INSTITUTIONAL LOGICS OF SUSTAINABILITY: AN EVALUATION OF KEY FACTORS IN THE CONTEXT OF KNOWLEDGE-BASED INSTITUTIONS

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Abstract:
Institutional Logics of Sustainability (ILS) comprise the principles, beliefs and norms that guide organizational behavior towards sustainable practices, reflecting societal and environmental values within institutions. Although the concept of institutional logic has been widely explored in organization theory, its specific application to sustainability, particularly within knowledge-based institutions (KBIs), remains under-examined. This study fills important gaps in the literature by identifying and conceptualizing the key factors that constitute KBIs, focusing on how KBIs, such as universities, research centers and technology companies, prioritize and implement sustainability within their organizational frameworks. Through a comprehensive analysis, the research examines the implications of ILS on organizational behavior and decision-making in KBIs. Findings highlight the critical role of regulatory environments, stakeholder expectations, organizational learning and industry-specific characteristics in shaping sustainability practices. This study contributes to a better understanding of the mechanisms governing sustainability in KBIs and offers valuable insights for practitioners and policy-makers wishing to advance sustainable development in these influential sectors.

Keywords: institutional logics of sustainability, knowledge-based institutions, sustainability practices, Mediterranean region.

1. Introduction

Institutional logics of sustainability (ILS) represent the underlying principles, beliefs, and norms that guide organizational behavior and decision-making towards sustainable practices (Silva and Figueiredo, 2017). According to Contrafatto (2022), the implementation of ILS shapes behaviors and practices, guiding them towards the realization of sustainability objectives. These logics encompass the societal and environmental values embedded within institutions, shaping their actions and responses to sustainability challenges (Burlea-Schiopoiu and Bachelard, 2010, Laasch, 2018). While the concept of institutional logics has been extensively studied in organizational theory, the specific application to sustainability remains underexplored, particularly concerning the conceptualization of key factors.

Despite the growing body of literature on sustainability, there exists a notable gap in the literature regarding the clear definition and conceptualization of the key factors that constitute institutional logics of sustainability. Many studies focus on assessing organizational practices or outcomes without thoroughly examining the underlying logics driving sustainability initiatives. This lack of conceptual clarity prevents our understanding of the mechanisms through which institutions enact sustainable practices and adapt to evolving environmental and societal demands.

Furthermore, within the context of knowledge-based institutions (KBIs), such as universities, research centers, and technology firms, there are a few studies exploring the dynamics of institutional logics of sustainability. These institutions play a crucial role in generating and disseminating knowledge, yet their approaches to sustainability are often ignored or inadequately understood (Rahim et al., 2020). Understanding how knowledge-based institutions conceptualize and enact sustainability initiatives is essential for advancing sustainable development efforts within these influential sectors.

Considering these literature gaps, this research aims to address the following questions:

1. What are the key factors that constitute institutional logics of sustainability?
2. How do knowledge-based institutions conceptualize and prioritize sustainability within their organizational frameworks?
3. What are the implications of institutional logics of sustainability for organizational behavior and decision-making in knowledge-based institutions?

By exploring these questions, this study seeks to elucidate the underlying mechanisms and drivers of sustainability within knowledge-based institutions, contributing to a deeper understanding of how organizational logics shape sustainability practices.

The aim of this research is to provide a comprehensive analysis of institutional logics of sustainability within knowledge-based institutions, filling the existing gaps in the literature. This article is structured as follows: first, we will provide a thorough review of the literature on institutional logics, sustainability, and knowledge-based institutions. Next, we will present our research methodology and data collection procedures. Subsequently, we will analyze the findings, focusing on the key factors influencing institutional logics of sustainability in knowledge-based institutions. Finally, we will discuss the implications of our findings, identify areas for future research, and conclude with recommendations for practitioners and policymakers.

2. Background literature and hypotheses formulation

2.1 Key factors influencing the implementation of institutional logics of sustainability in knowledge-based institutions

The implementation of institutional logics of sustainability within knowledge-based institutions is a multifaceted process influenced by various factors. Institutional logics are the patterns of practices, values, and beliefs that provide meaning and guide the actions of organizations within specific contexts. In knowledge-based institutions, where the production and dissemination of knowledge are central, understanding the drivers of sustainability is crucial.

Regulatory Environment

There is a growing body of scholarly literature on regulation and institutional logics, however, little is known about effects of regulatory environment on the implementation of institutional logics of sustainability in knowledge-based institutions.

The regulatory framework, including laws, policies, and standards, plays a critical role in shaping the sustainability practices of institutions (Abbott and Snidal, 2021). For instance, stringent environmental laws can necessitate the integration of sustainable operations, compelling institutions to align their activities with societal expectations and legal standards (Lashitew, 2021). Moreover, regulatory frameworks often include incentives such as subsidies, tax breaks, or grants for green innovation and sustainable development, which can motivate institutions to prioritize sustainability in their strategic planning (Le et al., 2024). In highly regulated environments, institutions may also face pressure to adhere to global sustainability standards, such as those outlined in international agreements like the Paris Accord, further embedding sustainability into their organizational logic. Consequently, the regulatory environment not only enforces compliance but also fosters a proactive approach to sustainability, encouraging institutions to innovate and lead in sustainable practices (Yuan and Zhang, 2020). This dual role of regulation, both as a form of coercive pressure and as a source of strategic opportunity, highlights its critical impact on the institutionalization of sustainability logics within knowledge-based organizations.

The literature offers diverse perspectives on the influence of the regulatory environment on the implementation of institutional logics of sustainability in knowledge-based institutions. Some scholars argue that the regulatory environment is a critical driver of sustainability practices, emphasizing its role in setting legal and normative frameworks that enforce compliance and promote sustainable development. Bice (2017) suggests that regulations serve as a form of coercive pressure, compelling institutions to align with societal expectations and legal standards. This perspective highlights how regulatory mandates can directly influence organizational behavior, leading to the institutionalization of sustainability as a core organizational logic.

On the other hand, Jaja, Gabriel, and Wobodo (2019) discuss the concept of institutional isomorphism, where organizations adopt similar practices due to regulatory pressures. They argue that while regulations can encourage the adoption of sustainable practices, they may also lead to homogenization, where institutions adopt sustainability measures primarily to conform to external pressures rather than as a result of internal strategic priorities. This view suggests that the regulatory environment may drive superficial compliance rather than deep, transformative change in organizational logics.

In contrast, some scholars highlight the limitations of regulatory influence. Wijethilake and Ekanayake (2018) point out that the organizations may engage in strategic responses to regulatory pressures, ranging from compliance to outright avoidance or manipulation of regulations to serve their interests. This perspective suggests that while the regulatory environment can influence sustainability practices, knowledge-based institutions may not always internalize these logics but rather may find ways to circumvent or minimally comply with regulations.

Furthermore, the literature also explores the role of voluntary and self-regulatory initiatives as a complement or alternative to formal regulation. Kelling, Sauer, Gold and Seuring (2021) argue that beyond formal regulations, industry

norms, voluntary codes of conduct, and certifications can also drive the institutionalization of sustainability logics. This view suggests that the regulatory environment includes not only formal laws but also a broader set of normative and cognitive rules that shape organizational behavior.

The effectiveness of regulatory influence appears contingent on how deeply these institutions internalize sustainability as part of their core logic and whether they perceive regulations as an opportunity for innovation or a constraint to be managed. This discussion leads us to formulate the following hypothesis.

Hypothesis 1: Regulatory Environment influences the implementation of Institutional Logics of Sustainability within an organization.

Stakeholders' expectations

Stakeholders, including investors, customers, employees, and local communities, can exert significant pressure on organizations to adopt sustainable practices. Schaltegger, Hörisch, and Freeman (2019) argue that stakeholder theory necessitates that organizations consider the interests of all stakeholders in their decision-making processes, leading to the integration of sustainability into institutional logics. This perspective suggests that the demands and expectations of stakeholders can drive organizations to embed sustainability into their core values and operations.

However, the literature also highlights the complexity of stakeholder influence. Mitchell, Lee and Agle (2017) discuss the concept of stakeholder salience, which varies based on the power, legitimacy, and urgency of stakeholder claims. This implies that not all stakeholders have equal influence over sustainability practices of an institution. Some stakeholders may advocate strongly for sustainability, while others might prioritize economic performance, leading to potential conflicts or trade-offs in institutional decision-making. Furthermore, stakeholders with conflicting interests can create challenges in aligning sustainability goals with broader organizational objectives.

Another view in the literature emphasizes the role of stakeholder engagement as a dynamic process that can foster the co-creation of sustainability initiatives. Gonzalez-Porras, Heikkinen, Kujala and Tapaninaho, (2021) argue that meaningful stakeholder engagement can lead to a deeper integration of sustainability into organizational practices, as it facilitates dialogue, collaboration, and shared values. This perspective suggests that proactive and inclusive stakeholder engagement can enhance the legitimacy and effectiveness of sustainability practices, making them more central to the institution's logic.

Overall, while stakeholders are recognized as powerful drivers of sustainability, the literature underscores that their influence is neither uniform nor straightforward. The impact of stakeholders on sustainability depends on the responsiveness of the institutions and the quality of stakeholder engagement, making it a complex and multifaceted factor in the institutionalization of sustainability logics (Burlea-Schiopoiu, 2013). This leads us to hypothesize the following:

Hypothesis 2: Stakeholder expectations influence the implementation of Institutional Logics of Sustainability within an organization.

Market Dynamics and Competition

The literature often positions market forces as both enablers and barriers to sustainability. Tu and Wu (2021) argue that competitive market pressures can drive innovation and efficiency, leading organizations to adopt sustainable practices as a

means of gaining a competitive edge. In this view, market dynamics, such as consumer demand for green products or the need to differentiate from competitors, push institutions to integrate sustainability into their operations and strategies.

Conversely, other scholars highlight the potential for market dynamics to hinder the adoption of sustainability logics. Wu, Subramanian, Abdulrahman, Liu and Pawar, (2017) suggest that market competition may lead to a focus on short-term financial performance at the expense of long-term sustainability goals. In highly competitive markets, knowledge-based institutions may prioritize cost-cutting and efficiency over investments in sustainability, particularly when the perceived market demand for sustainable practices is weak or uncertain. This perspective underscores the tension between market-driven priorities and the institutionalization of sustainability, where market dynamics may not always align with sustainable development objectives.

Moreover, the literature also discusses the role of market-based instruments, such as carbon pricing or green certifications, in shaping institutional logics of sustainability. These instruments can create market incentives for sustainable practices, aligning economic interests with sustainability goals. However, as pointed out by Slunge and Alpizar (2019), the effectiveness of these instruments depends on market conditions, including the level of consumer awareness and the availability of sustainable alternatives. In markets where sustainability is not yet a priority, such instruments may have limited impact.

Market dynamics represent a double-edged sword in the institutionalization of sustainability logics. While they can drive innovation and the adoption of sustainable practices in knowledge-based institutions, they can also create pressures that prioritize short-term gains over long-term sustainability, depending on market conditions and consumer expectations. With this analysis, we propose the following hypothesis:

Hypothesis 3: Market Dynamics and Competition influences the implementation of Institutional Logics of Sustainability within an organization.

Organizational culture

The literature emphasizes that a strong organizational culture that values sustainability can significantly enhance the integration of sustainable practices into institutional logics. Pathiranage (2019) describes organizational culture as a set of shared values, beliefs, and assumptions that shape behavior within an organization. When sustainability is deeply embedded in these cultural elements, it becomes a natural part of decision-making processes, guiding the institution's strategic direction and daily operations. Nishitha and Kavitha (2024) support this view by arguing that an organizational culture that prioritizes adaptability, mission, and involvement is more likely to embrace sustainability. Such cultures are open to change, align their mission with sustainable goals, and actively involve employees in sustainability initiatives (Burlea-Schiopoiu and Rainey, 2013). This fosters a sense of ownership and commitment to sustainability across all levels of the institution, making it a core component of the organizational logic.

However, the literature also points to challenges in aligning organizational culture with sustainability. Leone, Davis, Velasquez, and Nagle-Roides (2021) note that organizational cultures can be resistant to change, particularly in institutions with long-established practices and norms that do not prioritize sustainability. In such cases, attempts to integrate sustainability into the organizational logic may face significant internal resistance, leading to superficial or symbolic adoption rather than

meaningful change. This perspective highlights the potential disconnect between cultural values and sustainability initiatives, where the latter may struggle to gain traction in the absence of cultural support.

Furthermore, scholars such as Sackmann (2021) argues that organizational culture is not monolithic but rather composed of various subcultures, each with its own values and practices. In large knowledge-based institutions, these subcultures may have differing views on sustainability, leading to inconsistencies in how sustainability is implemented across the organization. This fragmentation can complicate efforts to institutionalize sustainability, as conflicting cultural elements may undermine a unified approach.

In this sense, organizational culture is considered a complex factor in the institutionalization of sustainability logics (Mahmood and Uddin, 2021). While a culture that supports sustainability can drive deep integration of sustainable practices, cultural resistance and fragmentation can pose significant barriers, making the alignment of culture and sustainability a critical challenge for knowledge-based institutions. from this review, we formulate the following hypothesis:

Hypothesis 4: Organizational Culture influences the implementation of Institutional Logics of Sustainability within an organization.

2.2 The mediator and mediating role for the implementation of ILS in KBIs

Organizational learning

The concept of organizational learning, as presented by Mitchell and Larry (2021), involves the processes through which organizations acquire, interpret, and respond to information, leading to changes in behavior or capabilities. When it comes to sustainability, organizational learning enables institutions to integrate new knowledge and best practices into their operational and strategic frameworks, thereby facilitating the adoption of sustainability logics.

Some scholars argue that organizational learning plays a transformative role in embedding sustainability within institutional logics (Burlea-Schiopoiu, 2007). Russ (2021) highlights that organizations committed to sustainability often engage in deep learning, where sustainability becomes an integral part of their identity and decision-making processes. This deep learning process allows organizations to move beyond superficial compliance and toward a more genuine integration of sustainability into their core values and operations.

On the other hand, some literature suggests that the effectiveness of organizational learning as a mediator depends on the organization's existing culture and openness to change. In this sense, a differentiation between exploration and exploitation in organizational learning is noted in the literature, where exploration involves experimentation and innovation, and exploitation focuses on refining existing practices (Stringfield, 2021). In the context of sustainability, organizations that emphasize exploration are more likely to successfully mediate the implementation of sustainability logics, while those focused on exploitation may struggle to incorporate new sustainability practices, limiting the mediating role of organizational learning (*ibid*). This review led us to formulate the following hypothesis:

Hypothesis 5: Organizational Learning mediates for an influence on the implementation of Institutional Logics of Sustainability within an organization.

Industry-specific Characteristics

The influence of industry characteristics on sustainability practices is present in the literature, with scholars like Nurim and Asmara (2019) arguing that industry structure determines competitive strategies, including those related to sustainability. Some researchers suggest that certain industries are naturally more aligned with sustainability due to inherent characteristics, such as resource dependency or regulatory scrutiny. For instance, the extractive industries, which have a significant environmental impact, may face stronger external pressures to adopt sustainable practices (Zhou et al., 2021). In such cases, industry-specific characteristics can amplify the influence of institutional logics of sustainability, making these logics more central to organizational strategies.

Conversely, in industries where sustainability is not a critical concern, such as sectors with low environmental impact or less regulatory oversight, industry-specific characteristics may weaken the influence of sustainability logics. Corbett, Webster and Jenkin (2018) argue that in such industries, sustainability may be perceived as less relevant, leading to weaker implementation of sustainability logics. This moderation effect highlights the variability in how sustainability is prioritized across different industries.

Furthermore, industry-specific characteristics can also shape the nature of the sustainability practices adopted. For example, industries with high technological innovation, such as the tech sector, may adopt sustainability practices that emphasize energy efficiency and green product design, while traditional manufacturing industries might focus more on waste reduction and resource efficiency (Shahzad et al., 2022). This suggests that the moderation effect of industry-specific characteristics not only influences the extent to which sustainability logics are implemented but also the specific forms they take within different sectors. On the basis of this review, we present the following hypothesis:

Hypothesis 6: Industry-specific Characteristics moderates the influence on the implementation of Institutional Logics of Sustainability within an organization.

3. Methodology

3.1 Methodology of research

Our comprehensive theoretical framework for evaluating the Institutional Logics of Sustainability is visually depicted in Figure 1, with each arrow symbolizing one of the hypotheses. The conceptual model we propose intricately delineates anticipated connections among independent and dependent variables. Specifically, it elucidates the impact of four pivotal variables – Regulatory Environment, Stakeholders' Expectations, Market Dynamics and Competition, and Organizational Culture and Leadership – on the variable Institutional Logics of Sustainability. Moreover, our model posits that the variable Organizational Learning acts as a mediator in the relationship between independent and dependent variables. Additionally, we acknowledge the role of Industry-Specific Characteristics as a moderator in this dynamic framework.

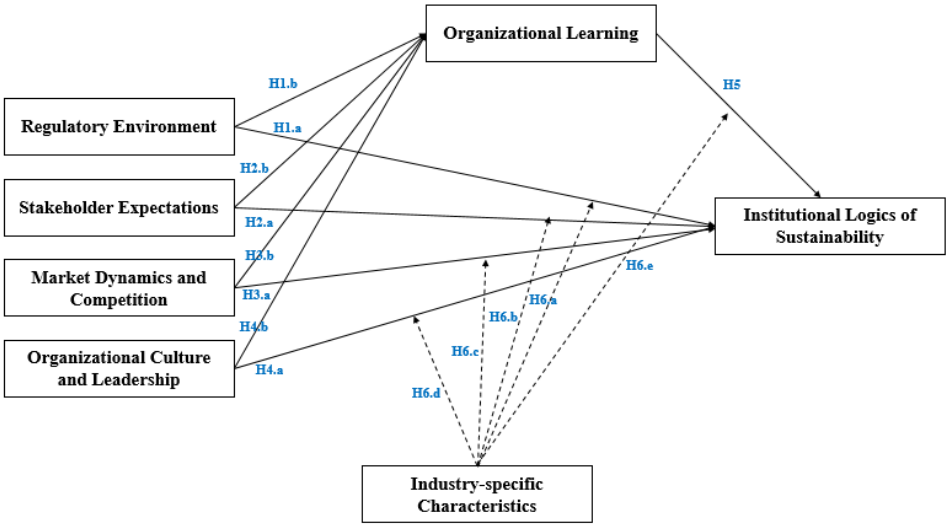

Figure 1. Research model

Source: Developed by the author

After the conception of the research model, the investigation progresses to the stage of variable measurement, wherein each aspect is assessed. Indeed, all constructs and measurement items were derived to fit into the context of this study from previous literature to ensure construct validity and reliability. We used established multiple-item scales from previous research, rated on a five-point Likert scale, and adapted them to our context as necessary.

The following table (Table 1) provides a detailed compilation of items associated with each construct examined in this study, shedding light on the key dimensions under investigation. The items presented have been selected from a variety of sources, with each construct drawing on the contributions of esteemed authors in the field. The inclusion of specific authors allows for a clear acknowledgment of the scholarly foundation supporting the construction of our measurement framework.

Table 1. Construct measurement

	Construct	Items	References
	Regulatory Environment	RE1: Degree of compliance with current environmental regulations	Yuan and Zhang (2020)
		RE2: Perception of the impact of regulatory changes on sustainability practices	
		RE3: Number of environmental certifications obtained	
	Stakeholder Expectations	SE1: Stakeholder surveys assessing expectations related to sustainability	Wijethilake and Lama (2019)
		SE2: Number of stakeholder engagement activities focused on sustainability	

Independent Variables		SE3: Public perception of the organization's commitment to sustainability	
	Market Dynamics and Competition	MD1: Market share attributed to sustainable products or services	Tu and Wu (2021)
		MD2: Analysis of competitor sustainability reports and practices	
		MD3: Number of industry awards or recognitions for sustainability	
	Organizational Culture and Leadership	OC1: Employee surveys measuring perceptions of the organization's sustainability culture	Sutoro and Pasla (2020)
		OC2: Leadership commitment to sustainability, as indicated by public statements or policies	
		OC3: Inclusion of sustainability in organizational values and mission statements	
Mediator Variable	Organizational Learning	OL1: Frequency of training programs related to sustainability for employees	Russ (2021)
		OL2: Number of sustainability-related research and development projects	
		OL3: Rate of adoption of innovative sustainable practices within the organization	
		OL4: Employee surveys measuring perceptions of the organization's learning culture	
Moderator Variable	Industry-specific Characteristics	IC1: Interaction between industry type and the regulatory environment	Zhou et al. (2021)
		IC2: Interaction term between organizational size and stakeholder expectations	
		IC3: Interaction term between location and market dynamics	
		IC4: Interaction between leadership practices and Organizational Culture and Leadership	
		IC5: Interaction between learning strategies and Organizational Learning	
Dependent Variable	Institutional Logics of Sustainability	ILS1: Presence of sustainability-related language in official organizational documents	Silva and Figueiredo (2017)
		ILS2: Integration of sustainability criteria in decision-making processes	
		ILS3: Inclusion of sustainability goals and targets in strategic plans	
		ILS4: Performance metrics related to sustainability practices	

3.2 Sample and data collection

Knowledge-Based Institutions constitute pivotal entities crucial for the cultivation, dissemination, and application of knowledge across diverse domains. The overarching mission of KBIs involves advancing education, research, and innovation, positioning them as integral contributors to intellectual inquiry and scholarly exploration. This paper emphasizes the strategic significance of the Mediterranean region as a conducive environment for fostering KBIs. The historical richness, cultural diversity, and geographical centrality of the Mediterranean make it an ideal locus for knowledge cultivation, echoing its historical role as a cradle of civilization and a nexus for intellectual exchange. In contrast to the traditionally high concentrations of prestigious universities and research institutions in North America and Europe, the Mediterranean region offers a unique blend of characteristics that facilitate collaborative networks, knowledge exchange, and joint initiatives. While acknowledging the established KBIs in these well-represented regions, the paper highlights the emerging growth in Knowledge-Based Institutions in Asia, Latin America, and Africa. These regions are progressively investing in higher education and research infrastructures, contributing to the global diversification of knowledge dissemination and innovation. In conclusion, the Mediterranean region, with its historical significance and conducive attributes, stands out as an influential space for the development and collaboration of Knowledge-Based Institutions, enriching the global landscape of scholarly endeavors and intellectual progress.

This study conducted an extensive investigation into Knowledge-Based Institutions in the Mediterranean region, with a specific focus on managers and directors within these institutions. To ensure a representative cross-section of the targeted managerial and leadership population, a comprehensive sample of 350 participants was meticulously selected through a random sampling process. Data collection employed the distribution of a survey via email, resulting in 203 responses from managers and directors of KBIs. The survey instrument, detailed in Table 2, was purposefully designed to capture diverse insights into knowledge dissemination strategies, organizational attitudes toward innovation, and the practical implementation of knowledge within these institutions. The robust sampling methodology and tailored survey instrument aimed to provide a nuanced understanding of the dynamics and practices within Knowledge-Based Institutions in the Mediterranean region, shedding light on crucial aspects of their managerial and leadership landscape.

Table 2. Demographic Characteristics of the Respondents

		Frequency	Percentage
Position	Junior management	127	62%
	Middle management or Head of department	57	28%
	Senior management or Director	19	10%
Organization Type	University	98	48%
	Research Institute	36	18%
	Think Tank	14	6%
	Government agency	26	13%
	Non-profit organization	21	10%
	Corporate Research center	9	5%

Institution size	1-100 employees	79	39%
	101-250	99	49%
	251 and above	25	12%
Research Area	Sustainability	29	14%
	Technology and Innovation	54	27%
	Social Sciences	32	16%
	Health Sciences	51	25%
	Political sciences	29	14%
	Other	8	4%
Years of experience	Less than 5 years	63	31%
	5-15 years	112	55%
	More than 15 years	38	14%
Age Group	Less than 36 years	54	26%
	36 – 55 years	109	53%
	More than 55 years	40	21%
Gender	Female	68	34%
	Male	135	66%

The study employed partial least squares structural equation modeling (PLS-SEM) analysis to investigate the structural model, utilizing SmartPLS Version 4.0 to obtain the PLS-SEM results. This approach simultaneously explored the intricate and interconnected relationships among variables and latent constructs. This specific analysis facilitated the evaluation of Organizational Learning's mediating effects on ILS and the moderating effects of Industry-specific Characteristics, providing valuable predictive insights. Additionally, PLS-SEM was chosen for its advantages over covariance-based SEM, particularly in addressing challenges related to sample size, distributional properties, factor indeterminacy, model complexity, identification, and measurement levels.

3.3. Assessment of the measurement model

The validation of the measurement model relies on assessing convergent and discriminant validity. The results indicate that the measured constructs meet the criteria for convergent validity: all indicator loadings exceed .65; composite reliabilities (CR) surpass .70; and the average variance extracted (AVE) for each construct is above .50. Table 3 illustrates that all indicator loadings surpass the recommended threshold of .65. The CR values range from .77 to .95, and AVE values range from .50 to .70. Thus, the measurement model satisfies all three conditions for convergent validity. Additionally, all indicator loadings are significant and exhibit strong relationships with their respective constructs, providing further evidence of convergent validity. Figure 2 presents the model assessment.

Table 3. Results of the Measurement Model.

Construct	Items	Loadings	Cronbach's alpha	Composite Reliability (CR)	Average variance extracted (AVE)
Regulatory Environment	RE1	0.867	0.92	0.86	0.51
	RE2	0.875			
	RE3	0.724			
Stakeholder Expectations	SE1	0.895	0.846	0.88	0.54
	SE2	0.848			

	SE3	0.804			
Market Dynamics and Competition	MD1	0.775	0.964	0.87	0.70
	MD2	0.897			
	MD3	0.836			
Organizational Culture and Leadership	OC1	0.711	0.84	0.81	0.50
	OC2	0.891			
	OC3	0.701			
Organizational Learning	OL1	0.853	0.84	0.77	0.65
	OL2	0.645			
	OL3	0.939			
	OL4	0.943			
Industry-specific Characteristics	IC1	0.917	0.899	0.95	0.66
	IC2	0.952			
	IC3	0.738			
	IC4	0.900			
	IC5	0.668			
Institutional Logics of Sustainability	ILS1	0.773	0.92	0.81	0.54
	ILS2	0.876			
	ILS3	0.875			
	ILS4	0.797			

Source: SmartPLS software

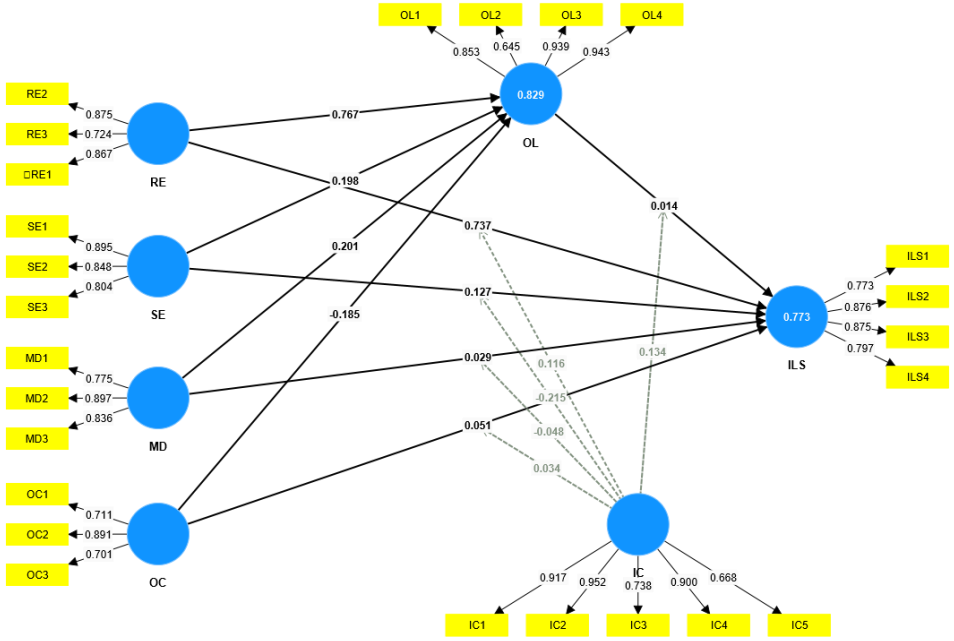

Figure 2. Model assessment, SMARTPLS4

Note: RE= Regulatory Environment, SE= Stakeholder Expectations, MD= Market Dynamics and Competition, OC= Organizational Culture and Leadership, Organizational Learning= OL, IC= Industry-specific Characteristics, ILS= Institutional Logics of Sustainability.

Furthermore, we used the recently introduced the Heterotrait–Monotrait Ratio (HTMT) criterion. Results summarized in Table 4 show that all HTMT ratio is less than the threshold of 0.90.

Table 4. Discriminant Validity HTMT of Measurement Model.

Constructs	RE	SE	MD	OC	OL	IC	ILS
RE							
SE	0.345						
MD	0.298	0.064					
OC	0.455	0.433	0.156				
OL	0.676	0.222	0.455	0.666			
IC	0.821	0.342	0.054	0.298	0.344		
ILS	0.333	0.122	0.314	0.197	0.154	0.654	

RE= Regulatory Environment, SE= Stakeholder Expectations, MD= Market Dynamics and Competition, OC= Organizational Culture and Leadership, Organizational Learning= OL, IC= Industry-specific Characteristics, ILS= Institutional Logics of Sustainability.

3.4. Assessment of the structural model

After confirming the quality of the measurement model, we tested the relationships between all constructs by conducting the structural model analysis (see Table 5).

Table 5. Hypothesis results

Hypothesis	Path coefficient (β)	T- Statistic	P- value	Remark
H1.a: RE -> ILS	0.767	5.792	0.000	Supported
H1.b: RE -> OL	0.737	4.879	0.002	Supported
H2.a: SE -> ILS	0.198	2.987	0.000	Supported
H2.b: SE -> OL	0.127	5.885	0.001	Supported
H3.a: MD -> ILS	0.201	3.576	0.000	Supported
H3.b: MD -> OL	0.029	1.570	0.090	Not Supported
H4.a: OC -> ILS	-0.185	3.999	0.452	Not Supported
H4.b: OC -> OL	0.051	1.845	0.000	Supported
H5: OL -> ILS	0.014	2.456	0.002	Supported
H6.a: IC -> RE	0.116	5.211	0.000	Supported
H6.b: IC -> SE	-0.215	4.292	0.001	Supported
H6.c: IC -> MD	-0.048	1.666	0.371	Not Supported
H6.d: IC -> OC	0.034	2.417	0.269	Not Supported
H6.e: IC -> OL	0.134	4.323	0.001	Supported

Note: RE= Regulatory Environment, SE= Stakeholder Expectations, MD= Market Dynamics and Competition, OC= Organizational Culture and Leadership, Organizational Learning= OL, IC= Industry-specific Characteristics, ILS= Institutional Logics of Sustainability.

4. Findings and discussion

The results of our study demonstrate a positive significant relationship between the regulatory environment and organizational learning (β = 0.737, t = 4.879, p <

0.005) and the implementation of institutional sustainability logics (β = 0.767, t = 5.792, p < 0.005). These findings are consistent with previous research by Abbott and Snidal (2021), who argue that regulatory pressures are a key driver of organizational adaptation and learning, particularly in environments where sustainability practices are increasingly imposed. Similarly, Lashitew (2021) found that regulatory forces play a crucial role in aligning organizational practices with sustainability goals, thereby reinforcing the legitimacy and adoption of these practices within organizations.

However, our results contrast with those of Wijethilake and Ekanayake (2018), who suggest that organizations can resist regulatory pressures, particularly when these regulations are perceived as not in line with their fundamental objectives, or when compliance costs are considered excessive. Furthermore, Kelling et al. (2021) have indicated that the influence of the regulatory environment on organizational learning depends on the perceived benefits of conformity, which can vary considerably from one sector to another. These contrasting views underline the complexity of the regulatory impact, suggesting that while it can foster organizational learning and the adoption of sustainability logics, its influence is not uniformly positive in all contexts.

Additionally, the study highlights the significant impact of stakeholder expectations on organizational learning (β = 0.127, t = 5.885, p < 0.005) and the adoption of institutional sustainability logics (β = 0.198, t = 2.987, p < 0.005). These results are in line with the work of Schaltegger, Hörisch and Freeman (2019), who emphasized the central role of stakeholders in the design of organizational behavior, particularly with regard to sustainability practices. Furthermore, Mitchell, Lee, and Agle (2017) reinforced this view by demonstrating that organizations often prioritize stakeholder expectations to maintain legitimacy and achieve strategic goals, leading to improved learning processes and the incorporation of sustainability principles.

On the other hand, the results diverge from those of Testa, Boiral and Iraldo (2018), who argue that although stakeholder pressure can influence organizational practices, it does not necessarily translate into significant learning or deep institutionalization of sustainability logics. Furthermore, Greenwood and Mir (2018) have criticized the stakeholder approach, suggesting that it can dilute the focus of the organization, leading to superficial adoption of practices rather than substantial organizational learning. These different perspectives suggest that while stakeholder expectations can drive learning and sustainability, their impact can vary depending on how organizations interpret and respond to these pressures.

Moving forward to another critical aspect, the study reveals that market dynamics and competition significantly influence the adoption of institutional sustainability logics (β = 0.201, t = 3.576, p < 0.005), but show no impact on organizational learning (β = 0.029, t = 1.570, p > 0.005). This finding corroborates the work of Tu and Wu (2021), who argue that competitive market forces can induce organizations to integrate sustainability into their core strategies in order to gain competitive advantage. Similarly, Wu, Subramanian, Abdulrahman, Liu and Pawar (2017) noted that companies often adopt sustainability practices as a strategic response to market pressures, particularly when these practices are perceived as enhancing competitiveness.

In contrast, our results differ from those of Ferreira, Cardim and Coelho (2021), who suggest that competitive market dynamics can also stimulate organizational learning as firms adapt to changing market conditions. Furthermore, Ali (2021)

suggested that competition often requires continuous learning and innovation, implying a direct relationship between market dynamics and organizational learning. The lack of influence in our study may indicate that, while market pressures encourage the adoption of sustainable practices, they do not necessarily promote the more profound learning processes required for long-term organizational adaptation.

Additionally, the study reports that organizational culture and leadership have a significant influence on organizational learning ($\beta = 0.051$, $t = 1.845$, $p < 0.005$) but a negative impact on the implementation of institutional sustainability logics ($\beta = -0.185$, $t = 3.999$, $p > 0.005$). This result supports the perspective of Azeem, Ahmed, Haider, and Sajjad (2021), who argue that a strong organizational culture and leadership are essential drivers of learning within organizations, fostering an environment conducive to knowledge sharing and innovation. Similarly, Amtu, Souisa, Joseph and Lumamuly (2021) stressed that leadership plays an essential role in shaping the learning processes of an organization, notably through the creation of a culture that values continuous improvement and adaptation.

However, the negative relationship between organizational culture and leadership and the implementation of sustainability logics contrasts with the findings of Isensee, Teuteberg, Griese and Topi (2020) who suggested that a strong organizational culture aligned with sustainability values is essential to embed these practices within an organization. Furthermore, Ojo and Fauzi (2020) argue that leadership committed to sustainability is crucial to the successful adoption of sustainability practices. The results of our study suggest that while culture and leadership can foster learning, they can sometimes stand in the way of implementing sustainability logics, perhaps due to a disconnect between existing cultural norms and the requirements of sustainability initiatives.

Furthermore, the study reveals that organizational learning serves as a mediating factor in influencing the adoption of institutional sustainability logics ($\beta = 0.014$, $t = 2.456$, $p < 0.005$). This result is in line with the work of Russ (2021), who argues that organizational learning processes are essential to the effective integration of new practices and logics, particularly those related to sustainability. According to the author, learning enables organizations to adapt to and internalize sustainability principles, thus facilitating their implementation at different levels of the organization.

On the other hand, the results contrast with the views of Yin and Jamali (2021), who argue that while organizational learning can support adaptation, it does not always lead to the successful adoption of new institutional logics, particularly in cases where learned practices conflict with established norms or where the learning capacities of the organization are limited. Similarly, Obeso, Hernández-Linares, López-Fernández, and Serrano-Bedia (2020) noted that the effectiveness of learning as a mediator can vary according to organizational context, indicating that while learning can promote the adoption of sustainability logics, its influence is not guaranteed and may depend on other factors. These divergent perspectives underline the complexity of the relationship between learning and the adoption of sustainability logics, suggesting that while learning can facilitate this process, its impact may depend on context.

Moving forward to the last analyzed aspect, our results show that industry-specific characteristics significantly moderate the influence on institutional sustainability logics. Specifically, these characteristics impact the regulatory

environment (β = 0.116, t = 5.211, p < 0.005), stakeholder expectations (β = -0.215, t = 4.292, p < 0.005) and organizational learning (β = 0.134, t = 4.323, p < 0.005). This result is consistent with the work of Zhou, Govindan, Xie, and Yan (2021), who emphasized that industry-specific factors play a key role in how organizations respond to regulatory pressures and stakeholder demands. According to the authors, different industries face varying levels of regulatory control and stakeholder pressure, which influences their approach to sustainability and learning. Furthermore, Shahzad, Govindan, Xie, and Yan (2021) pointed out that industry characteristics can significantly affect organizational learning processes, as companies in certain industries may be more attentive to sustainability issues and more likely to integrate them into their learning and operational practices.

Nevertheless, the study also reveals that industry-specific characteristics do not influence market dynamics and competition (β = -0.048, t = 1.666, p > 0.005) or organizational culture and leadership (β = 0.034, t = 2.417, p > 0.005). This result deviates from the arguments of Alsharari and Aljohani (2023), who suggested that industry-specific factors should naturally shape market competition and organizational strategies, including leadership and culture. In addition, Corbett, Webster and Jenkin (2018) proposed that industry conditions directly influence organizational structures and cultures as companies adapt to their external environment. These contrasting results suggest that while sector-specific characteristics are important in shaping responses to regulatory environments, stakeholder expectations and learning processes, they may have little or no effect on market competition and organizational culture, indicating a more nuanced and selective influence of sector factors on sustainability practices.

To sum, the findings highlight the complexity and multi-faceted nature of sustainability adoption within knowledge-based institutions. The study reveals that while factors such as the regulatory environment, stakeholder expectations and organizational learning play a pivotal role, their influence is often moderated by industry-specific characteristics. These findings underline the importance of considering the unique context of knowledge-based institutions, where the interplay between external pressures and internal dynamics shapes the integration of sustainability logics. Furthermore, the lack of significant influence of market and competitive dynamics, as well as organizational culture and leadership, suggests that sustainability efforts in these institutions may require targeted strategies that consider their specific operating environments. Ultimately, this research contributes to a better understanding of how knowledge-based institutions can effectively address the challenges of adopting sustainability practices, highlighting the need for a tailored approach that aligns with their distinctive characteristics.

5. Research implications

Our study presents significant research implications at the theory, management and policy levels, with a particular focus on knowledge-based institutions in the Mediterranean region. From a theoretical perspective, this research provides new contributions by examining little-explored interactions between regulatory environments, stakeholder expectations, organizational learning and industry-specific characteristics in the adoption of institutional logics of sustainability. Unlike previous studies, which have often treated these factors in isolation, our work integrates them to reveal a more comprehensive understanding of how sustainability practices are integrated in knowledge-based sectors. This extends the existing

literature on institutional theory and sustainability, particularly in contexts where knowledge creation and dissemination are central.

From a management perspective, the results lead to three actionable recommendations for knowledge-based institutions: First, developing and implementing targeted organizational learning initiatives that are explicitly aligned with sustainability goals, ensuring that these learning processes are embedded profoundly within the strategic framework of the institution. Second, proactively engage with stakeholders not only to meet their expectations, but also to use these interactions as a strategic advantage in driving sustainability initiatives, thus reinforcing institutional legitimacy and social responsibility. Finally, cultivating a flexible organizational culture that supports sustainability while responding to the unique challenges posed by specific industry characteristics and regulatory requirements, ensuring both compliance and competitive advantage.

At the policy level, recommendations are addressed at the macro level, with a focus on the Mediterranean region. Policymakers should aim to create a harmonized regional framework that standardizes sustainability regulations across Mediterranean countries, encouraging cross-border collaboration and enabling the sharing of best practices between knowledge-based institutions. This may involve the creation of regional centers of excellence focused on sustainability, where institutions can collaborate on research and innovation. In addition, regional policies should encourage the development of educational programs and research initiatives that prioritize sustainability, positioning the Mediterranean as a leader in the production and dissemination of sustainable knowledge. In so doing, the region can leverage its unique geographical and cultural position to become a global hub for sustainability-driven innovation. Such integrated theoretical, managerial and policy approaches are essential to advance the sustainable evolution of knowledge-based institutions across the Mediterranean, ensuring that they contribute effectively to both regional and global sustainability goals.

6. Conclusions

In conclusion, this study aimed to fill critical gaps identified in the literature regarding the conceptualization and application of institutional sustainability logics within knowledge-based institutions. By examining the key factors that constitute ILS, including regulatory environments, stakeholder expectations, organizational learning and industry-specific characteristics, this research provides a new and comprehensive analysis that had been insufficiently explored, particularly in the context of sustainability. The findings reveal that while these factors collectively shape the sustainability practices of KBIs, their influence is nuanced and moderated by the specific industry contexts in which these institutions operate.

Theoretical implications of this study include the expansion of institutional theory by integrating sustainability into the conceptual framework of institutional logics, particularly in sectors focused on knowledge production and dissemination.

Our research contributes to a better understanding of how institutional logics can guide organizational behavior and decision-making towards sustainable practices, thereby filling an important gap in the literature. From a managerial perspective, the study offers three direct propositions for KBIs: (1) integrate sustainability into organizational learning processes to ensure that knowledge production aligns with sustainability goals; (2) involve stakeholders not only to meet their expectations but also to leverage their contribution to improving sustainability

initiatives; and (3) develop an adaptive organizational culture that is both sensitive to industry-specific challenges and supportive of sustainability, thereby ensuring long-term institutional resilience and suitability. At the policy level, results suggest that a harmonized approach to sustainability regulations in the Mediterranean region could foster collaboration and knowledge sharing between KBIs, positioning the region as a leader in sustainable innovation.

Despite its contributions, the study is limited by its focus on the Mediterranean region, which may restrict the generalization of results to other geographical contexts. In addition, the cross-sectional design of the study limits the ability to assess the long-term effects of KBIs on sustainability practices. Future research should aim to expand the geographic scope to include a more diverse range of KBIs and adopt longitudinal approaches to capture the evolving dynamics of ILS more effectively. In addition, future studies could explore the role of emerging technologies, such as artificial intelligence and big data, in enhancing the implementation of sustainability logics within KBIs.

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