/2009	
	6d	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	Ohio State University		Public	2007/2009	
	6e	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	Case Western		Private	2007/2009	
	6f	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	Cornell University		Private	2007/2009	
	6g	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	Tulane University		Private	2007/2009	
	6h	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	Michigan State University		Public	2007/2009	
	6i	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	University of Oregon		Public	2007/2009	
	6j	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	Yale University		Private	2007/2009	
	6k	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	Syracuse University		Private	2007/2009	
	6l	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	Penn State University		Public	2007/2009	
	6m	University presidential rhetoric and the 2008–2009 economic crisis	2010	USA	Stanford University		Private	2007/2009	
7	7	The financial health of Australian universities: policy implications in a changing environment	2019	Australia	The paper looked at 39 Australian government-funded public universities. These universities are all public higher education institutions in Australia that are included in the government's annual financial reports.	39	Public	2007/2009	Irvine & Ryan (2019)
8	8	Leadership lessons from administrators, faculty, and students during the COVID-19 pandemic	2021	USA	College of Pharmacy at the University of Tennessee Health Science Center	1	Public	COVID-19	Chisholm-Burns et al. (2021)
9	9	Rebooting Irish higher education: policy challenges for challenging times	2014	Ireland	The article generally addresses the measures taken by the country's higher education system as a whole, without specifying individual actions by HEI.	39	Public	2007/2009	Hazelkorn (2014)

(continues)

Annex II – List of articles and cases

No.	Case	Article title	Year	Country	HEI	Qty.	Nature	Economic crisis	Reference
10	10	Out of the Frying Pan: Into the Fire of Post-Global Financial Crisis (GFC) University Management	2013	Australia	The article does not specifically mention which HEIs were analyzed. It addresses the general context of Australian universities.		Public	2007/2009	Galbraith (2013)
11	11	Leadership strategies for a higher education sector in flux	2020	Australia	The article does not specifically mention which HEIs were analyzed. It presents a general discussion of the Australian university sector, with a focus on leadership strategies and challenges faced during the COVID-19 pandemic.		Public	COVID-19	Bebbington (2021)
12	12	Australian universities in a pandemic world: Transforming a broken business model?	2020	Australia	The article does not specifically mention which HEIs were analyzed. It generally addresses the Australian university system and its characteristics during the COVID-19 pandemic.		Public	COVID-19	Parker (2020)
13	13a	A Comparative analysis of public and private universities in the United States using data envelopment analysis models	2020	USA	The article does not mention by name the HEIs that were analyzed.	265	Public	2007/2009	Malhotra et al. (2020)
	13b	A Comparative analysis of public and private universities in the United States using data envelopment analysis models	2020	USA	The article does not mention by name the HEIs that were analyzed.	260	Private	2007/2009	
14	14	Approaching effects of the economic crisis on university efficiency: A comparative study of Germany and Italy	2017	Germany and Italy	The article analyzed 133 public universities, 73 public universities in Germany and 60 public universities in Italy.	133	Public	2007/2009	Lehmann et al. (2018)
15	15	Revenue Diversification in Public Higher Education: Comparing the University and Polytechnic Sectors	2014	Portugal	The study was carried out with a panel of 30 Portuguese public institutions, 15 universities and 15 polytechnic institutes, covering the period from 2003 to 2009.	30	Public	2007/2009	Teixeira et al. (2014)
16	16	The Changing Finances of Public Higher Education Organizations: Diversity, Change, and Discontinuity	2016	USA	The article mentions that 516 four-year public higher education institutions in the United States were analyzed. These institutions were selected based on the 2010 Carnegie Classification, including universities classified as Research, Doctoral, Master's and Baccalaureate institutions. In addition, these institutions participated or applied for participation in the federal student financial aid program.	516	Public	The decline in state funding for these institutions over the last few decades, especially between 1986 and 2010.	Barringer (2016)
17	17	The dialectical development of "storytelling" learning organizations: A case study of a public research university	2017	USA	Not mentioned (single HEI).	1	Public	The financial crisis was attributed to a substantial drop in government revenue due to the decline in oil and gas prices from 2015 onwards.	Hillon & Boje (2017)
18	18	The impact of the economic crisis on the (in)efficiency of public Higher Education institutions in Southern Europe: The case of Spanish universities	2019	Spain	The article does not explicitly mention the names of the 44 Higher Education Institutions (HEIs) analyzed.	44	Public	2007/2009	Martínez-Campillo & Fernández-Santos (2019)
19	19	Universities' attractiveness to students: The Darwinism effect	2018	Italy	The study does not explicitly mention the names of the HEIs analyzed.	75	Public/Private	2007/2009	Cattaneo et al. (2018)
20	20	Universities in Crisis	2014	USA, United Kingdom, Canada and several European countries, such as Germany, Spain, Ireland and the Nordic countries.	The article does not specifically mention which HEIs were analyzed.			2007/2009	Christopherson et al. (2014)
21	21	Declining State Funding and Efficiency Effects on Public Higher Education: Government Really Does Matter	2016	USA	The article does not name the HEIs analyzed. However, it reports that the sample includes 378 public universities in the United States, including those that offer undergraduate and graduate education.	378	Public	2007/2009	Sav (2016)
22	22	Descriptive Analysis of benchmarking in Respect to SMART/UNI-Q Systems' Intellectual Integrations within the European Higher Education Area	2020	The research includes data from universities in Austria, the Czech Republic, Germany, Kazakhstan, Kyrgyzstan, Romania, the Russian Federation, Slovakia and Spain.	The article does not explicitly mention the names of the HEIs analyzed.		Public/Private	COVID-19	Sibgatullina-Denis et al. (2020)
23	23	Efficiency Evaluations of U.S. Public Higher Education and Effects of State Funding and Pell Grants: Panel Data Estimates Using Two Stage Data Envelopment Analysis, 2004-2013 Academic Years	2017	USA	The article mentions that the analysis included research universities, comprehensive universities and colleges, and associate level colleges. The sample consisted of 144 research universities, 201 comprehensive universities and colleges, 313 associate I colleges, and 340 associate II colleges, as classified by the IPEDS (Integrated Postsecondary Education Data System).	998	Public	2007/2009	Sav (2017)
24	24	Responding to regulatory jolts in the English higher education sector	2016	England	The article does not specifically mention which HEIs were analyzed.		Public	2007/2009	Pederzini (2016)
25	25a	Responses of American Research Universities to Issues Posed by the Changing Environment of Higher Education	1996	USA	The article does not mention specifically which Higher Education Institutions (HEIs) were analyzed. However, it does report that the study was conducted with members of the Association of American Universities (AAU), covering 31 public and 28 private universities.	31	Public	1990-1991 economic recession	Schmidtlein & Taylor (1996)
	25b	Responses of American Research Universities to Issues Posed by the Changing Environment of Higher Education	1996	USA	The article does not mention specifically which Higher Education Institutions (HEIs) were analyzed. However, it does report that the study was conducted with members of the Association of American Universities (AAU), covering 31 public and 28 private universities.	28	Private	1990-1991 economic recession	
26	26	Simulations of Technology-induced and Crisis-led Stochastic and Chaotic Fluctuations in Higher Education Processes: A Model and a Case Study for Performance and Expected Employment	2015	Türkiye	The article does not specifically mention which Higher Education Institutions (HEIs) were analyzed. It refers to the Turkish higher education system as a whole.		Public/Private	2007/2009	Kara (2015)
27	27a	Structural reforms and business ethos in universities under Estonia's post-2008 austerity regime	2020	Estonia	University of Tartu	1	Public	2007/2009	Aidnik (2020)
	27b	Structural reforms and business ethos in universities under Estonia's post-2008 austerity regime	2020	Estonia	University of Tallinn	1	Public	2007/2009	
	27c	Structural reforms and business ethos in universities under Estonia's post-2008 austerity regime	2020	Estonia	Tallinn University of Technology	1	Public	2007/2009	
28	28a	The Hope Fulfilled? Measuring Research Performance of Universities in the Economic Crisis	2022	USA	Emory University	1	Private	2007/2009	Zhang et al. (2022)
	28b	The Hope Fulfilled? Measuring Research Performance of Universities in the Economic Crisis	2022	USA	Georgia State University	1	Public	2007/2009	
	28c	The Hope Fulfilled? Measuring Research Performance of Universities in the Economic Crisis	2022	USA	Georgia Institute of Technology (Georgia Tech)	1	Public	2007/2009	
29	29	The System Crisis 2020: The End of Neoliberal Higher Education in the UK?	2019	United Kingdom	The article does not specifically mention which HEIs were analyzed.		Public/Private	2007/2009	Rudd & O'Brien (2019)
29	**52**	-	-	-		**2991**	-	-	-

Note: Articles 5, 20, 22, and 26 were not included in the analysis. Articles 20 and 22 were excluded due to the inclusion of several countries located in different economic regimes, without individualizing the data, so it was not possible to classify each HEI by economic regime. Articles 5 and 26 were excluded because they included a single country, each classified in different economic regimes, which did not meet the criterion of a minimum frequency of two empirical cases per configuration. Thus, the data analysis covered 25 articles, 48 cases, and 2,987 HEIs.