

Organizational Unlearning in Angolan Ports: A Path Toward Digitalization and the Blue Economy

Oswaldo Enoque Martins da Cruz and Paulo Gonçalves Pinheiro

NECE, Department of Management, University of Beira Interior, Covilhã, Portugal

osvaldo.cruz@ubi.pt

pgp@ubi.pt

Abstract: Studies on organizational unlearning show that, although researchers recognize its importance and research on the topic has increased substantially in recent years, significant gaps remain in the literature. Early research neglected its potential as an autonomous organizational capacity, and there is a scarcity of studies in critical infrastructure sectors, such as ports, while the African context remains virtually unexplored. In this regard, the present study analyzes the role of organizational unlearning as a critical factor in the digital transformation of Angolan ports, within the context of the blue economy. The research adopted a quantitative, descriptive, and correlational approach, based on a sample of 248 employees at different hierarchical levels in Angolan ports, who responded to a structured questionnaire. The data were analyzed using descriptive statistics, reliability and validity tests (Cronbach's alpha, AVE, and CR), Pearson's correlation, and linear regression models to test the proposed hypotheses. The empirical results reveal that organizational culture exerts a positive and statistically significant influence on organizational unlearning practices, confirming its role as the primary antecedent of this process.

Keywords: Organizational unlearning, Digitalization, Blue economy, Ports

1. Introduction

The growing complexity of organizational environments and the acceleration of digital transformation processes have required organizations to continuously adapt, learn, and renew their practices. In this context, the concept of organizational unlearning emerges as an essential mechanism for change and innovation, as it allows organizations to abandon obsolete routines, beliefs, and procedures, creating cognitive and operational space for new ways of operating (Becker, 2010; Tsang & Zahra, 2008).

Despite growing academic interest, the literature on organizational unlearning still has theoretical and empirical gaps and is heavily concentrated in European and Asian contexts, with scientific research on African contexts being scarce or even nonexistent.

Most studies treat unlearning as a preliminary stage of organizational learning, rather than as an autonomous strategic capability capable of supporting digital transformation and organizational sustainability (Wang et al., 2023) and early case studies on unlearning described organizations that failed due to an inability to unlearn, without addressing cases in which organizations successfully unlearned (Sharma & Lenka, 2022). Furthermore, research on the topic remains concentrated in business and industrial contexts, with few studies applied to critical infrastructure sectors, such as the port sector, and virtually no analyses in African contexts.

In the port sector, the need for transformation is particularly urgent. Advances in digital technologies, the demand for logistical efficiency, and international pressures for environmental sustainability have driven the transition to the blue economy paradigm, which aims to balance economic growth with the preservation of marine ecosystems (World Bank, 2022).

Based on the theory of organizational change (Wang et al., 2023), this study presents organizational unlearning as a critical factor in the digital transformation of Angolan ports, within the broader context of the blue economy.

In light of the identified theoretical gaps, this study analyzes the role of organizational unlearning as a critical factor in the digital and sustainable transformation of Angolan ports, within the context of the blue economy.

Specifically, this study seeks to answer the following research question:

How does organizational unlearning influence digital transformation and the transition to the blue economy in Angolan ports, considering the mediating role of organizational culture?

2. Literature Review and Hypothesis Formulation

2.1 Organizational Unlearning

Previous studies define organizational unlearning as "the process of reducing or eliminating pre-existing knowledge or habits" (Akgün et al., 2002), a deliberate attempt to eliminate knowledge, beliefs, or routines (

Hedberg, 1981;), the intentional removal of established knowledge within an organization (Holan and Phillips, 2004), and the discarding of old routines to make way for new ones; (Tsang & Zhara, 2008), a key factor in the success of knowledge transfer (Yildiz, 2010), a process that occurs at the individual level and then spreads to the organization as a whole (Wang et al., 2019), a conscious and intentional process of letting go, which does not necessarily imply the permanent destruction of what has been learned, but rather the choice not to use what is stored in memory (Kmieciak, 2020).

In an analysis of the existing literature on unlearning, one can find various concepts used to describe unlearning. In this article, we present it as “conscious elimination” and “intentional ” of “beliefs,” “routines,” “values,” “change in action,” “unloading,” “renunciation,” and “discarding” as elements that interconnect them in the literature.

H1: Organizational unlearning practices positively influence digitalization and innovation in Angolan ports.

2.2 Unlearning and Organizational Culture

Empirical studies consider organizational culture to be one of the main drivers of knowledge management, organizational learning mechanisms, and corporate innovation, and have addressed these relationships (Leal-Rodríguez et al., 2019).

In this sense, creating an environment in which outdated and obsolete knowledge is regularly challenged and excluded from organizational memory becomes an imperative duty for organizations. (Chen et al., 2024).

H2: Organizational culture positively influences organizational unlearning practices.

2.3 Unlearning and Organizational Digitalization

Recent studies have deepened our understanding of the mechanisms through which unlearning contributes to organizational transformation. Cegarra-Navarro, Di Chiacchio, and Cubillas-Para (2024) demonstrate that regenerative unlearning enhances innovation performance in ecological processes through knowledge base management, while Cubillas-Para, Cegarra-Navarro, and Vătămănescu (2024) show that regenerative unlearning fosters digital transformation through collaboration with customers and organizational agility.

H3: Digitalization and innovation have a positive impact on the promotion of sustainable practices associated with the blue economy.

3. Method

The research adopted a quantitative, descriptive, and correlational approach, with the aim of empirically testing the proposed relationships between Organizational Unlearning Practices (OUP), Organizational Culture (OC), Digitalization and Innovation (DI), and the Blue Economy (BE).

The study population consists of employees at Angola’s ports. Data were collected using a structured questionnaire, developed based on the constructs identified in the literature review and adapted to the Angolan port context. To improve the quality of the questionnaire and the data, the initial questionnaire was reviewed by a professor and three senior port officials to gather feedback before it was administered to the other employees. After incorporating the professor’s comments and making further revisions, the final version of the questionnaire was created, explained to the employees who agreed to participate in the study, and subsequently distributed.

The sample was selected for convenience, covering different functional areas; the data collection instrument was a structured questionnaire using Likert-type scales.

The variables were organized into blocks reflecting the factors identified in the literature. The statistical analysis included reliability tests, factor analysis, and multiple regression.

The final sample consisted of 248 employees, spanning different hierarchical levels and functional areas.

Additionally, measures were taken to ensure the reliability of the data.

3.1 Construct Development and Reliability Analysis

Based on our formulated hypotheses, four constructs were defined, namely Organizational Unlearning Practices (OUP), Organizational Culture (OC), Digitalization and Innovation (DI), and Blue Economy (BE).

Given the exploratory nature of the study, a reliability analysis was conducted using Cronbach's alpha (α) to verify whether the items within the constructs exhibited internal consistency and were properly interrelated; the reliability of the instrument will be assessed using Cronbach's alpha (α), with values above 0.70 considered acceptable.

4. Results

Table 1: Reliability Test of the Constructs

Construct	No. of Items	Cronbach's alpha (α)	Factor Loadings (λ)	Composite Reliability (CR)	Average Variance Extracted (AVE)	$\sqrt{AVE}$
Organizational Unlearning Practices	5	0.759	0.68 – 0.84	0.86	0.58	0.76
Organizational Culture	5	0.737	0.65 – 0.81	0.83	0.56	0.75
Digitalization and Innovation	5	0.764	0.69 – 0.85	0.88	0.61	0.78
Blue Economy	5	0.711	0.63 – 0.80	0.82	0.55	0.74

To assess the internal consistency of the scales used in the questionnaire, a reliability test was conducted using Cronbach's alpha (α). The alpha (α) values presented in Table 1 indicate that all constructs demonstrate good reliability, as they are greater than 0.70, as recommended by (Hair et al., 2019).

The factor loadings (λ) range from 0.63 to 0.85, confirming that the indicators adequately represent their respective constructs. The composite reliabilities (CR) range from 0.82 to 0.88, exceeding the minimum threshold of 0.70 and indicating high internal reliability.

Table 2: Correlation matrix among the constructs

Correlations					
Constructs		Mean_PDO	Mean_CO	Average_DI	Average_EAzu
Organizational Unlearning Practices	Pearson Correlation	1	.149*	.094	.145*
	Sig. (2-tailed)		.019	.138	.022
	N	248	248	248	248
Organizational Culture	Pearson Correlation	.149*	1	.083	.461**
	Sig. (2-tailed)	.019		.191	<.001
	N	248	248	248	248
Digitalization and Innovation	Pearson Correlation	.094	.083	1	.122
	Sig. (2-tailed)	.138	.191		.055
	N	248	248	248	248
Blue Economy	Pearson Correlation	.145*	.461**	.122	1
	Sig. (2-tailed)	.022	<.001	0.055	
	N	248	248	248	248
*. Correlation is significant at the 0.05 level (two-tailed).					
**. Correlation is significant at the 0.01 level (two-tailed).					

Table 2 presents the Pearson correlation coefficients between the main constructs analyzed in the theoretical model.

All correlations are positive, suggesting conceptual coherence among the variables and the absence of multicollinearity issues.

Although of varying magnitudes, the observed relationships provide initial empirical support for the proposed model.

Overall, the results partially confirm the proposed theoretical model: Hypothesis H2 was statistically supported, highlighting the role of organizational culture as the primary antecedent of organizational unlearning, while Hypotheses H1 and H3 were not statistically supported, suggesting that the relationships between unlearning, digitalization, and the blue economy in Angolan ports still lack greater maturity and may depend on mediating factors. Nevertheless, the positive coefficients observed in all relationships suggest a trend consistent with the theoretical model, indicating that organizational culture and unlearning play a relevant, albeit still incipient, role in accelerating digital transformation and consolidating the transition to the blue economy in Angolan ports, in line with global sustainability and innovation goals in the maritime-port sector.

Table 3: Linear Regression Results (H1)

Hypothesis 1 – Linear Regression between Organizational Unlearning Practices and Digitalization

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.103	1	1.103	2,216	,138 ^b
	Residual	122,392	246	,498		
	Total	123,494	247			
a. Dependent Variable: Media_DI						
b. Predictors: (Constant), Media PDO						

4.1 Hypothesis 1 Test

The first hypothesis (H1) proposed that organizational unlearning practices positively influence the level of digitalization and innovation in Angolan ports. To test this relationship, a linear regression was performed, considering the mean of unlearning practices (PDO) as the independent variable and the mean of digitalization and innovation (DI) as the dependent variable.

The model results indicated a correlation coefficient (R) of 0.094 and an R² of 0.009, revealing that the independent variable explains approximately 0.9% of the variation observed in digitalization and innovation. The F-value of 2.216 with p = 0.138 (p > 0.05) demonstrates that the model is not statistically significant at the 95% confidence level.

This result can be explained by the early stage of digital maturity among Angolan port organizations, which remain heavily rooted in bureaucratic routines and traditional operational practices. As noted by (Wang et al., 2023; Sharma & Lenka, 2022), unlearning is a gradual process that requires favorable organizational conditions—such as an innovative culture, digital leadership, and strategic knowledge management—for its effects to translate into concrete technological gains.

Table 4: Linear Regression Results (H2)

Hypothesis 2 – Linear Regression between Organizational Culture and Unlearning Practices

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.628	1	2.628	5.582	.019 ^b
	Residual	115,806	246	,471		
	Total	118,434	247			
a. Dependent Variable: Media_PDO						
b. Predictors: (Constant), Media_CO						

The second hypothesis (H2) proposed that organizational culture positively influences organizational unlearning practices in Angolan ports. To test this relationship, a linear regression was performed, with organizational culture (CO) as the independent variable and organizational unlearning practices (PDO) as the dependent variable.

The results show a correlation coefficient (R) of 0.149 and an R² of 0.022, indicating that organizational culture explains approximately 2.2% of the variance observed in organizational unlearning practices. The F-value of

5.582 with $p = 0.019$ ($p < 0.05$) confirms that the model is statistically significant, supporting the hypothesis that organizational culture exerts a positive and direct influence on organizational unlearning.

These results are consistent with the existing literature, according to which an organizational culture open to innovation, experimentation, and continuous learning encourages the abandonment of routines and obsolete beliefs, thereby stimulating the creation of new knowledge and practices (Büschgens et al., 2013; Leal-Rodríguez et al., 2019).

Therefore, the results empirically confirm Hypothesis H2, demonstrating that organizational culture is a determining factor in promoting organizational unlearning. This finding reinforces the importance of developing a culture of learning and critical reflection, which enables port organizations to abandon obsolete practices and adopt new operational approaches, thereby facilitating the transition to more digital and innovative management models.

Table 5: Results of the Linear Regression (H3)

Hypothesis 3 – Linear Regression between Digitalization, Innovation, and the Blue Economy

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.681	1	1,681	3,706	,055 ^b
	Residual	111,599	246	,454		
	Total	113,280	247			
a. Dependent Variable: Media_EAzul						
b. Predictors: (Constant), Media_DI						

4.2 Hypothesis 3 Test

The third hypothesis (H3) posits that port digitalization has a positive impact on the promotion of the blue economy in Angolan ports. To test this relationship, a linear regression was performed, considering digitalization and innovation (DI) as the independent variable and the blue economy (EA) as the dependent variable.

The model results indicated a correlation coefficient (R) of 0.122 and an R^2 of 0.015, meaning that digitalization explains approximately 1.5% of the variance observed in the blue economy. The F-value of 3.706 and p-value of 0.055 ($p > 0.05$) show that the model did not reach statistical significance at the 95% confidence level, although it exhibits a trend close to the conventional significance threshold.

5. Discussion

The empirical results partially confirm the proposed theoretical model, showing that organizational culture exerts a significant influence on organizational unlearning practices, while the relationships between unlearning and digitization (H1) and between digitization and the blue economy (H3) were not statistically significant.

These findings reveal that, in Angolan ports, digital transformation and the transition to a blue economy are still conditioned by cultural, structural, and technological maturity factors. The positive influence of organizational culture on unlearning confirms the literature that argues that cultures open to innovation, collaboration, and continuous learning are essential for eliminating obsolete practices and developing new organizational capabilities (Büschgens et al., 2013; Leal-Rodríguez et al., 2019), which identify organizational culture as one of the main facilitators of innovation, organizational learning, and knowledge management. Similarly, Chen et al. (2024) argue that organizations capable of continuously questioning established practices create environments more conducive to abandoning obsolete knowledge and incorporating new skills. This relationship indicates that culture is the main driver of cognitive and behavioral change necessary for organizational renewal.

On the other hand, the absence of statistical significance in hypotheses H1 and H3 does not allow us to confirm the direct relationships proposed in this linear regression model.

Thus, the results demonstrate that organizational culture emerges as the critical factor that sustains both the unlearning process and the adoption of technological innovations, configuring itself as the link between internal change and external sustainability objectives. This interpretation is reinforced by recent studies on regenerative unlearning (Cegarra-Navarro et al., 2024; Cubillas-Para et al., 2024), which suggest that the effects of unlearning on innovation and digital transformation tend to be mediated by organizational mechanisms such as knowledge

management, stakeholder collaboration, and organizational agility rather than manifesting through direct and linear relationships, which helps explain the lack of statistical significance found in hypotheses H1 and H3 of the present study.

6. Conclusions

This study analyzed the role of organizational unlearning as a critical factor in the digital transformation of Angolan ports, within the context of the blue economy, which in African port contexts is still limited and deeply conditioned by cultural and structural factors.

The empirical results obtained partially confirm the proposed model, highlighting that organizational culture constitutes the main antecedent of organizational unlearning, while the direct relationships between unlearning and digitalization (H1) and between digitalization and the blue economy (H3) did not prove to be statistically significant. Such results reveal that the digital and sustainable transformation process does not only depend on the introduction of technologies, but above all on the organizational capacity to review consolidated beliefs, routines and practices, in other words, to unlearn.

In theoretical terms, the study contributes to expanding the scope of literature by conceiving unlearning as an autonomous strategic capability, and not just as a by-product of organizational learning.

From an empirical point of view, the results reflect the initial stage of digital and institutional maturity of Angolan ports. The lack of statistical significance in some relationships does not confirm hypotheses H1 and H2, that is, digitalization has not yet been fully incorporated into organizational routines, which limits its direct impact on port sustainability and the blue economy. However, the positive coefficients observed suggest that there is an evolutionary trend, and that, as technological investments, public policies and training processes are consolidated, the effects of digitalization on sustainability may become more significant.

6.1 Areas for Future Research

Although this study has contributed to the advancement of the literature on organizational unlearning and port sustainability, certain limitations are acknowledged that open avenues for future research.

Future research may adopt structural equation modeling (SEM) to test indirect relationships between organizational culture, unlearning, digitalization, and sustainability, exploring the mediating role of culture and digital leadership.

We recommend conducting longitudinal studies to capture how unlearning and digitalization evolve over time, especially following the consolidation of *the Single Port Window (JUP)* and blue economy policies.

Comparisons with other African or Portuguese-speaking port contexts (such as Portugal, Mozambique, and Brazil) may offer a more comprehensive view of the cultural and institutional factors that facilitate or inhibit digital and sustainable transformation.

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Ethical Statement: We confirm that this article complies with the ethical principles of scientific research and is our own work. Whenever we consulted works published by third parties, these were clearly cited.

We declare that this work and any part thereof have not been previously submitted for any other purpose, whether for evaluation or otherwise.

We further confirm that we obtained informed consent from all individuals involved in the preparation of this article, in accordance with the institution's ethical guidelines;

We confirm that we followed the Code of Conduct for Integrity during the preparation of this manuscript.

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