The Impact of Exogenous Shocks on Organizational Ambidexterity in VUCA and BANI Environments: The Role of Information Technology

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Article Info	ABSTRACT
  	This study examines how Exogenous Shocks affect Organizational Ambidexterity in VUCA and BANI environments, focusing on Information Technology's (IT) role in enhancing Absorptive Capacity and Crisis Perception. The methodology approach using a quantitative approach, structural equation modeling (SEM) analyzed data from Brazilian IT professionals, with SMART-PLS software supporting the analysis. The research findings are Exogenous Shocks significantly influence Organizational Ambidexterity. IT enhances Absorptive Capacity, aidy adaptation and innovation, and acts as a moderator in Absorptive Capacity. The cross-sectional design limits causal inference, suggesting future research should explore longitudinal studies to deepen understanding.Practical Implications are the Managers should invest in IT to boost responsiveness and resilience, fostering a culture of learning and innovation to exploit new opportunities and mitigate negative impacts.The study integrates organizational resilience and innovation within VUCA and BANI contexts, highlighting IT as a key facilitator for ambidexterity and innovation during crises

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INTRODUCTION

Organizations today face rapid changes and unforeseen challenges, marked by increased complexity and uncertainty. These Exogenous Shocks, as defined by Röglinger et al. (2022), can render existing capabilities obsolete, pressuring corporate structures and threatening established competencies. To navigate these challenges, Organizational Ambidexterity is important, enabling firms to balance exploration of new opportunities with exploitation of existing strengths, thus fostering agility and resilience (Tushman et al., 1996).

The VUCA (Volatility, Uncertainty, Complexity, Ambiguity) and BANI (Brittleness, Anxiety, Non-linearity, Incomprehensibility) models provide frameworks to understand these dynamics. VUCA describes changing conflict natures, while BANI captures the complexity of a digitalized world, emphasizing the need for resilience and flexibility (Zakharov, 2022).

Information Technology (IT) plays an important role in improving crisis awareness and absorption capacity by transforming data into actionable insights. (Meesters et al., 2022). Despite IT's potential, its role in moderating Exogenous Shocks' effects on Organizational Ambidexterity is underexplored.

This study examines how Exogenous Shocks impact Organizational Ambidexterity in VUCA and BANI contexts, focusing on IT's role in enhancing absorptive capacity and crisis perception. The research aims to develop effective strategies for organizations to adapt to disruptive changes, contributing valuable insights for both academic and practical applications.

LITERATURE REVIEW

Literature review is essential for understanding current knowledge and identifying future research gaps. We conducted a Systematic Literature Review (SLR) on the interaction between Exogenous Shocks and Organizational Ambidexterity within VUCA and BANI contexts, utilizing the rigorous methodology outlined by Kitchenham and Charters (2007). This investigation is driven by the growing frequency of economic crises and market turbulence that challenge organizational stability (Feitosa et al., 2022).

Our search in databases Web of Science and Scopus initially covered various variables, refined to "Exogenous Shock" and "Organizational Ambidexterity," yielding 59 articles. After removing duplicates, 12 articles were selected for detailed analysis, as shown in Figure 1, documented by a PRISMA flowchart (Moher et al., 2010). This analysis highlighted Organizational Ambidexterity as a key adaptation mechanism.
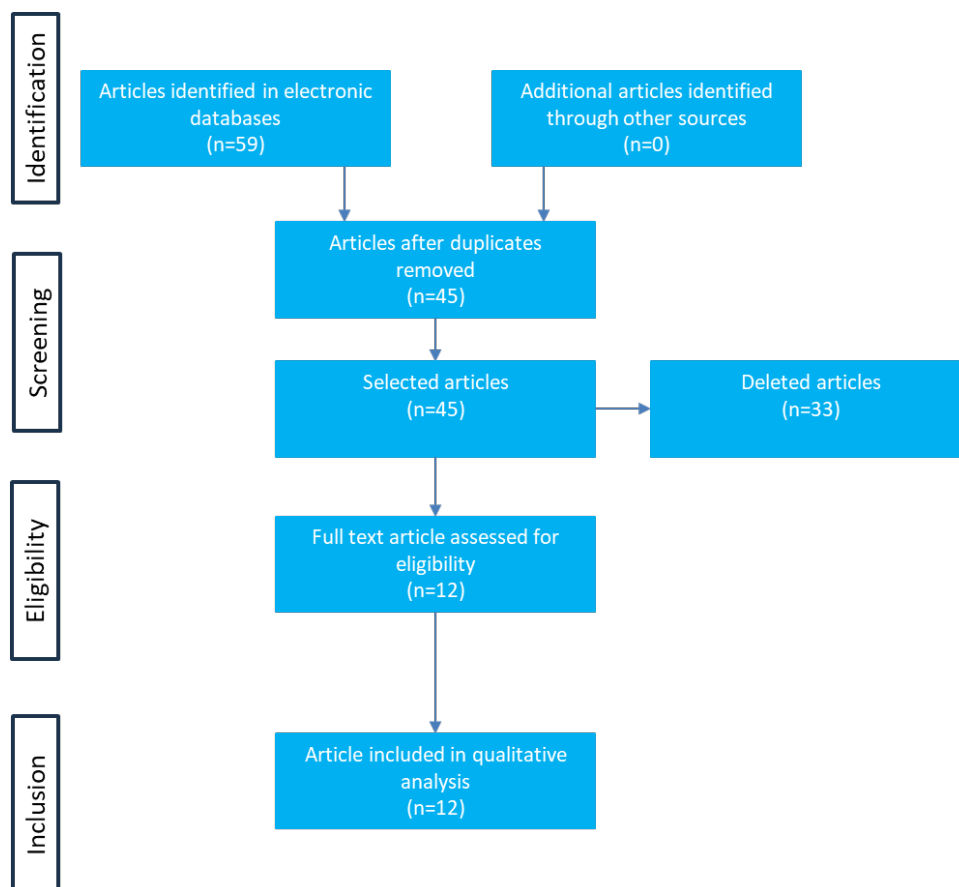

Figure 1 – PRISMA flowchart reporting the different phases of the SLR. Adapted from Liao et al. (2017), by the authors.

The SLR authors significantly contributed to addressing literature gaps. Du and Chen (2018) note the lack of focus on strategic management in changing contexts, despite consensus on ambidexterity

and performance. Bao et al. (2020) question technological capabilities' role in organizational adaptation. The relationship between Exogenous Shocks and Ambidexterity is debated: Shi et al. (2020) argue turbulence doesn't affect exploration or exploitation; while Feitosa and Garcia (2022) found it positively influences innovative performance but reduces innovation during crises; Tran (2009) suggests turbulence drives ambidexterity, supported by Schmitt et al. (2010) and Molina-Castillo et al. (2011), who indicate it enhances exploitation; Buck et al. (2022) highlight digital technologies' role in rapid crisis responses.

Posen and Levinthal (2012) link absorptive capacity with ambidexterity, stressing continuous adaptation, while Wallo et al. (2012) emphasize integrated management during crises.

This chapter enriches existing knowledge, offering insights for academics and professionals, and lays a foundation for future research and organizational practices.

Organizational Ambidexterity

Organizational Ambidexterity is fundamental in modern management, especially in VUCA and BANI context characterized by volatility and uncertainty. Lukoschek et al. (2018) and Malik et al. (2019) define it as the ability to manage dualities, simultaneously pursuing divergent and complementary objectives. This competence is fundamental for sustainable performance and competitive advantage, allowing the exploitation of existing competences and the search for new opportunities (Zhang et al., 2015).

March (1991) articulates the theory of ambidexterity as the choice between exploring new possibilities and refining practices. Tushman and O'Reilly (1996) emphasize the need to balance exploration and exploitation for innovation and efficiency, especially in competitive environments (Auh et al., 2005; Raisch et al., 2008).

Lean production methods emphasize efficiency, aligning with exploitation, while exploration is associated with discovery and adaptability (O'Reilly et al., 2008; Vahlne et al., 2017). Stoiber et al. (2022) identify concepts that allow the coexistence of traditional and disruptive business models, facilitating exploration and exploitation.

The review by Stoiber et al. (2022) analyzes organizational structures to sustain ambidexterity, revealing how integrating or separating models can overcome barriers such as resource allocation and cultural inertia. Ambidextrous structures are suggested to address these barriers.

The ability to navigate between exploration and exploitation is indispensable for sustainability and competitive advantage in uncertain environments (Zhang et al., 2015; Lukoschek et al., 2018; Malik et al., 2019). Ambidexterity is critical for organizational resilience, promoting innovation and rapid adaptation to crises (Snoeijers et al., 2018).

Exogenous Shocks in the VUCA and BANI Context

Exogenous shocks, characterized by their unpredictability and potentially devastating impact, play a critical role in several fields, such as macroeconomics, management and information systems, directly influencing Organizational Ambidexterity in contemporary environments (Fedorowicz et al., 2004; Singh et al., 2021). Röglinger et al. (2022) define them as high-impact events that require significant organizational reorientation. Effective response capability to these shocks is essential for organizational survival and success (Tran, 2009; Schmitt et al., 2010).

These shocks challenge traditional risk management strategies, requiring more dynamic and flexible approaches in VUCA and BANI environments (Trkman et al., 2009; Foss, 2020). The bibliometric review by Baptestone et al. (2023) shows increased academic interest in Exogenous Shocks, especially during crises like the 2008 financial crisis and the Covid-19 pandemic, reflecting their critical importance.

Exogenous Shocks often cause economic and health impacts, such as the Covid-19 pandemic, which necessitated strategic reassessment (Perolari et al., 2021). Hypothesis H1 suggests that Exogenous Shocks negatively affect Organizational Ambidexterity, challenging the balance between exploration and exploitation.

In VUCA and BANI environments, organizations face a growing need to adapt their structures and strategies to mitigate the impacts of Exogenous Shocks. The VUCA concept, which describes the dynamic and chaotic nature of today's reality, highlights the importance of organizational agility and flexibility (Bodenhausen et al., 2009; (Taskan et al., 2022). The evolution to the BANI paradigm, incorporating brittleness, anxiety, non-linearity, and incomprehensibility, reflects a deeper understanding of the challenges faced by modern organizations (Cascio, 2020; Zadorina et al., 2023).

In summary, Organizational Ambidexterity emerges as a strategic response in VUCA and BANI environments. By balancing operational efficiency and innovation, organizations can not only survive but thrive in an increasingly complex and unpredictable world. This continuous adaptability is essential to confront the challenges posed by Exogenous Shocks and ensure long-term sustainability and competitive advantage.

The Impact of Information Technology on Crisis Perception and Absorptive Capacity

Crisis management refers to situations of instability that can result in significant negative consequences (Fink et al., 1986; Mayor, 2009). In VUCA and BANI environments, Crisis Perception is a greater challenge, requiring organizations to have enhanced capabilities to detect warning signs (Taskan et al., 2022). According to Coombs (2021), Crisis Perception is the interpretation of unpredictable events that threaten important aspects, impacting organizational performance and triggering strategic responses (Billings et al., 1980).

In the context of Exogenous Shocks, Hypothesis H2 is proposed: "Exogenous Shocks increase crisis perception." These shocks introduce risks and uncertainties, requiring quick responses to mitigate negative impacts (Snoeijers et al., 2018; Zhan, 2021).

Absorptive Capacity, as defined by Cohen and Levinthal (1990) and expanded by Zahra and George (2002), is the ability to recognize and apply external knowledge, essential for innovation. Hypothesis H3 suggests that "greater crisis perception is positively related to the development of Absorptive Capacity," with crises acting as catalysts for organizational learning (Pearson et al., 2019).

Hypothesis H4 proposes that "enhanced Absorptive Capacity facilitates Organizational Ambidexterity". IT is essential in this process, enhancing Absorptive Capacity and integrating external knowledge (Camisón et al., 2010). IT provides data enabling effective responses to changes (Lansonia et al., 2024).

IT can assist in crisis perception and response, and Hypothesis H5 suggests that "IT moderates the relationship between Exogenous Shock and Crisis Perception," attenuating it when effectively used, offering insights for strategic decisions in times of uncertainty.

Hypothesis H6 proposes that "IT moderates the relationship between Crisis Perception and Absorptive Capacity," enhancing the ability to absorb knowledge and innovate. IT facilitates the integration of external knowledge, potentially accelerating the innovation process (da Silva Florencio et al., 2022).

The integration of IT into organizational strategy promotes a culture of continuous learning and innovation, fundamental elements for Organizational Ambidexterity, allowing organizations to efficiently explore their current competencies while seeking new opportunities (O'Reilly et al., 2013). In conclusion, IT emerges as a central element in the strategic management of organizations operating in VUCA and BANI environments, offering a promising path for sustainable resilience and innovation.

Critical Analysis of Existing Theories

The literature on organizational ambidexterity and crisis perception provides a foundational understanding of navigating complex environments, yet several gaps remain. Organizational ambidexterity, as described by Tushman and O'Reilly (1996), emphasizes balancing exploration and exploitation. However, the impact of external shocks on this balance, particularly with IT as a moderating factor, is underexplored (Lavie et al., 2010; Agostini et al., 2016).

Absorptive capacity is fundamental for innovation and learning (Zahra & George, 2002), but the interaction between absorptive capacity and crisis perception to enhance resilience lacks focus. The role of IT in facilitating these interactions and transforming data into actionable insights is an emerging area needing further investigation (Meesters et al., 2022).

Current frameworks often overlook how IT moderate's crisis responses, integrating absorptive capacity and crisis perception. The proposed theoretical model addresses these gaps by integrating Exogenous Shocks, Crisis Perception, IT, and Absorptive Capacity, highlighting IT's role as a strategic enabler in volatile environments.

Proposed Theoretical Conceptual Model

The development of a theoretical conceptual model is essential for structuring quantitative research, clearly identifying the study variables and their interrelationships. According to Creswell and David (2018), this involves defining independent, dependent, moderator, and mediator variables, along with a visual model that illustrates these relationships. This model helps us understand how the variables will be measured in research.

The model proposed in this research (Figure 2), based on the hypotheses from the literature review, structures the relationships between Exogenous Shocks, Organizational Ambidexterity, Crisis Perception, Absorptive Capacity, and the moderating role of Information Technology. It allows for the formulation of hypotheses that delineate the research field, providing a methodology to verify whether the data support or refute the hypotheses (Morettin et al., 2017).
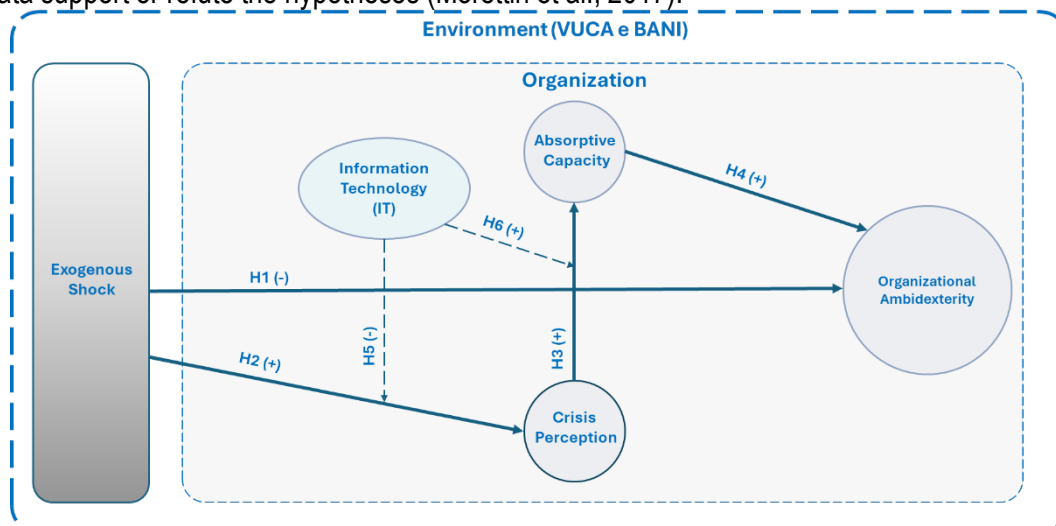

Figure 2 – Theoretical and conceptual model, by the authors.

Hypothesis testing is central to quantitative research, using sample data to understand about populations (Land et al., 2010). The adequacy of theories to the real world is verified through sample analysis, detailed in Chapter 3.

The proposed theoretical model incorporates hypotheses regarding the influence of Exogenous Shocks on Organizational Ambidexterity and the impact of Information Technology on Crisis Perception and Absorptive Capacity. It guides data collection and analysis, providing a solid foundation for interpreting results and significantly contributing to understanding organizational dynamics in VUCA and BANI environments.

RESEARCH METHODS

Description of the Research Design

This theoretical-empirical study used research through survey with questions and weights using the Likert scale relationships in the empirical model. It involved two phases: initial validation of the questionnaire with 10 technical experts and 10 academics, followed by administration to Brazilian IT professionals. Structural Equation Modeling (SEM) was employed for hypothesis validation and result analysis.

Data Collection and Analysis Methods

Quantitative data collection followed steps outlined in Figure 3, using a Likert scale effective for measuring attitudes (Joshi et al., 2015). A pre-test in May 2023 involved Uninove specialists and an IT professional to balance academic and market insights. After adjustments from 11 suggestions, the main questionnaire was distributed, yielding 223 responses, with 187 analyzed using SMART-PLS 4, exceeding the minimum requirement for R^2 values (J F Hair Jr et al., 2014; J. Cohen, 1992).

SEM in SMART PLS was chosen for its capability to handle complex models and latent variables (Sarstedt et al., 2021), testing hypotheses and validating causal relationships.
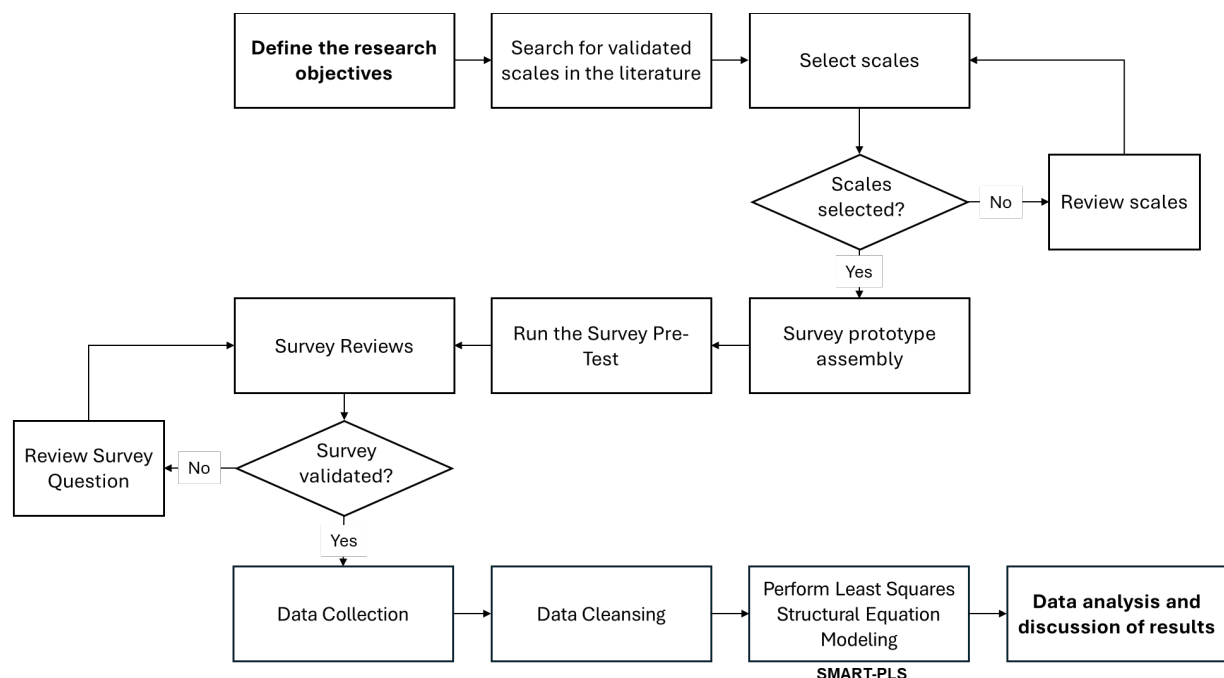
Figure 3 – Survey data collection planning steps, by the authors.

Methodological Limitations and Mitigation Strategies

The cross-sectional design limits causal inference (J. Cohen, 1988; J F Hair Jr et al., 2014). To mitigate this, a validated Likert scale ensured data reliability (Joshi et al., 2015), and SMART-PLS

effectively managed complex models (Sarstedt et al., 2021). Bias from self-reported data was addressed through pre-testing with IT professionals and selecting a diverse Brazilian sample.

Justification for the Choice of Methods

Quantitative research, using surveys and SEM, tested hypotheses and identified causal relationships, transforming data into statistically relevant insights (Creswell John et al., 2018). The field research aimed to identify causes of phenomena and analyze causal relationships, providing a detailed understanding of how exogenous shocks affect Organizational Ambidexterity and the strategic role of IT in VUCA and BANI environments.

RESULTS AND DISCUSSIONS

Survey Results through Structural Equation Modeling

The PLS-SEM method was used due to the number of responses. Initially, the Average Variance Extracted (AVE) for "Organizational Ambidexterity" and "Crisis Perception" were below 0.50 (0.401 and 0.425), necessitating the removal of specific questions to achieve AVEs above 0.50. After adjustments, all AVE values were above 0.50 (as shown in Table 1), confirming convergent validity. The composite reliability ρC exceeded 0.857, and Cronbach's alpha ranged between 0.800 and 0.878, indicating high internal consistency.

Construct	Cronbach's Alpha	Composite Reliability (ρC)	Composite Reliability (ρA)	Average Variance Extracted (AVE)
Organizational Ambidexterity	0.800	0.810	0.857	0.500
Absorptive Capacity	0.878	0.883	0.903	0.508
Crisis Perception	0.872	0.879	0.900	0.530

Table 1 – Values after adjusting the Average Variances Extracted from Structural Equation Modeling, by the authors.

Discriminant validity was established according to the Fornell and Larcker criterion, with the square roots of the AVEs exceeding the correlations between constructs (Table 2).

Construct	Organizational Ambidexterity	Absorptive Capacity	Crisis Perception
Organizational Ambidexterity	0.707		
Absorptive Capacity	0.453	0.713	
Crisis Perception	0.405	0.428	0.728

Table 2 - Values of correlations between latent variables and square roots of the values of Average Variances Extracted on the main diagonal (highlighted), by the authors.

The formative analysis showed robust convergent validity, with measures (0.888, 0.929, 0.946) exceeding the critical value of 0.708. Collinearity was not an issue, as the highest VIF value (2.691 for the formative indicator CA-56) was below the conservative threshold of 3.

The significance testing for the indicator weights used the bootstrapping procedure, as per Sarstedt et al. (2021), with 95% confidence intervals. Most indicator weights were significant, except for MEI-19 and MET-2, whose intervals included 0. Nevertheless, these indicators showed loadings above 0.50, indicating their relevant contribution to the constructs. Therefore, the non-significant but relevant indicators were retained in the formative measurement models.

Thus, the results of the reflective and formative assessment suggest that all construct measures exhibit satisfactory levels of reliability and validity, allowing for the evaluation of the structural model to proceed.

Based on Sarstedt et al. (2021), the analysis of the path coefficients of the structural model (Table 3) reveals that Exogenous Shock (0.447) has the greatest impact on Organizational Ambidexterity, followed by Absorptive Capacity (0.230). The bootstrapping results confirm the significance of these effects at a 5% error probability level. Crisis Perception has a smaller, yet significant, effect on Absorptive Capacity (0.101), while IT exerts a very strong effect (0.856). The model explains 50% of the variance in Organizational Ambidexterity (R^2 = 0.500, as shown in Table 1), considering only Exogenous Shock and Absorptive Capacity as predictors.

For Crisis Perception (R^2 = 0.530, as shown in Table 1), IT has the strongest effect (0.341), followed by Exogenous Shock (0.175), both significant. In Absorptive Capacity (R^2 = 0.508, as shown in Table 1), IT again stands out with a very strong effect (0.856), while Crisis Perception has a smaller, yet significant, effect (0.101).

The total effects indicate that IT on Absorptive Capacity has the greatest impact (0.196) on Organizational Ambidexterity, suggesting companies should focus on IT to enhance Absorptive Capacity.

The effect sizes f^2 show that the relationship IT ➜ Absorptive Capacity is very high (3.275), while Exogenous Shock ➜ Organizational Ambidexterity (0.232) and IT ➜ Crisis Perception (0.108) have medium effects. Other f^2 effects are weak, especially Exogenous Shock ➜ Crisis Perception (0.028), confirming the hypothesis evaluation.

	Path Coefficients	95% confidence interval		Significance (p<0,05)?	f2 effect size
Absorptive Capacity -> Organizational Ambidexterity	0.230	0.059	0.361	Sim	0.061
Exogenous Shock -> Organizational Ambidexterity	0.447	0.344	0.617	Sim	0.232
Exogenous Shock -> Crisis Perception	0.175	0.038	0.410	Sim	0.028
Crisis Perception -> Absorptive Capacity	0.101	0.032	0.177	Sim	0.046
IT => Absorptive Capacity -> Absorptive Capacity	0.856	0.802	0.914	Sim	**3.275**
IT => Crisis Perception -> Crisis Perception	0.341	0.198	0.502	Sim	0.108

Table 3 – Path coefficients of the structural model and significance test results, by the authors.

In the evaluation of the structural model, according to Ringle et al. (2015), Pearson's coefficients of determination (R^2) are used to assess the quality of the adjusted model (Table 4). According to Cohen (1988), an R^2 above 0.25 indicates a small effect, 0.50 a medium effect, and 0.75 a large effect. For "Absorptive Capacity," the R^2 is 0.809, indicating a large effect. For "Organizational Ambidexterity" and "Crisis Perception," the R^2 values are 0.355 and 0.209, respectively, indicating small effects. This suggests that the respondents consider Absorptive Capacity more important for Organizational Ambidexterity than Crisis Perception.

Construct	R Squared	Adjusted R Square
Organizational Ambidexterity	0.355	0.348
Absorptive Capacity	0.809	0.807
Crisis Perception	0.209	0.201

Table 4 – R squared (R^2) values, by the authors.

To test the significance of the relationships in the research, the Bootstrapping module of SMART-PLS was used to calculate the values of the Latent Variables (LVs) using the t-Student, as shown in Figure 4. A coefficient is considered significant when the empirical t-value exceeds the critical value. The critical values for two-tailed tests are 1.65 (10% significance), 1.96 (5% significance), and 2.57 (1% significance). In this research, a significant level of 5% was used, with a critical t-value of 1.96. T-values

above ±1.96 reject the null hypothesis H0, indicating that the correlations and regression coefficients are significant (see results presented in Table 6) (Ringle; Da Silva; Bido, 2015). For high degrees of freedom, t-values above ±1.96 correspond to p-values ≤ 0.05, meaning 95% probability within the interval and 5% outside, in a normal distribution.
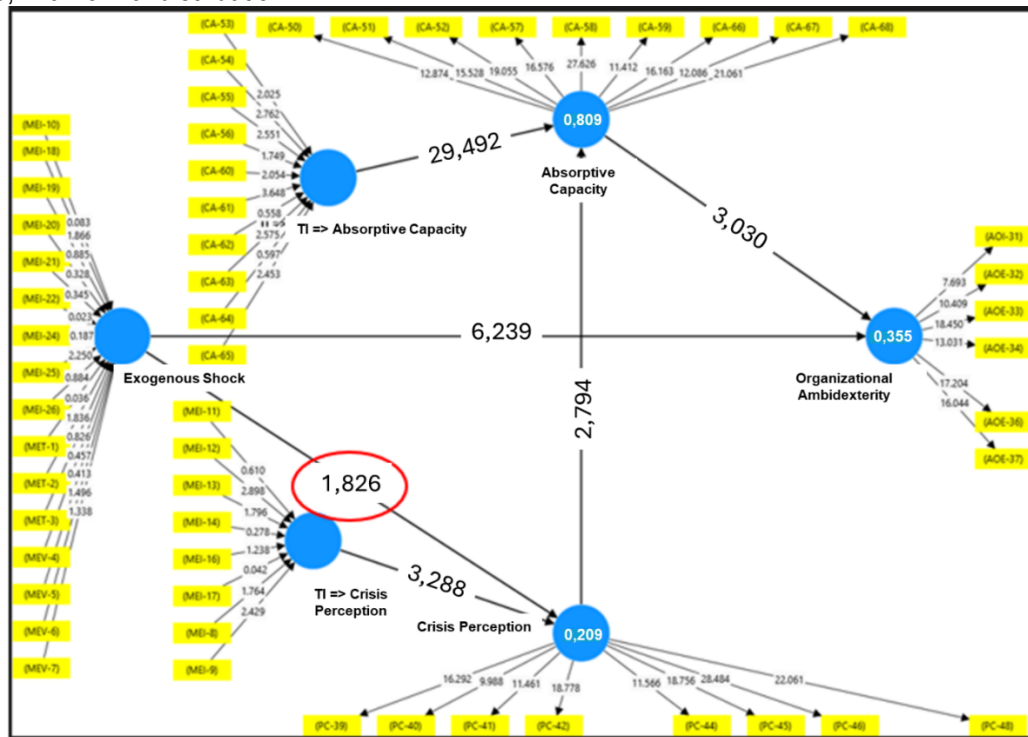

Figure 4 – VLs (Construct or Latent Variable) values using "t-Student", by the authors, using SMART-PLS 4 (version: 4.1.0.2).

Regarding out-of-sample prediction (Q²), which evaluates the predictive capability of the model, positive values indicate good predictive capability. Table 5 shows that the Q² predict is greater than "0" (zero), indicating that the PLS-SEM model has better predictive capability than the benchmark (the average of the indicators from the validation samples).

Construct	Q²predict	RMSE (RMSE value)	MAE (LM benchmark's RMSE value)
Organizational Ambidexterity	0.247	0.881	0.703
Absorptive Capacity	0.774	0.479	0.360
Crisis Perception	0.098	0.960	0.761

Table 5 – Interpretation of the "Q² predict", by the authors.

Presentation of the Main Research Findings

Regarding H1, it was predicted in the theoretical conceptual model that there was no relationship between Exogenous Shock and Organizational Ambidexterity. However, Table 6 shows a correlation, and the regression coefficient is significant; therefore, the hypothesis was refuted, indicating a significant relationship between Exogenous Shock and Organizational Ambidexterity.
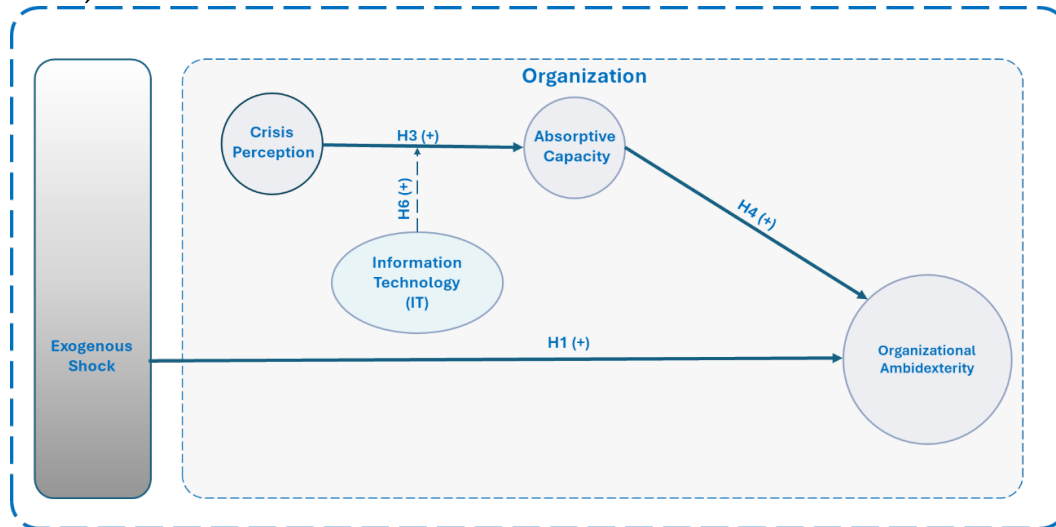
Figure 5 – Final Theoretical Model (with confirmation of Hypotheses), by the authors.

Since the t-test result for H2 was below +1.96, it means that the path suggested in the literature, where Exogenous Shock increases Crisis Perception, is not supported by the data obtained, and H5 (moderator) is also not supported, considering that the relationship it moderated (H2) was also not supported. The remaining hypotheses (H3, H4, and H6) are supported as their results were significant, as shown in figure 5.

The results indicated that IT amplifies Absorptive Capacity, allowing organizations to assimilate and utilize new information more effectively. This corroborates existing literature, which highlights the importance of IT in crisis management and supporting Organizational Ambidexterity (Zahra et al., 2002; Joe F Hair Jr et al., 2020).

The study's findings might be affected by economic conditions at the time of data collection, influencing organizational behavior and crisis perception (Feitosa et al., 2022). Cultural factors, especially in Brazil, may also shape crisis responses. To mitigate these influences, control variables like organizational size and industry sector were included (Zahra et al., 2002) , helping to isolate IT's primary effects on enhancing organizational resilience.

Interpretation of the Results

The analysis of Exogenous Shocks reveals ambiguity in their boundaries, allowing any external problem to be classified as such. The literature still needs to mature to clearly define this concept. The results challenge the notion that Exogenous Shocks have negative effects on Organizational Ambidexterity, indicating that they can stimulate innovation and adaptation, thereby enhancing organizational efficiency and flexibility (Shi et al., 2020; Feitosa et al., 2022). This suggests that shocks can be opportunities for innovation and growth.

The hypothesis that Exogenous Shocks increase Crisis Perception was not confirmed, possibly due to resilience mechanisms that cushion their impact (Bao et al., 2020). Factors such as organizational culture and crisis experience influence perception, explaining the lack of significant correlation.

Hypothesis	Description	t-Student	Result
H1(-)	Exogenous shocks have a negative effect on Organizational Ambidexterity.	6,239*	t observed $\in$ CR (Critical Region) t observed > t critical The null hypothesis H0 is rejected, that is., there is evidence of correlation, and the regression coefficient is significant to explain the hypothesis. *In this case, the theoretical hypothesis of the research was incorrect, as the research predicted that there was NO relationship!
H2(+)	Exogenous shocks increase Crisis Perception within organizations.	1,826**	t observed $\notin$ CR (Critical Region) t observed < t critical The null hypothesis H0 is accepted, that is, there is NO evidence of correlation, and the regression coefficient is NOT significant to explain the hypothesis. **In this case, the theoretical hypothesis of the research was incorrect, as the research predicted that there WAS a relationship!
H3(+)	A greater Perception of Crisis is positively related to the development of Absorptive Capacity.	2,794	t observed $\in$ CR (Critical Region) t observed > t critical The null hypothesis H0 is rejected, that is., there is evidence of correlation, and the regression coefficient is significant to explain the hypothesis.
H4(+)	An improved Absorptive Capacity is positively related to the maintenance or improvement of Organizational Ambidexterity.	3,030	t observed $\in$ CR (Critical Region) t observed > t critical The null hypothesis H0 is rejected, that is., there is evidence of correlation, and the regression coefficient is significant to explain the hypothesis.
H5(-)	Information Technology moderates the relationship between Exogenous Shock and Crisis Perception, such that when Information Technology is effectively used, Crisis Perception is attenuated.	3,288***	t observed $\in$ CR (Critical Region) t observed > t critical The null hypothesis H0 is rejected, that is., there is evidence of correlation, and the regression coefficient is significant to explain the hypothesis. ***Since hypothesis H5 is moderating, when hypothesis H2 is not confirmed, this hypothesis no longer makes sense.
H6(+)	Information Technologies positively moderate the relationship between Crisis Perception and Absorptive Capacity, such that when Information Technologies are effectively used, an organization's capacity to absorb external knowledge and innovation is expanded.	29,492	t observed $\in$ CR (Critical Region) t observed > t critical The null hypothesis H0 is rejected, that is., there is evidence of correlation, and the regression coefficient is significant to explain the hypothesis.

Table 6 – Results of the research hypotheses for the essay, by the authors.

The research confirms that a higher Crisis Perception is linked to the development of Absorptive Capacity, reinforcing that crises catalyze organizational learning (Zahra et al., 2002), which is essential for Organizational Ambidexterity (Shi et al., 2020).

Finally, IT acts as a positive moderator between Crisis Perception and Absorptive Capacity, facilitating communication, coordination, and data analysis, thereby improving resilience and innovation

(El Sawy et al., 2008; Berti et al., 2021). This underscores the importance of strategies that mitigate negative impacts and explore opportunities for innovation.

Suggestions for Future Research

Future research should consider longitudinal studies to understand dynamics between Exogenous Shocks and Organizational Ambidexterity, supported by IT. Exploring diverse industrial and geographical contexts could enhance generalization. Proposals include:

- Social Impacts: Investigate how Exogenous Shocks affect consumer behavior, mental health, and well-being.
- Supply Chain: Analyze impacts on resilience, efficiency, and mitigation strategies.
- Shock Characterization: Categorize scope, intensity, and magnitude of shocks to understand implications.
- Academic Publications: Examine the increase in articles during crises and publication patterns.
- Crisis Perception: Explore the unconfirmed relationship with Exogenous Shocks, considering resilience and internal communication.

These suggestions can broaden theoretical understanding and provide practical insights for managers, aiding in developing effective strategies to tackle Exogenous Shocks and foster organizational resilience and innovation.

CONCLUSION

This paper examines the interaction between exogenous shocks and organizational ambidexterity, highlighting IT as an important moderator. The research integrates organizational resilience and innovation in VUCA and BANI environments, challenging the notion that Exogenous Shocks are solely negative. Instead, they can stimulate innovation and adaptation, enhancing efficiency and flexibility. IT facilitates Absorptive Capacity, essential during crises.

The findings expand how organizations can view Exogenous Shocks as opportunities for innovation. They suggest managers invest in IT and promote adaptability, mitigating negative impacts and exploring opportunities. Adapting quickly to change is essential, with IT being important for resilience.

The article urges managers to adopt emerging technologies and resilience strategies, and academics to explore research on Exogenous Shocks and Organizational Ambidexterity. Advancements in this field will enrich literature and help organizations thrive in an uncertain world.

To effectively navigate challenges posed by Exogenous Shocks, managers should integrate Information Technology (IT) strategically to enhance organizational resilience and ambidexterity. This study suggests that investing in IT infrastructure can improve absorptive capacity by enabling the assimilation and application of external knowledge, as highlighted by Shi, Su, and Cui (2020). IT also plays an important role in enhancing crisis awareness and management capabilities, aligning with the insights of Feitosa and Garcia (2022). Managers should recognize cultural factors in shaping organizational responses to crises and tailor IT strategies accordingly.

Additionally, developing proactive strategies that anticipate potential shocks and incorporate resilience measures can maintain a competitive edge in volatile environments. By implementing these recommendations, managers can strengthen their organizations' ability to withstand and thrive amidst Exogenous Shocks, ensuring long-term sustainability and success.

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