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HIGHER EDUCATION INSTITUTIONS IN AN ERA OF ECONOMIC CRISES: A SYSTEMATIC REVIEW OF RESOURCES AND CAPACITIES

JULIO CESAR TEIXEIRA
UNIVERSIDADE NOVE DE JULHO (UNINOVE)

LEONARDO VILS
UNIVERSIDADE NOVE DE JULHO (UNINOVE)

EMERSON ANTONIO MACCARI
UNIVERSIDADE NOVE DE JULHO (UNINOVE)

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1. INTRODUCTION

The occurrence of catastrophes around the world is nothing new. However, a differentiation must be made between those that affect a delimited geographic area and do not have long-term effects, such as a terrorist attack (Zeng et al., 2005), and economic and pandemic crises, with the production of long-lasting and whose effects are felt by practically everyone. Since 1970, no less than 18 economic crises have been reported by the Organization for Economic Co-operation and Development – ODCE (Euroframe, 2008).

Contextually to the economic crises, the 2008 crisis, which began in the USA, developed with considerable speed (Kotz, 2009), as well as impacting the non-financial sector of the world economy, causing recession in many regions of the planet (Pattnaik et al., 2020). On the other hand, the COVID-19 pandemic that occurred in the 2020-2021 biennium generated a severe international economic crisis (Zhang et al., 2020), interrupting the recovery movement from the 2007-2008 recession, which had been taking shape in a consistent (Manuel & Herron, 2020). Its damage has not been fully measured (Sharma et al., 2020). In addition, organizations must reinvent themselves to survive, as consumer habits and business practices are changing on a large scale, especially in uncertain and volatile periods (He & Harris, 2020).

From the resource-based view (RBV), organizations must manage their resources and capabilities effectively to face challenging external economic conditions (Barney, 1991). According to Backman and Kohlhase (2020), companies' resilience is induced by their internal resources and through the improvement of their management (capabilities) (Naidoo, 2010). Therefore, the RBV appears to be a management strategy theory capable of contributing to organizations facing economic crises.

In Wernerfelt's (1984) understanding, the company's RBV presupposes that its resources are heterogeneous, translating into performance differences so that different organizations respond to crises better than others. Thus, the RBV can explain organizations' performance due to their varied resources and capabilities (Barney, 1991; Wernerfelt, 1984). Conversely, enterprises with resources inferior to the need to face crises will be forced to leave the market, and only those with the best use of these will remain (Arikan et al., 2020).

Given the above, considering the occurrence of global economic crises that affect the survival of higher education institutions (HEIs), which have diversified resources and capabilities, this study proposes the following research problem: What are the resources and capabilities used by HEIs in facing economic crises, based on international scientific literature? Therefore, the general objective of this study is To specify, based on international scientific literature, the resources and capabilities HEIs use in facing economic crises. To answer this question, the study systematically collects all the organizational characteristics of HEIs in the form of resources and capabilities and interprets them from the perspective of the RBV.

Regarding the method used to answer this research question, a systematic literature review (RSL) was developed to obtain an overview of international scientific production, without time limits, of how HEIs have faced economic crises to ensure their survival. RSL was chosen because it can overcome the weaknesses that arise from a narrative review (Tranfield et al., 2003) and an expert review with ad hoc literature selection (Kitchenham et al., 2009). The originality of the research consists of verifying the internal resources used by HEIs, verifying those most used for the survival of these institutions in times of economic crises, and pointing out future research.

The remainder of this article is structured as follows: Section 2 discusses a comprehensive review of the literature regarding RBV in the context of organizations' responses to economic crises. Section 3 reports the method used to conduct the research. Section 4 presents the results found. Section 5 analyzes the findings, and finally, section 6 outlines the conclusions, limitations of the study, and future research.

2. THEORETICAL FRAMEWORK

2.1 Recent global economic and financial crises

The world has been experiencing a particular period of recent economic crises. The subprime crisis began in the USA in 2007, leading to a global economic recession. This crisis reduced consumption, increased unemployment, and dropped economic activity in several countries (Xu et al., 2022).

Likewise, the global scenario resulting from the COVID-19 pandemic is one of economic depression, in which countries are forced to deal with a recession, as has happened in other pandemics, such as SARS, Spanish flu, etc. (Garrett 2007; Lee & McKibbin 2004; Qiu et al. 2018). The effects of the COVID-19 pandemic have affected global demand, supply chains, labor supply, and foreign trade, among other areas (Oravský et al., 2020).

Considering the frequency of economic crises, there is a gap in the literature regarding the survival of companies in periods of crisis since few studies have been developed recently (Alvarez & Görg, 2009; Alvarez & Grg, 2011; Bhattacharjee et al ., 2009; Naidoo, 2010; Tsoukas, 2011); However, regarding the factors that interfere with the survival of companies, Chatzoudes et al. (2021), carried out a brief literature review, as shown in Figure 1.

Figure 1 - Brief literature review

Article	**Method**	**Findings**
Cucculelli & Peruzzi (2020)	Empirical analysis	Post-crisis company survival findings: reduced vertical integration, increased intangible investments, and decreased complexity.
Esteve-Pérez et al. (2018)	Empirical analysis	Firm productivity is associated with lower risk in the “mature” stage of the industry life cycle, when competition is primarily driven by efficiency. In contrast, firm age does not play a significant role in firm survival.
Yang et al. (2017	Empirical analysis	Interconnected internal resources have a significant impact on the survival of companies.
Delmar et al. (2013).	Longitudinal study	Profitability strengthens survival, and growth negatively affects the company's survival.
Tsoukas (2011)	Empirical analysis	Financial development plays a vital role in influencing the survival of the company.
Alvarez & Görg (2011)	Empirical analysis	Multinationals are more likely to exit, contributing to employment contraction during the crisis, but surviving foreign firms experience lower employment reductions than domestic firms.
Naidoo (2010)	Longitudinal study	Competitive advantage has a positive impact on the probability of survival.
Bhattacharjee (2009)	Empirical study	Macroeconomic instability increases the risk of bankruptcy and reduces the risk of acquisition.
Alvarez & Görg (2009)	Empirical analysis	The presence of multinationals has a positive effect on the survival of industries.

Source: Chatzoudes, D., Chatzoglou, P., & Diamantidis, A. (2021). Examining the impact of firm-specific and environmental-specific factors on short and long-term firm survival during an economic crisis. EuroMed Journal of Business.

Given the lack of recent studies on how organizations survive economic crises, the situation worsens for HEIs, whose type of organization faces specific challenges in resource management, such as financial limitations, human resources management, and technological adaptation (Komara, 2020; Shukla, 2023; Slatvinskyi & Tsymbal-Slatvinska, 2023).

In the 2020 Special Virtual Edition of the Strategic Management Journal, a study (Wenzel et al., 2020) analyzed the main articles published in the journals of the Strategic Management Society and identified four types of strategic responses by organizations to crises: containment, perseverance, innovation, and exit. Containment is related to reducing costs, assets, products, product lines, and expenses in general (Pearce & Robbins, 1993, p. 614). The perseverance strategy concerns measures that aim to maintain the activities of organizations and mitigate the effects caused by the crisis (Wenzel, 2015). The response identified as innovation is associated with the opportunity provided by the crisis for strategic renewal (Reymen et al., 2015). The increase in uncertainty during a crisis makes it possible to explore new alternatives, expand activities to other sectors, and search for new ways of doing business (Sarasvathy, 2001). Finally, exit represents the interruption of an organization's activities in response to the crisis (Burgelman, 1996; Argyres et al., 2015). However, the exit may not be an inevitable imposition of uncertain and volatile environments. Conversely, exit may represent a strategic response to the crisis (Wan et al., 2015). The decision to exit can make previously committed resources available for creating new businesses (Carnahan, 2017).

2.2 Resource-based view

The RBV represented a change in strategy formulation by adopting an internal approach, to the detriment of an external focus, as it began to consider organizations as an exclusive set of internal resources sufficient to develop the strategy to compete in the market (Penrose, 1959; Wernerfelt, 1984). According to Penrose (1959), companies with access to resources over their competitors would obtain superior results. From this perspective, Barney (1991) indicated that idle resources are necessary for a competitive advantage. The combination of these features can become challenging to imitate, which adds the attributes of value and rarity. Thus, this combination becomes crucial for achieving specific objectives (Paeleman & Vanacker, 2015; Vanacker et al., 2017).

In this sense, resources are classified as financial, physical, human, and organizational. Financial resources include own resources (partners and shareholders) and third-party resources (debts). Physical resources include equipment, facilities, geographic location, etc. Human resources are made up of training, experience, discernment, intelligence, and relationships of employees. Finally, organizational resources include the formal reporting structure, its formal and informal systems of planning, control, and coordination systems, its culture and reputation, and informal relationships between groups within the company and between the company and other actors in the environment. External (Barney, 1991; Barney & Hersterly, 2017, p. 67).

Despite this, several authors have demonstrated that one of the elements implicit in the performance of organizations is related to the ability to adapt and apply their resources (Helfat, 2000; Teece et al., 1997; Zollo & Winter, 2002; Zott, 2003). Therefore, an understanding is configured that involves internal factors (Bourgeois, 1981) and their adjustment to environmental changes (Combs et al., 2011; Kortmann et al., 2014). In this sense, Brush and Artz (1999) pointed out that aspects of the situation, e.g., information asymmetries, affect the resources that generate competitive advantage, modulating their effectiveness. In this aspect, knowledge about the dynamic capabilities of organizations becomes relevant.

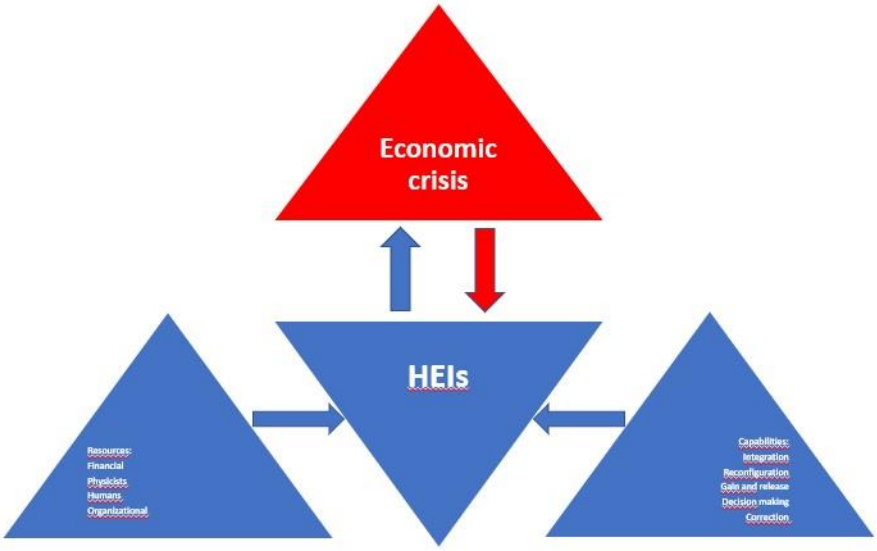
Dynamic capabilities are characterized as organizational processes that integrate, reconfigure, obtain, and release resources to match or generate changes in the market. They are necessary but not sufficient conditions for obtaining competitive advantages, as their value lies

in the configurations they create and not in themselves. They can be classified into integration, reconfiguration, earning, releasing, strategic decision-making, and correction capabilities. Integration capabilities combine multiple resources to develop products or services. Reconfiguration capabilities change companies' resource base, including copying, transferring, and recombining resources. Gaining and releasing capabilities implies the acquisition of new resources and the elimination of obsolete ones. Strategic decision-making capabilities, in turn, concern routines for strategic decision-making, which reconnect various parts of the company. Finally, correction capabilities correct the direction of resource combinations due to market opportunities (Eisenhardt & Martin, 2000).

Therefore, the literature continues to demonstrate the need for further studies on the use of resources and capabilities under the control of organizations from the perspective of the RBV and their adaptation in the face of economic crises.

This study uses the RBV to analyze the resources and capabilities that help HEIs face economic crises, as illustrated in Figure 2.

Figure 2 - Resource-capabilities structure



The following section describes the method and procedures we seek to answer the research problem in detail.

3. METHOD

This section presents the author's method, procedures, and techniques for answering the research problem. It describes the criteria for selecting articles, the instruments for collecting data, and how the results were analyzed.

3.1 Research Design

The Systematic Literature Review (SLR) method aims to identify, synthesize, and evaluate the existence of scientific works on a given topic (Okoli, 2019). It reduces the researcher's interpretation bias and provides greater procedure rigor (Kitchenham & Charters, 2007). According to Palmatier et al. (2018), systematic literature reviews can be classified into

three distinct categories, namely: (1) domain-based, (2) theory-based, and (3) method-based. Therefore, the present research can be considered to belong to the domain-based category. In this RSL, the PRISMA protocol (Moher et al., 2009) was used as a form of guidance in its execution.

In such a way, this study portrays the existing literature up to November 2023 on the topic mentioned, summarizing and examining its specificities and identifying the procedures adopted in its preparation to allow its replication in future studies. The application three stages conducted this systematic review (Tranfield et al., 2003), namely: 1) review planning, where the research question and protocol were defined; 2) operationalization, in which search procedures were carried out in the databases defined in the protocol; uploading the file, in BibTeX format extracted from the consulted databases, onto the Rayyan online platform; checking duplicate articles; analysis of abstracts for preliminary acceptance or not of the article; full reading of the articles selected for acceptance purposes based on the inclusion and exclusion criteria; 3) dissemination of results, which consists of communicating the characteristics and findings of the articles analyzed.

3.2 Data collection and selection procedures

This study topic describes the research protocol to make the research transparent and meet the replicability criteria. The research protocol presented in Figure 3 covers the search criteria for articles according to the following items: database, publication types, language, period, category, search field, and search terms. Furthermore, it also determines the parameters for selecting the studies that will make up the RSL based on the inclusion and exclusion criteria.

To define the search terms, the keywords from the April 2020 Virtual Special Edition of the Strategic Management Journal, “Strategic responses to the crisis,” were previously read.

Figure 3 - Research Protocol

Item	**Description**
Database	Web of Science e Scopus.
Publication Type	Peer-reviewed articles. Early access.
Language	English.
Period	No delimitation.
Category	Business; Business Finance; Decision Science; Economics; Economics and Finance; Education Educational Research; Management; Management and Accounting; Multidisciplinary Sciences; Public Administration; Social Sciences and Social Sciences Interdisciplinary.
Search field	Title, abstract, and keywords.
String	(("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*" OR "HEI" OR "HEIs" OR "universit*") AND ("sustainability" OR "organizational resilience" OR "organizational response*" OR "institutional response*" OR "responsiveness" OR "management" OR

	"organizational effectiveness" OR "institutional effectiveness" OR "strateg*" OR "organizational decline")
Inclusion criteria	Articles in English; studies on private and public capital HEIs; articles that research in the context of facing economic crises by HEIs; articles that used quantitative, qualitative, and mixed methods.
Exclusion criteria	Articles whose focus is research in the environmental and sustainability areas. Studies developed in the financial sector. Book chapters, teaching cases, conference papers, and articles published in a language other than English.

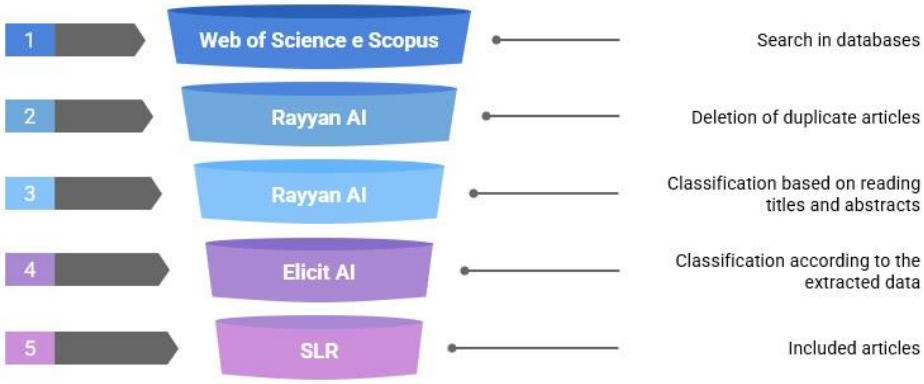
The use of the Web of Science and Scopus databases is justified because they are widely used for scientific research and offer comprehensive coverage across disciplines. They are appropriate resources for identifying high-quality journals and evaluating the impact of research (Bartold, 2016; Schotten et al., 2017; Li et al., 2020; Baas et al., 2020; Birkle et al., 2020).

As for the RSL management tool, the online artificial intelligence (AI) platform Rayyan was chosen due to its effectiveness in identifying essential studies in the initial phase of the screening process, its user-friendly interface, and text mining functionality that reduces work of filtering multiple summaries (Hanna et al., 2017). Using this platform speeds up the preparation of the RSL, facilitating collaboration between reviewers and the organization in synthesizing results (Namita et al., 2023). This tool provides general effectiveness for the article selection process.

For the screening phase, the AI tool Elicit (Elicit, 2024) was used to extract the following information: methodological approach, study design, research question, primary objective, main theories addressed, research contributions, gaps identified, and suggestions for future research. After reading this information, the article was included or excluded from the reading phase. AI tools improve the efficiency and accuracy of RSLs, assisting in various phases of the review process, such as literature search, screening, data extraction, and summarization (Kung, 2023; van Dijk et al., 2023; Burns et al., 2024; Fabiano et al., 2024;). Furthermore, it has been demonstrated that AI tools such as Elicit demonstrated performance comparable to that of human review, with high accuracy in screening titles and abstracts. Finally, such tools can reduce the time spent screening articles, with an accuracy of around 92% to 99% (Smela-Lipińska et al., 2019a, 2019b; Smela et al., 2020; Burns et al., 2024).

Figure 4 shows the path to search and select the articles that comprise this systematic review.

Figure 4 – Route for selecting articles



The inclusion and exclusion criteria for the final selection of articles, aiming to provide greater clarity, were based on whether the article was about strategies for confronting economic or financial crises by HEIs.

3.3 Article analysis procedures

After the final selection of articles, which took place in April 2024, the necessary elements were extracted with the help of the AI tool Elicit to create the binding matrix (Mazzon, 1981), such as the year of publication, country of the study, approach used, and results, among others, to facilitate a structural visualization of the articles and facilitate evaluation by third parties (Telles, 2001).

Data from the selected articles was also uploaded to the Vosviewer software, version 1.6.20 (2023), to analyze the co-occurrence of keywords. The choice to use this software is because it is considered an efficient tool for bibliometric analysis and data visualization in various research domains. Added to this is the use of methods such as co-citation, bibliographic coupling, and text mining to generate insightful visualizations (Peixe & Pinto, 2022). Moreover, it produces maps that are easy to interpret and promote exploratory analyses (van Eck & Waltman, 2009; Kirby, 2023).

Subsequently, the strategic responses of HEIs to face economic crises, found in the articles that make up this RSL, were classified according to the categories defined by Wenzel et al. (2020): containment, perseverance, innovation, and exit.

Finally, in conclusion, from the perspective of the RBV, the resources and capabilities used by HEIs in coping with economic or financial crises were classified into four categories: financial, physical, human, and organizational resources. At the same time, capabilities were classified into five categories: integration capabilities, reconfiguration capabilities, earning and releasing capabilities, strategic decision-making capabilities, and correction capabilities.

To identify the resources and capabilities HEIs used during economic crises, the topic modeling technique consisted of a text mining technique to extract semantic topics from collections of documents (Silva et al., 2021). The most commonly used method for topic modeling is the algorithm called 'Latent Dirichlet Allocation' (LDA), although other approaches exist (Alghamdi & Alfalqi, 2015; Ray et al., 2019). This technique is beneficial for use in RSLs (Grisales A. et al., 2023).

This study used the Large Language Model (LLM) tool, specifically Chat GPT 4 omni (OpenAI, 2024), to apply the topic modeling technique. LLM improves topic modeling tasks in academic studies, favoring more linguistically valuable document representations, collecting structural characteristics, and improving topic coherence (Haoli et al., 2018). Recent studies showed that Chat GPT outperformed traditional methods such as LDA, producing topics with better human-friendly interpretation (Pham et al., 2023; Rijcken et al., 2023). Furthermore, GPT Chat can perform more complex tasks that require more profound understanding, such as recognizing and analyzing discursive relationships (Fan et al., 2023). The prompts used to extract topics and classify them are detailed in Appendix 1.

Figure 5 demonstrates the four approaches to the analyses conducted in this RSL.

Figure 5 – Analyzes carried out in this RSL

Nº	**Approach**	**Type of analysis**
1	Tie matrix	Structural (Telles, 2001).
2	Keyword co-occurrence network	Establish possible connections between terms and subjects, creating a knowledge map (van Eck & Waltman, 2009; Kirby, 2023).
3	Organizations' strategic responses to crises	Containment, perseverance, innovation, and exit (Wenzel et al., 2020).

4	Resource-based view	Dynamic resources and capabilities (Barney, 1991; Barney & Hersterly, 2017, p. 67; Eisenhardt & Martin, 2000).

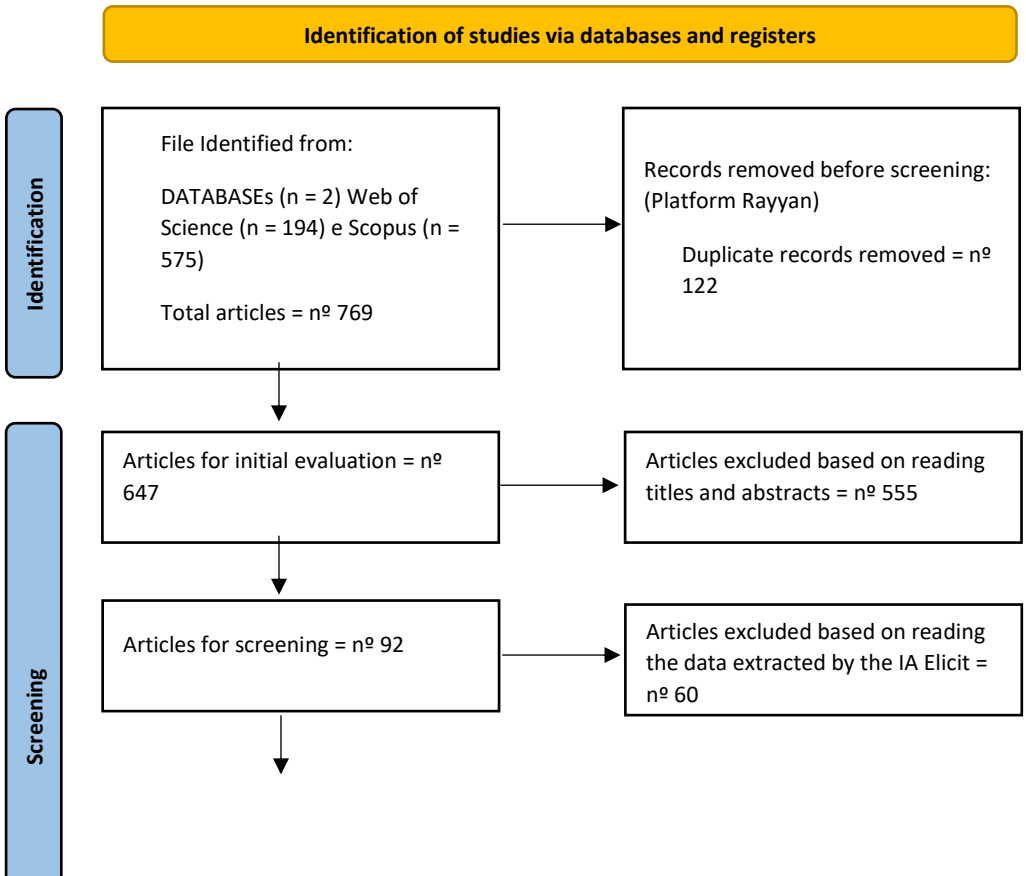
4. RESULTS

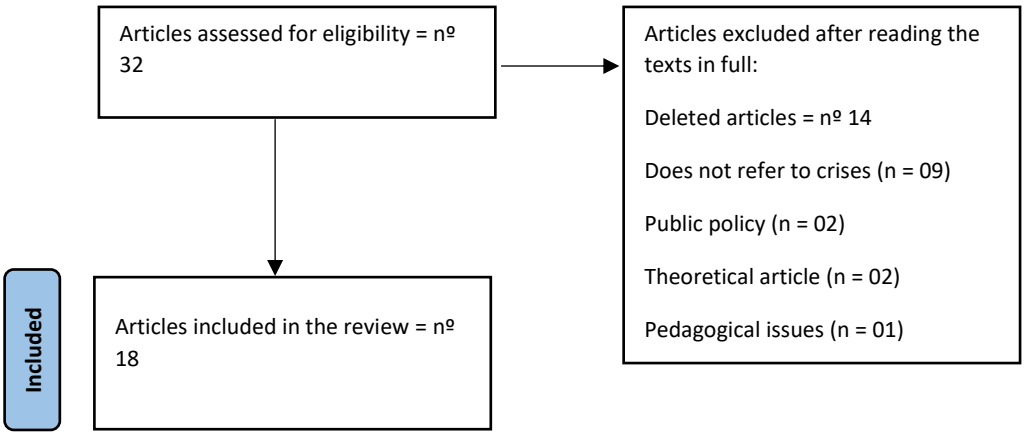
The results section describes an overview of the articles, pointing out and displaying the selection flow of the studies surveyed, the number of publications per year, and the classification of articles by citation. Next, the keyword co-occurrence map and a brief analysis are highlighted. Continuing, the classification of articles is presented by the strategic responses of HEIs to crises and, finally, the classification of internal resources used by HEIs in facing economic crises in light of the RBV.

4.1 Article overview

Meeting the search criteria, 194 articles were initially identified in the Web of Science database and 575 articles in the Scopus database, totaling 769 articles selected. Subsequently, duplicate articles were identified using the AI Rayyan online platform, totaling 122. Therefore, 647 articles remained for preliminary analysis based on reading their titles and abstracts. After reading the respective titles and abstracts, 555 articles were excluded as they did not comply with the purpose of the systematic review, leaving 92 studies for screening. In the screening phase, 60 articles were eliminated after examining the information extracted by the AI Elicit tool. In this way, 32 articles went to the eligibility phase for full reading. After reading these articles, 14 of them were eliminated for the reasons that they were not in the context of confronting economic crises by HEIs (09), discussion of public policies (02), eminently theoretical articles (02), and discussion of pedagogical issues (01). Figure 6 shows the flow diagram for selecting articles that comprise this RSL.

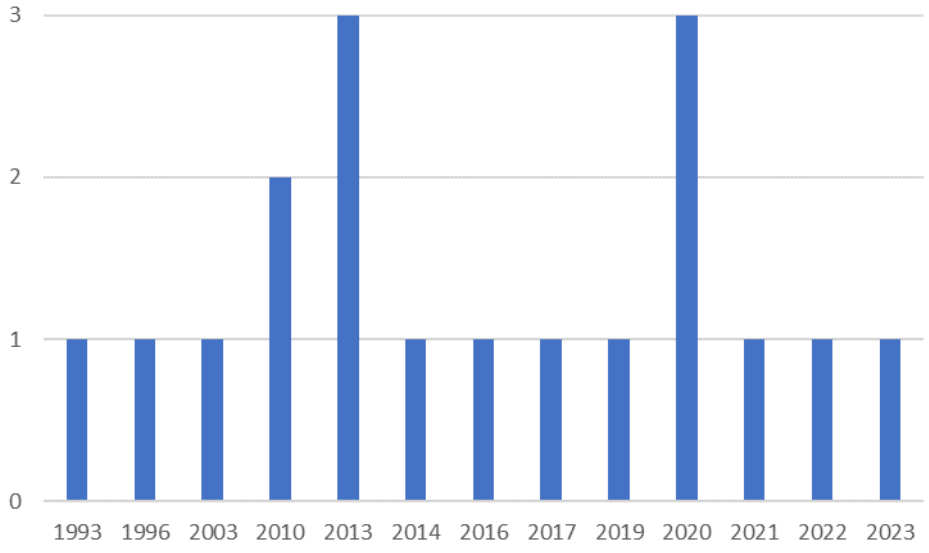
Figure 6 – Flow diagram for selecting RSL articles





Below are the years in which publications on the topic were published, according to the survey. Figure 7 shows that in 2010, 2013, and 2020, there were 2, 3, and, again, three publications, respectively, and in all other years, there was only one publication. The years with more than one publication coincide with the subsequent or immediate period referring to the two biggest crises recently: the 2007-2008 crisis and the COVID-19 pandemic. This graphic representation confirms the lack of studies on coping with economic or financial crises by HEIs.

Figure 7 – Scientific production per year



Continuing with the results obtained according to the Tying Matrix (Mazzon, 1981), Table 1 shows the articles in order of citation in the Scopus and Web of Science databases.

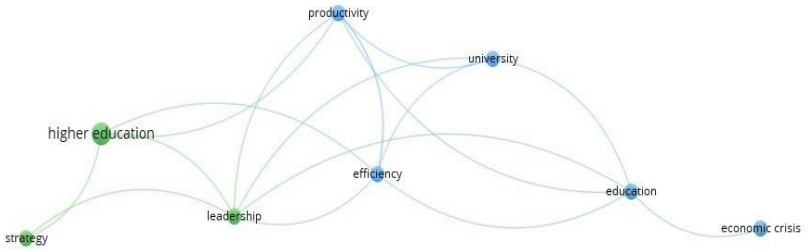
Table 1 – Articles in order of citation

Article	Authors	Journal	Year	Scopus	WoS
A diametric forces model of strategic change: Assessing the antecedents and consequences of restructuring in the higher education industry	Zajac, E.J. & Kraatz, MS.	Strategic Management Journal	1993	200	168
Managing university culture: an analysis of the relationship between institutional culture and management approaches	Sporn, B.	Higher Education	1996	118	103
Leadership strategies for a higher education sector in flux	Bebbington, Warren.	Studies in Higher Education	2020	37	26
A Model of Strategic Change: Universities and Dynamic Capabilities	Navarro, J.R. & Gallardo, F.O.	Higher education policy	2003	35	-
Bringing the organization back in: Flexing structural responses to competing logics in budgeting	Lepori, Benedetto & Montauti, Martina.	Accounting, Organizations and Society	2020	33	24
Australian universities in a pandemic world: transforming a broken business model?	Parker, Lee D.	Journal of Accounting & Organizational Change	2020	32	22
Comparing university performance by legal status: a Malmquist-type index approach for the case of the Spanish higher education system	de la Torre, E.M.; Gómez-Sancho J.-M. & Perez-Esparrells, C.	Tertiary Education and Management	2017	31	-
Performance management practices, employee attitudes and managed performance	Kagaari, J.; Munene, J.C. & Ntayi, J.M.	International Journal of Educational Management	2010	23	-
Rebooting Irish higher education: policy challenges for challenging times	Hazelkorn, Ellen.	Studies in Higher Education	2014	22	16
The financial health of Australian universities: policy implications in a changing environment	Irvine, Helen & Ryan, Christine.	Accounting, Auditing & Accountability Journal	2019	21	12
Financial Crisis Management in Higher Education: Responses by 20 Private Colleges and Universities to the 2007–2009 Financial Crisis	Dorantes, A.R. & Low, J.R.	Journal of Education Finance	2016	8	-
University presidential rhetoric and the 2008–2009 economic crisis	Vitullo, E. & Johnson, J.	Journal of Higher Education Policy and Management	2010	7	-
Knowledge-oriented leadership and organizational performance: modelling the mediating role of service innovation, knowledge sharing quality	Sahibzada, Umar Farooq; Janjua, Nadia Aslam; Muavia, Muhammad & Aamir, Suhaib	Journal of Organizational Effectiveness: People and Performance	2023	6	7
Public no more universities: subsidy to self-reliance	Fethke, G.C. & Policano, A.J.	Journal of Management Development	2013	6	-
Leadership lessons from administrators, faculty, and students during the COVID-19 pandemic	Chisholm-Burns, Marie A.; Brandon, Hope Howard & Spivey, Christina A.	Currents in Pharmacy Teaching and Learning	2021	5	1
Out of the Frying Pan: Into the Fire of Post-Global Financial Crisis (GFC) University Management	Galbraith, Peter.	Higher Education Policy	2013	5	3
Catalyzing resource recombination in higher education through potential building and value realizing capabilities	Muneeb, Dilnaz; Aslam, Haris; Abdalla, Shahira; Hayat, Naeem & Ahmad, Syed Zamberi.	Journal of Asia Business Studies	2022	1	1
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	Kabouridis, G.C.	World Transactions on Engineering and Technology Education	2013	-	-

4.2 Keyword co-occurrence map

Keyword co-occurrence map analysis visually represents the relationships between keywords based on their frequency in selected articles, helping to identify connections and semantic patterns in the research literature (Bornmann et al., 2018). Based on this concept, Figure 8 represents the connection between the keywords of the articles that make up this RSL.

Figure 8 – Keyword co-occurrence map



When analyzing the map, it is possible to identify two groupings or clusters. The first is green and contains the words ‘higher education,’ ‘leadership,’ and ‘strategy.’ The possible interpretation is the focus on aspects linked to management and leadership within the context of higher education, including strategies to improve these areas. The second blue cluster is formed by the terms ‘university,’ ‘education,’ ‘economic crisis,’ ‘efficiency’, and ‘productivity.’ This grouping is related to efficiency and productivity issues in higher education institutions in the context of economic crises. Finally, analyzing the connection between the two groupings, it can be inferred that leadership and management strategies in higher education are directly linked to discussions about efficiency and productivity in universities in the context of economic crises, revealing a thematic integration.

4.3 Organizations’ strategic responses to crises

The authors carefully analyzed the 18 articles that remained after the selection process, classifying the actions that HEIs implemented to face economic crises in the last 30 years according to the categories proposed by Wenzel, Stanske, and Lieberman, 2020: containment, perseverance, innovation, and exit. To better understand the results presented, it should be considered that the same article may contain several institutions and that, in turn, each institution may have presented a different answer; and even more so, that the same institution may have used different responses, combining, for example, an action evaluated as perseverance with another classified as innovation. Figure 9 summarizes all responses classified into the categories mentioned per article.

Figure 9 – Strategic responses of HEIs in facing economic crises

Category	Articles
Containment	Dorantes & Low (2016); Kabouridis (2013); Kagaari et al. (2010); de la Torre et al. (2017); Vitullo & Johnson (2010); Zajac & Kraatz (1993); Sporn (1996); Lepori at al. (2020); Irvine & Ryan (2019); Chisholm-Burns et al. (2021); Hazelkorn (2014); Galbraith (2013); Bebbington (2021); Parker (2020), Navarro & Gallardo (2003).
Perseverance	Dorantes & Low (2016); Kabouridis (2013); Kagaari et al. (2010); Sahibzada et al. (2024); Muneeb et al. (2023); Zajac & Kraatz (1993); Sporn (1996); Lepori at al. (2020); Irvine & Ryan (2019); Chisholm-Burns et al. (2021); Hazelkorn (2014); Galbraith (2013); Bebbington (2021); Parker (2020), Navarro & Gallardo (2003).
Innovation	Dorantes & Low (2016); Fethke & Policano (2013); Kabouridis (2013); Kagaari et al. (2010); Sahibzada et al. (2024); Muneeb et al. (2023); Zajac & Kraatz (1993); Sporn (1996); Lepori at al. (2020); Irvine & Ryan (2019); Chisholm-Burns et al. (2021); Hazelkorn (2014); Galbraith (2013); Bebbington (2021); Parker (2020), Navarro & Gallardo (2003).

The “Exit” category, understood as the total closure of activities in the higher education segment, was not identified in any of the articles analyzed. Mergers were identified between HEIs within the same economic group, as well as between departments. Thus, the article by Hazelkorn (2014) mentions the merger of smaller institutions into larger entities, but as activities continued as a whole of the economic group, this action was classified in the “Perseverance” category. Likewise, in the article by Galbraith (2013), the closure of programs and the merger of deficit departments with others are described, with the closure of specific academic units, however, the university's teaching activities were also maintained.

4.4 Resources and capabilities used by HEIs to face economic crises

The articles were processed individually according to prompt 1 (Appendix 1) to extract topics representing resources and capabilities. In this way, all 18 articles selected in this RSL had their topics extracted. After this step, the resulting topics were placed in a single file for proper classification according to the categories indicated for both resources and capabilities, using prompt 2 (Appendix 1) for both. With the results of the classification in step 2, a table was created containing all the resources identified in the literature surveyed, with the topics and associated keywords, as well as the identification of the corresponding article. Figure 10 demonstrates this information.

Figure 10 – Identified resources, with associated topics and Keywords

Resource	Topics	Keywords	Article
Financial	Financial strategies and institutional responses	donations, financial aid, tuition income	Dorantes & Low (2016)
	Financial models and financing of higher education	tuition fees, government grants, research grants, donations	Fethke & Policano (2013)
	Financial stability and management	Budget cuts, grants, financial aid, grant funding, state appropriations, tuition fees	Vitullo & Johnson (2010)
	Financial vulnerability	financial health, vulnerability, expense control, financial sustainability, funding cuts	Irvine & Ryan (2019)
	Revenue diversification	revenue diversity, government funding, private financiamento, sources of income, domestic students, international students	Irvine & Ryan (2019)
Physical	Infrastructure and capital projects	capital projects, construction, infrastructure, physical expansion	Vitullo & Johnson (2010)
	Institutional resources and infrastructure	universities, institutes of technology, campus expansion, facilities	Hazelkorn (2014)
Humans	Human capital and academic staff	faculty, hiring, flexibility, research, teaching	de la Torre et al. (2017)
	Employment and workforce management	faculty hiring, firing, salary freezes, job security, hiring freezes, retraining	Vitullo & Johnson (2010)
Organizational	Resource Management and Cost-Saving Measures	payroll systems, administrative budgets	Dorantes & Low (2016)
	Organizational control and effectiveness	control, employee attitudes, effectiveness	Kagaari et al. (2010)
	Internal communication and transparency	transparency, communication messages, community engagement, mission, responsibility	Vitullo & Johnson (2010)
	Institutional culture and management approaches	university culture, organizational communication management, academic values	Sporn (1996)
	Governance	governance, bureaucratic, entrepreneurial, and political coordination	Navarro & Gallardo (2003)

Likewise, the categorized capabilities were organized in a table shown in Figure 11.

Figure 11 – Identified capabilities with associated topics and keywords

Capacity	Topics	Keyword	Article
Integration	Development of products and routines	curriculum design, pedagogical innovation, interdisciplinarity of collaboration	Fethke & Policano (2013)
	Strategic Planning and Flexibility	strategic management, flexibility, adaptation	Zajac & Kraatz (1993)
Reconfiguration	Recombination	resource recombination, innovation, strategic management	Muneeb et al. (2023)
	Structural Flexibility and Adaptation	structural flexibility, negotiation spaces, strategic plans	Lepori et al. (2020)
Gain and Release of Resources	Financial crisis management	crisis response strategies, financial management, adaptive strategies	Dorantes & Low (2016)
	Operational efficiency	operational efficiency, expense management, academic salaries	Irvine & Ryan (2019)
Strategic decision making	Leadership and Decision Making	leadership, strategy, practical action, long-term goals	Chisholm-Burns et al. (2021)
	Management strategies and decision-making	managerial strategies, decision-making, policies, managerialism	Galbraith (2013)
Correction	Institutional adaptation and flexibility	institutional flexibility, service provision, dynamic environment	Kagaari et al. (2010)
	Financial resilience	financial resilience, economic crises, mission delivery	Irvine & Ryan (2019)

5. DISCUSSION

The findings in this RSL revealed that HEIs have adopted different strategies to face economic crises, as described in the international scientific literature. Among the discoveries, we can mention the direct relationship between leadership and management strategies and discussions about efficiency and productivity in economic crises. Furthermore, the survey showed HEIs used three strategic responses to crises: containment, perseverance, and innovation. This research did not capture exit as a strategic solution in uncertain and volatile times. From the RBV's point of view, institutions used all categories of available resources, such as financial, physical, human, and organizational, to confront difficulties in the external environment. Moreover, evidence of dynamic integration capabilities, reconfiguration, gain and release of resources, strategic decision-making, and correction was found.

Regarding the thematic integration that emerged through applying the keyword co-occurrence map, the literature has demonstrated that leadership contributes to crisis management, strategic management approaches are critical for companies during crises, and leadership, knowledge management, and organizational learning produce considerable synergy for effective crisis management. (Varelas & Apostolopoulos, 2020; Buhagiar & Anand, 2021; Saeed et al., 2023). However, management education programs may not adequately prepare leaders for turbulent times (Hall & Rowland, 2016).

Regarding the strategic responses of HEIs to crises, the findings are in line with the literature on the subject, which demonstrates the combination of different strategies, represented by actions to resume relationships with interested parties, use of pricing mechanisms and compliance organizational (perseverance); application of short-term tactics, such as working capital management (containment); long-term strategies such as business model changes, crisis innovation that drives digitalization (innovation), however, may lack lasting digital transformation (Bhattacharyya & Thakre, 2021; Kozachenko et al., 2022; Brem et al., 2023), which the HEIs developed throughout the analyzed period. Ultimately, responses to crises require a balance between short-term survival and long-term sustainability (Dushnitsky et al., 2020).

As for the resources used, the HEIs used all categories: financial, physical, human, and organizational. This use aligns with the theory that organizations use different types of idle resources, with liquid resources playing a fundamental role in crisis management (Agusti et al., 2020). The topic 'Financial stability and management,' which is part of the financial resources category, is symptomatic as budgeting becomes more critical for planning and allocating resources but less important for evaluating performance in periods of crisis (Becker et al., 2016). Another highlight is human capital management, represented by the topics 'Human capital and academic staff' and 'Employment and workforce management,' an essential factor in resilience and organizational performance in challenging times (Pereira et al., 2020). The use of organizational resources that HEIs have made expressed by the topics 'Resource Management and Cost Saving Measures,' 'Organizational Control and Effectiveness,' 'Institutional Culture and Management Approaches,' and 'Governance,' is fundamental as companies focus on workforce sizing, knowledge management and the balance between control and autonomy, to achieve organizational agility (Nijssen & Paauwe, 2012).

The present study revealed the use of several categories of dynamic capabilities (DC) by HEIs during periods of crisis, such as the topics 'Financial crisis management' and 'Operational efficiency,' belonging to the 'Gain and Release of Resources' capability. Because exploratory capabilities focused on reducing expenses tend to contribute more to performance than exploratory capabilities (Jifri et al., 2023). The capabilities of ‘Integration’ and ‘Strategic decision-making’ also deserve mention, as the integration of resources and a proactive stance are essential in recognizing opportunities in challenging environments (Battisti & Deakins, 2017).

On the other hand, there are arguments that specific capabilities may become less effective or even harmful in turbulent times, such as the implementation of specific CDs, for example, marketing, innovation, and learning capabilities, which can have diverse impacts on the organization's performance, depending on the economic context. Furthermore, the effectiveness of DC depends on the size of the institution and the sector in which it operates (Grewal & Tansuhaj, 2001; Colombo et al., 2021; Rashid & Ratten, 2021; Jifri et al., 2023; Ledesma-Chaves & Arenas-Gaitán, 2023). Because of this, more studies are required regarding the effects of dynamic capabilities on the various organizational results in HEIs, especially in the context of economic crises.

6. CONCLUSION

This RSL investigated HEIs' coping with economic crises, examining how these institutions used their resources and dynamic capabilities to ensure survival. Aspects regarding the management of resources and capabilities were addressed from the perspective of the RBV, which resulted in discoveries for knowledge about the adaptation strategies of HEIs in turbulent periods.

The theoretical contribution lies in identifying and categorizing the dynamic resources and capabilities of HEIs applied during economic crises. This expands the understanding of organizational resilience in the higher education sector. The importance of strategic management of internal resources and dynamic capabilities for the adaptation and continuity of HEIs during economic uncertainty was highlighted. Such a contribution is fundamental to understanding effective management practices and institutional policies that these institutions can implement to improve adaptability to the external environment.

The practical implications guide managers and decision-makers in higher education. The findings suggest strategies for improving the management of financial, physical, human, and organizational resources and implementing policies that promote innovation and operational efficiency.

The limitations are the methodological restrictions inherent in a systematic literature review. They highlight areas for future research, such as expanding empirical studies on the practical application of dynamic capabilities and the use of different resources in different contexts, especially verifying how their various combinations affect the different organizational results within the scope of higher education.

The research highlights the importance of efficient and flexible strategic management for the survival of HEIs during uncertain and volatile times. The findings indicate possible paths for developing policies and practices that strengthen HEIs' capacity to face future economic challenges.

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APPENDIX 1

Prompt	Goal	Text
1	Extraction of topics representing resources and capabilities.	You are an expert in Natural Language Processing. The attached file contains identified topics from 18 different scientific articles. Considering the definitions of resources and capabilities below. Resources are defined as tangible and intangible assets that the company controls and can use to create and implement strategies. Examples of resources include a company's factories (tangible assets), its products (tangible assets), its reputation among customers (intangible assets), and the teamwork among its managers (intangible assets). Capabilities constitute a subset of a company's resources and are defined as tangible and intangible assets that allow the company to fully leverage other resources it controls. In other words, capabilities alone do not allow a company to create and implement its strategies, but they do allow it to use other resources to create and implement such strategies. Examples of capabilities might include a company's marketing competencies, its teamwork, and cooperation between management. Carry out a semantic analysis of the themes and group the themes. Create separate groups for resources and capabilities. For each group created, identify the associated themes, articles, and keywords. For each group created, write a brief contextualization. Be precise and concise. Use academic language.
2	Classification of topics according to resource and capability categories	You are an expert in Natural Language Processing. The attached file contains identified topics from 18 different scientific articles. Sort the topics found into features and capabilities. To classify resources, consider the following categories: - Financial resources: include all the money, from any source, that companies use to create and implement strategies. These financial resources include money from entrepreneurs, shareholders, creditors and banks, retained profits or the profit that a company previously made and invested in the business; - Physical resources: include all physical technology used by the company. They cover the company's facilities and equipment, its geographic location, and access to raw materials; - Human resources, which include training, experience, judgment, intelligence, relationships, and individual vision of a company's managers and employees; - Organizational resources, which are attributes of groups of people. They include the company's formal reporting structure, its formal and informal systems of planning, control, systems coordination, its culture and reputation, as well as the informal relationships between groups within the company and between the company and those in its environment. To classify capabilities, consider the following categories: - Resource integration, for example, product development routines and strategic decision-making processes. This category involves processes that combine

		diverse skills and functional experiences to create new products and services. For example, product development routines and strategic decision-making processes are dynamic capabilities that integrate resources to generate revenue-generating results. Toyota's superior product development capabilities in the automotive industry exemplify this category. - Resource reconfiguration, includes transfer processes, resource allocation routines, co-evolution and correction. This category includes processes that copy, transfer, and recombine resources within the enterprise. Examples are transfer processes, resource allocation routines, co-evolution and patches. For example, IDEO's knowledge brokering of various design projects to create new products and Dell's segmentation of operational businesses to meet changing customer demands illustrate effective reconfiguration of resources. - Gain and Release of Resources, Covers knowledge creation routines, alliance and acquisition routines and exit routines. This category focuses on acquiring new resources and discarding those that no longer offer a competitive advantage. It includes knowledge creation routines, alliance and acquisition routines, and exit routines. Cisco Systems' effective acquisition process and biotechnology companies' strong alliance processes for accessing external knowledge are examples of resource sourcing, while output routines are crucial for discarding outdated resource combinations. - Strategic decision-making capabilities are dynamic capabilities where managers pool their various business, functional, and personal expertise to make choices that shape the major strategic moves of the firm. These capabilities involve integrating diverse knowledge and perspectives to make informed and effective strategic decisions. Examples: Eisenhardt (1989): This study highlights strategic decision-making as a dynamic capability where managers combine their expertise to make significant strategic choices. Fredrickson (1984): This research found that effective strategic decision-making processes in the paint industry were linear, involving a sequence of problem-solving steps that began with comprehensive data collection, followed by the development of alternatives, extensive analysis, and choice. Judge and Miller (1991): This study also supports the notion of strategic decision-making as a dynamic capability, emphasizing the pooling of diverse expertise to shape strategic decisions. - Correction capabilities refer to the dynamic capabilities that involve routines for adjusting and realigning resources and strategies in response to changing market conditions or internal inefficiencies. These capabilities are essential for maintaining or regaining competitive advantage by correcting course when necessary. Examples: Exit Routines: These are critical correction capabilities that involve jettisoning resource combinations that no longer provide competitive advantage as markets undergo change (Sull, 1999a; Sull, 1999b). Patching: This strategic process involves routines to realign the match-up of businesses (i.e., add, combine, and split) and their related resources to changing market opportunities. An example is Dell's constant segmentation of operating businesses to match shifting customer demands, which is an example of a superior patching process (Magretta, 1998). To perform the classification, perform a semantic analysis of the topics and their contexts. Create separate groups for resources and capabilities. For each category, identify the associated topics, keywords, and articles. Be precise. Use academic language.