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# Navigating VUCA and BANI environments in higher education: A qualitative meta-analysis and framework for adaptive academic leadership

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ABSTRACT

Contemporary higher education operates under volatility, uncertainty, complexity, and ambiguity (VUCA), complemented by brittle, anxious, non-linear, and incomprehensible (BANI) conditions. These dynamics are shaped by rapid digital transformation, global competition, demographic shifts, and political dynamics. Academic leaders require agility, emotional intelligence, and systemic thinking. The COVID-19 pandemic intensified these pressures, exposing institutional vulnerabilities and prompting a re-evaluation of leadership practices. In Malaysia, these pressures were compounded by policy changes, disparities in technology access, and the need to reconcile national education objectives with international standards. This qualitative meta-analysis systematically reviews 25 empirical and conceptual studies (2015–2025) following PRISMA reporting guidelines. The studies, sourced from Scopus, ERIC, and Google Scholar, encompass 10 Malaysian and 15 international perspectives. Thematic synthesis identified three core themes: (1) navigating structural and policy volatility, (2) leading through uncertainty and crisis management, and (3) Managing Complexity, Stakeholder Diversity, and Framework Development. From these findings, this study introduces the VUCA-Responsive Academic Leadership Framework, outlining competencies such as digital leadership, emotional resilience, strategic foresight, and collaborative governance.

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## 1. INTRODUCTION

In recent years, the realm of higher education has grown progressively unpredictable, unclear, complex, and ambiguous. This scenario is frequently termed VUCA (Bennett & Lemoine, 2014). The VUCA concept, initially developed in military situations, has been extensively embraced across several sectors to characterize circumstances necessitating ongoing adaptation and innovation. In the academic sector, these variables are transforming governance, policy execution, educational methodologies, and stakeholder involvement. Global universities face increasing need to exhibit agility, strategic foresight, and resilience amidst rapid digital transformation, international rivalry, demographic shifts, and political instability (Olabiyi et al., 2025; Bakar et al., 2025).

Leadership in higher education, once reliant on stability and long-term planning, now necessitates agility, emotional intelligence, and systems thinking to navigate continuous turbulence. The COVID-19 pandemic intensified this transition by revealing institutional weaknesses, hastening digital adoption, and necessitating a thorough re-evaluation of leadership paradigms (Abu Hassan et al., 2024; Sani et al., 2021). Re-evaluation of leadership paradigms means reassessing inherited hierarchical models and adopting approaches that better fit complex, uncertain conditions, notably distributed and sustainable leadership (Bush & Ng, 2019; Vesudevan et al., 2024).

In Malaysia, this shift is visible in the *Malaysia Education Blueprint 2013-2025*, which prescribes distributed leadership yet operates within a long-standing centralized culture that can limit full enactment (Bush & Ng, 2019; Ministry of Education Malaysia, 2013). A broader regional trajectory in Southeast Asia shows systems moving toward collaborative governance and international alignment while still balancing strong ministerial oversight (HEAD Foundation, 2021; ASEAN Secretariat, 2022). Recent mapping of organizational change research in higher education further underscores the need for agile, context-sensitive leadership frames that integrate evidence with practice (Alzahmi et al., 2025).

Global research indicates that leaders adopted strategies including distributed leadership, prompt policy modifications, and decision-making frameworks that emphasized stakeholder requirements (Beresford-Dey, 2024). In Malaysia, these global concerns were aggravated by issues particular to the local setting. This encompasses recurrent modifications in educational policy, inconsistent access to technology, and the necessity to synchronize national educational methods with global standards. Research demonstrates that Malaysian university administrators have relied significantly on strategic thinking, adaptation, crisis management, emotional intelligence, and effective communication to maintain institutional performance during unpredictable times (Abu Hassan et al., 2024). During and after the pandemic, rapid quality assurance updates such as MQA micro-credential guidelines (2020) and flexible assessment standards (2023) accelerated the shift to normalized hybrid learning, exposing persistent digital divide issues and reinforcing the need for adaptive governance (Malaysian Qualifications Agency, 2020, 2023; Chung et al., 2020).

Certain researchers propose integrating the VUCA framework with the BANI concept, which highlights the necessity of addressing brittleness, anxiety, non-linear change, and complex situations to foster resilience and mental agility in leadership (Halil et al., 2025). Moreover, research on human resource development strategies within Malaysian higher education emphasizes the significance of digital competencies, innovative cognition, and leadership flexibility for sustaining performance in volatile environments (Abu Hassan et al., 2024).

Despite the growing body of research on this topic, there remains a limited and fragmented synthesis about the operations of academic leaders in VUCA and BANI environments, both in Malaysia and globally. To address this gap, this study conducts a qualitative meta- analysis of 25 conceptual and empirical papers published from 2015 to 2025. Specifically, this review addresses three research questions:

i. What primary structural, psychological, and operational challenges do academic leaders face in VUCA and BANI higher education environments?
ii. How do adaptive leadership strategies differ or align between global and Malaysian higher education contexts?
iii. What conceptual framework can integrate these adaptive competencies into actionable institutional resilience?

## 2. LITERATURE REVIEW

The concept of volatility, uncertainty, complexity, and ambiguity, known as VUCA, has gained increasing prominence in higher education research. Initially introduced in military contexts, the VUCA framework is now widely applied to describe environments that require constant adaptation and innovation (Bennett & Lemoine, 2014). Recent systematic reviews indicate that higher education institutions are particularly exposed to these dynamics due to rapid digital transformation, shifts in student demographics, and global geopolitical instability (Syamsir et al., 2025). Within this context, the demand for academic leaders who can navigate uncertainty with agility and foresight has become more pressing than ever (Olabiyi et al., 2025).

International studies have consistently shown that academic leaders face unprecedented challenges in decision-making, policy implementation, and stakeholder engagement. The COVID-19 pandemic served as a stress test, compelling institutions to adopt online learning rapidly while ensuring continuity in research and administrative functions (Alsaleh & Rutter, 2024). Leadership responses often relied on distributed and collaborative models that promoted shared responsibility and rapid problem solving (Harris, 2022). Comparative analyses further highlight that successful leaders applied iterative sense-making strategies, allowing them to adapt institutional priorities in line with changing conditions (Uhl-Bien & Arena, 2018). Distributed and collaborative leadership models emphasize the dispersal of decision-making authority across multiple actors in an organization, rather than centralizing control in a single leader. In these approaches, leadership is seen as a collective social process, where formal and informal leaders share responsibility for identifying challenges, generating solutions, and implementing actions (Harris, 2022; Spillane, 2006).

Such models foster shared responsibility, meaning that staff at different levels take ownership of institutional goals, while also enabling rapid problem solving because decision-making is not bottlenecked at the top. In higher education during the COVID-19 pandemic, these approaches proved essential: academic leaders leveraged cross-functional teams spanning faculty, IT staff, and administrative units to co-design online learning strategies, adjust research timelines, and maintain operational continuity (Alsaleh & Rutter, 2024; Harris, 2022). This aligns with Uhl-Bien and Arena's (2018) concept of adaptive space, where leaders create conditions for iterative sense-making, enabling quick adaptation of institutional priorities in response to shifting health guidelines, student needs, and policy directives.

On the other hand, the rise of digital academic leadership has been a defining trend in the post-pandemic era. Leaders have been required to broker resources, build digital capabilities, and integrate technological innovations into institutional strategies (Jing et al., 2025). Bibliometric reviews suggest that digital leadership not only supports operational efficiency but also strengthens resilience and continuous improvement in teaching, research, and community engagement (Olabiyi et al., 2025). This form of leadership demands a balance between technological adoption and the preservation of academic values, ensuring that innovation aligns with institutional missions (Beresford-Dey, 2024).

While the VUCA framework remains influential, scholars have increasingly explored complementary perspectives such as Complexity Leadership Theory and the BANI (Brittle, Anxious, Nonlinear, Incomprehensible) model. Crucially, VUCA and BANI do not function as normative leadership theories; rather, they serve as complementary environmental diagnostic lenses. While VUCA describes external structural instability, BANI captures the psychological and cognitive strain imposed on leaders and employees. BANI frames operating conditions as:

(i) Brittle: Systems look robust but can snap under stress, requiring leaders to build slack and redundancy.
(ii) Anxious: Heightened uncertainty amplifies risk perception, requiring leaders to foster empathy and psychological safety.
(iii) Non-linear: Small inputs trigger outsized, cascading effects, requiring scenario planning and rapid feedback loops.
(iv) Incomprehensible: Opaque data creates information overload, requiring transparent sensemaking and data analytics.

Recent scholarship positions BANI as a post-VUCA diagnostic lens where agility is paired with psychological resilience and collaborative adaptation (Syamsir et al., 2025; Kruger & Barkhuizen, 2024).

In Malaysia, the VUCA realities of global higher education are further shaped by local challenges, including frequent policy shifts, disparities in technological access, and the drive to meet national education targets set out in the *Malaysia Education Blueprint 2015–2025* (Ministry of Education Malaysia, 2015). Empirical studies show that Malaysian university administrators relied heavily on strategic thinking, crisis management, emotional intelligence, and effective communication to sustain operations during the pandemic (Abu Hassan et al., 2024). The transition to remote learning highlighted both opportunities for innovation and the urgent need to address gaps in digital readiness (Salleh et al., 2023). Other Malaysian research has identified leadership agility, curriculum reform, and sustainability planning as critical strategies for enhancing institutional resilience in uncertain environments (Rasli et al., 2022).

Despite the growing body of research, there remains a scarcity of qualitative meta-analyses that synthesize leadership practices across diverse geographical contexts. Existing studies tend to focus on single institutions or national systems, limiting the generalizability of findings (Syamsir et al., 2025). There is also a need for deeper exploration of how global frameworks like VUCA and BANI can be effectively integrated into leadership development programmes, particularly within the Malaysian higher education system.

## 3. METHODOLOGY

This study employed a qualitative meta-analysis (meta-synthesis) to integrate and synthesize empirical and conceptual research on academic leadership in higher education within the context of Volatility, Uncertainty, Complexity, and Ambiguity (VUCA) and BANI. Qualitative meta-synthesis, as described by Noblit and Hare (1988) and Finfgeld-Connett (2010), enables the systematic integration of qualitative and conceptual findings to build higher-level interpretations and framework models. While "systematic review" defines the literature retrieval process and "PRISMA" serves as the reporting guideline, "qualitative meta-analysis" represents the core interpretive methodology**.**

The search strategy was systematically executed across Scopus, Google Scholar, and ERIC between January 2015 and February 2025. Search terms combined Boolean operators across title, abstract, and keyword fields: ("academic leadership" OR "higher education leadership") AND ("VUCA" OR "BANI" OR "complexity leadership" OR "crisis management").

Table 1. Comprehensive Search Strategy and Database Breakdown

| Database | Search Field | Search Strings Used | Dates Covered | Initial Records Hits |
|---|---|---|---|---|
| Scopus | Title,Abstract, Keywords | ("academic leadership" OR "higher education leadership") AND ("VUCA" OR "BANI") | Jan 2015 – Feb 2025 | n = 412 |
| ERIC | Abstract / Keywords | ("academic leadership" OR "educational leadership") AND ("VUCA" OR "resilience") | Jan 2015 – Feb 2025 | n = 298 |
| Google Scholar | Title / Full-text | ("academic leadership" AND "VUCA" AND "higher education") | Jan 2015 – Feb 2025 | n = 444 |
| Total Hits | | | | n = 1,154 |

Studies were included if they focused on academic leadership in higher education, engaged with VUCA/BANI models, and used qualitative, conceptual, or systematic review designs. Studies were excluded if they focused outside higher education, lacked qualitative interpretive data, or were non-peer-reviewed opinion pieces.

The selection process followed PRISMA 2020 reporting guidelines (Page et al., 2021). The initial search identified 1,154 records, reduced to 832 after duplicates were removed. Title and abstract screening led to the exclusion of 720 studies. Full-text assessment of 112 articles resulted in the exclusion of 87 studies (reasons included: non-higher education focus = 41; quantitative design only = 28; lack of VUCA/BANI diagnostic focus = 18). A total of 25 studies were retained for final synthesis.

### Quality Appraisal

To ensure methodological rigor, all 25 included studies underwent formal quality appraisal using the Critical Appraisal Skills Programme (CASP) qualitative checklist. Studies were evaluated across research design clarity, data collection transparency, analytical rigor, ethical considerations, and contextual relevance. All 25 retained studies demonstrated Moderate to High quality scores, providing a credible and robust evidence base for thematic synthesis.

### 3.2 Data Extraction and Synthesis

Data extraction was conducted using a structured matrix recording publication details, geographical context, research design, sample/data source, and main findings. Of the 25 studies, 10 represented Malaysian higher education contexts and 15 represented international contexts (including Southeast Asia, Europe, and North America).

Thematic synthesis followed Thomas and Harden's (2008) three-stage framework:

(i) Stage 1: Line-by-line open coding of raw findings/discussion sections generated 42 initial codes.
(ii) Stage 2: Grouping open codes into 8 descriptive themes based on shared conceptual characteristics.
(iii) Stage 3: Developing 3 higher-level analytical themes that extended beyond original study contexts.

VUCA and BANI were applied as post-hoc diagnostic lenses rather than rigid predetermined coding buckets, allowing inductive findings to emerge naturally. NVivo 14 managed code traceability. Trustworthiness was established through independent review by two higher education scholars, an audit trail, and database triangulation.

## 4. FINDINGS AND DISCUSSION

The thematic synthesis of the 25 reviewed studies yielded three primary analytical themes that directly correspond to the study's research questions: Section 4.1 explores Navigating Structural and Policy Volatility (RQ1); Section 4.2 examines Leading Through Uncertainty and Crisis Management (RQ2); and Section 4.3 investigates Managing Complexity, Stakeholder Diversity, and Framework Development (RQ3).

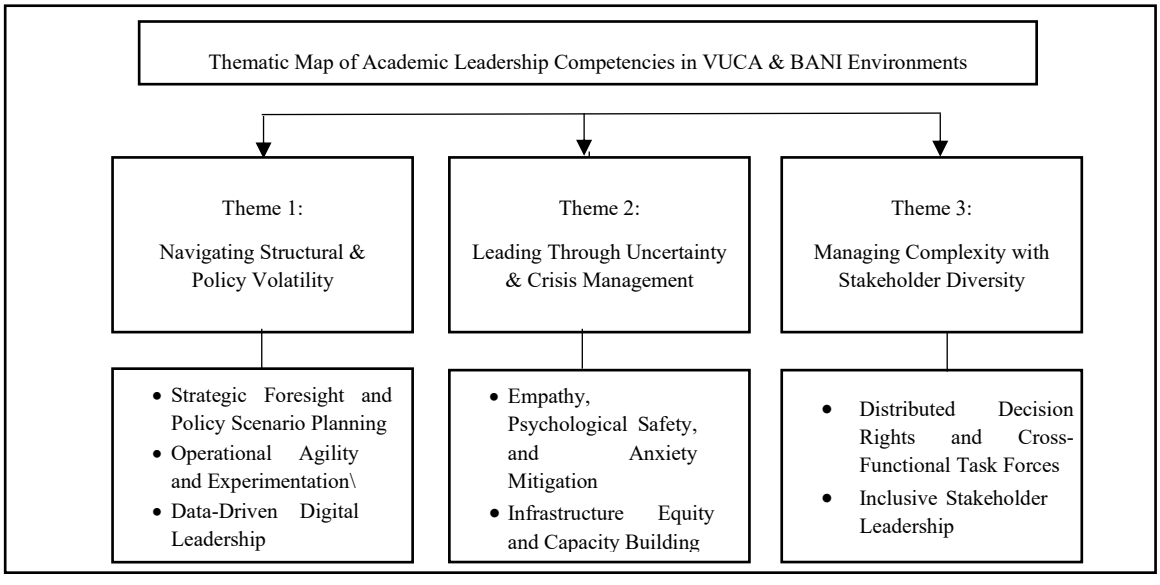



Fig.1. Thematic Map of Academic Leadership Competencies in Vuca & Bani Environments

### 4.1 Navigating Structural and Policy Volatility

Across the literature, one of the most persistent challenges faced by academic leaders is the need to adapt to rapidly changing institutional policies, government directives, and external accreditation requirements (Beresford-Dey, 2024; Mutil et al., 2024). In global contexts, rapid policy shifts during crisis periods forced leaders to make operational decisions with incomplete information and under severe time constraints (Alsaleh & Rutter, 2024; Beresford-Dey, 2024). In Malaysia, volatility was compounded by the national education agenda's alignment with the *Malaysia Education Blueprint 2013–2025* and updating quality assurance standards, such as the MQA micro-credential guidelines and assessment rules (Ministry of Education Malaysia, 2013; Malaysian Qualifications Agency, 2020, 2023; Abu Hassan et al., 2024).

Synthesis across these studies reveals three core sub-themed capabilities required to navigate structural volatility:

*Strategic Foresight and Policy Scenario Planning*: Rather than reacting passively to government directives, effective academic leaders engaged in prospective horizon scanning and scenario laboratories (Halil et al., 2025; Syamsir et al., 2025). Evidence shows that leaders who stress-tested academic programs and credit pathways against potential policy updates were better equipped to maintain institutional performance and buffer faculty from regulatory shocks (Bakar et al., 2025; Rasli et al., 2022).

*Operational Agility and Experimentation*: Leaders cultivated organizational nimbleness by adopting iterative, short-cycle decision-making (Beresford-Dey, 2024; Olabiyi et al., 2025). Instead of waiting for multi-year strategic plans, leaders executed rapid pilot initiatives—such as fast-tracking modular hybrid delivery—and adjusted workflows continuously based on operational feedback (Adi Badiozaman, 2024; Chan, 2023).

*Data-Driven Digital Leadership*: Navigating regulatory fluidity required leaders to build robust digital capabilities (Jing et al., 2025; Olabiyi et al., 2025). Leaders leveraged learning analytics and digital management dashboards to track student engagement, monitor course delivery, and adjust institutional policies using real-time empirical data rather than informal estimates (Fernández & González, 2023; Long et al., 2025).

While policy fluidity challenged leaders globally, international institutions often possessed greater institutional autonomy to adjust operational models (Alsaleh & Rutter, 2024; Beresford-Dey, 2024). In contrast, Malaysian leaders experienced dual-layer friction: navigating top-down Ministry of Higher Education directives while attempting to enact distributed autonomy within a historically centralized administrative culture (Bush & Ng, 2019; Sani et al., 2021).

### 4.2 Leading Through Uncertainty and Crisis Management

The literature consistently illustrates that uncertainty—whether caused by global health crises, geopolitical shifts, or technological disruption—places unique psychological and operational demands on academic leadership (Alsaleh & Rutter, 2024; Syamsir et al., 2025). Globally, leaders with high adaptability and communication competence were significantly more effective in mitigating psychological stress among faculty and students (Fernández & González, 2023; Olabiyi et al., 2025). Balancing immediate emergency responses with long-term strategic viability created ongoing tension for administrators (Chughtai et al.,

2023; Kezar, 2020). Applying the BANI lens to this evidence base highlights two critical sub-themed dimensions:

*Empathy, Psychological Safety, and Anxiety Mitigation*: In anxious environments, leaders built emotional resilience by creating psychological safety—maintaining open communication, validating staff burnout, and establishing flexible expectations (Bushuyev et al., 2025; Kruger & Barkhuizen, 2024). Building "operational slack" prevented single-point failures.

*Infrastructure Equity and Digital Capacity Building*: Crisis response was severely hindered by technological disparities, a challenge particularly pronounced in Malaysian studies comparing urban and regional campuses (Chung et al., 2020; Salleh et al., 2023). Adaptive leaders responded by reallocating institutional resources to provide hardware support, internet connectivity subsidies, and targeted digital pedagogy training for under-resourced faculty, ensuring equitable educational continuity (Abu Hassan et al., 2024; Salleh et al., 2023).

### 4.3 Managing Complexity, Stakeholder Diversity, and Framework Development

Complexity in higher education manifests in the need to manage competing expectations across students, academic staff, accreditation agencies, industry partners, and government bodies (Alzahmi et al., 2025; Harris, 2022). International studies demonstrate that shared and distributed leadership models offer a viable mechanism for managing this complexity by decentralizing authority and encouraging collective problem-solving (Harris, 2022; Spillane, 2006; Uhl-Bien & Arena, 2018). In Malaysia, complexity is further heightened by the multicultural and multilingual composition of university communities, alongside regional resource imbalances (Abu Hassan et al., 2024; Vesudevan et al., 2024). Synthesis of this evidence identifies two key sub-themes that operationalize collaborative governance:

*Distributed Decision Rights and Cross-Functional Task Forces*: To prevent administrative bottlenecks at the executive level, effective institutions distributed decision-making authority (Harris, 2022; Spillane, 2006). Leaders formed cross-functional task forces uniting academic deans, IT directors, administrative heads, and student representatives, granting them explicit authority to solve localized operational challenges rapidly (Alsaleh & Rutter, 2024; Harris, 2022).

*Inclusive Stakeholder Leadership*: In diverse institutional environments, top-down directives frequently encountered resistance (Bush & Ng, 2019). Leaders succeeded by deploying culturally competent communication and transparent stakeholder consultations, ensuring that institutional adaptations aligned with community values and national higher education targets (Vesudevan et al., 2024).

#### *4.3.1 Understanding the VUCA-Responsive Academic Leadership Framework*

When universities face non-stop change and disruption, administrators cannot rely on rigid, top-down playbooks. As shown in Figure 1, the VUCA-Responsive Academic Leadership Framework provides a straightforward, human-centered guide to help university leaders make sense of chaos, support their teams, and keep their institutions moving forward.

As outlined at the top of Figure 1, the process begins by assessing what the institution is up against, looking at both external realities and human impacts through two complementary lenses. Externally, leaders look through the VUCA lens to spot sudden policy changes, shifting student needs, or unexpected global disruptions. Internally, they use the BANI lens to recognize how these pressures affect staff emotional health, paying attention to signs of burnout, anxiety, or confusion. Spotting both operational obstacles and emotional strain diagnoses institutional strain and triggers action, showing that solving a crisis involves both logistics and taking care of the people driving the university.

To guide an institution through disruption, administrators need to focus on three core leadership actions. First, navigating structural and policy volatility requires staying flexible and forward-looking.

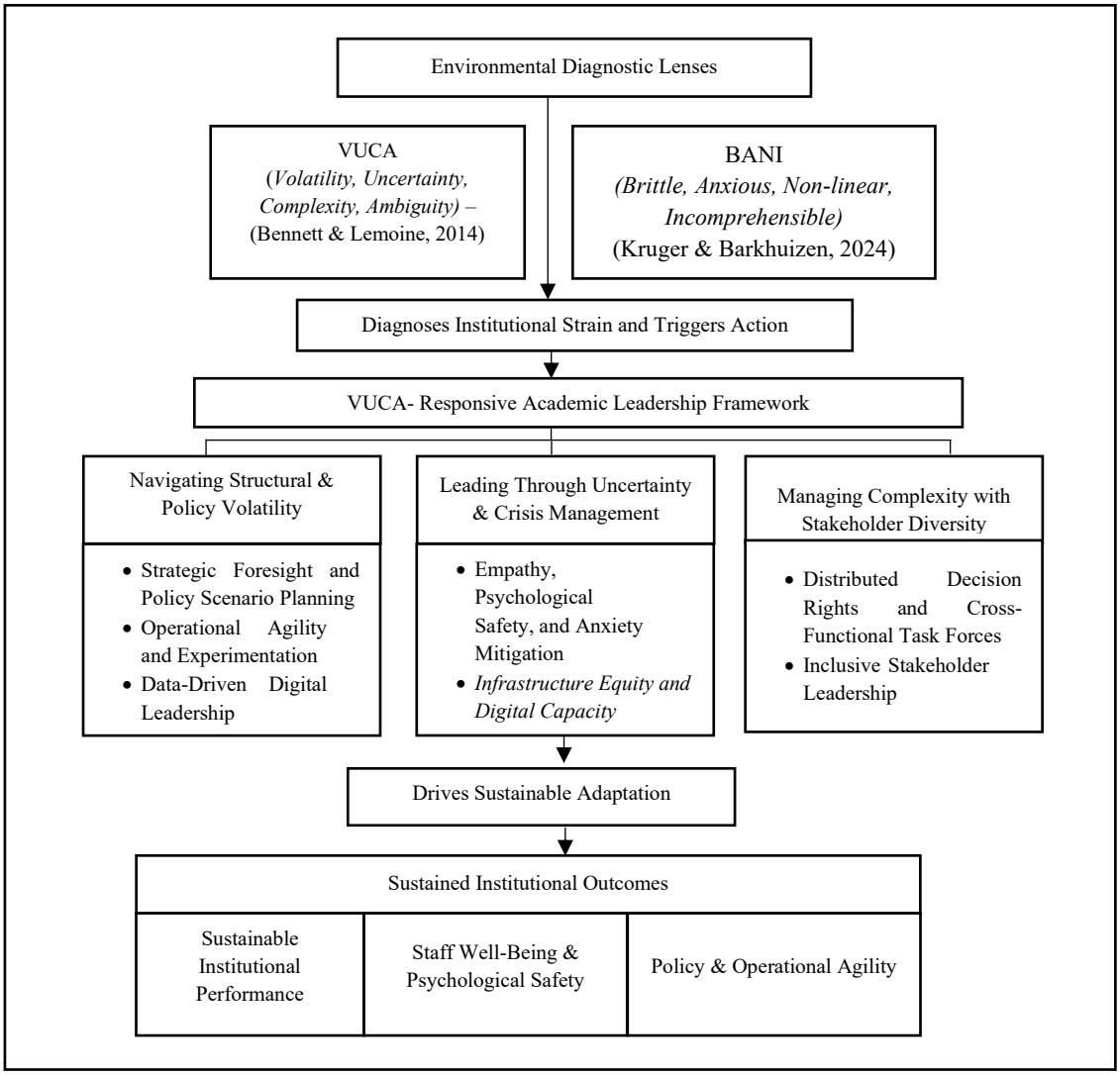



Fig. 1. The VUCA-Responsive Academic Leadership Framework

Leaders plan ahead by running scenario checks so policy shifts do not catch the university off-guard, test small pilot initiatives before committing to massive rigid plans, and make operational choices using clear, real-time data rather than guesswork. Second, leading through uncertainty and crisis management means putting people first. Leaders build psychological safety by showing empathy, listening to concerns, validating burnout, and providing staff with the resources, skills, and training they need so no one feels abandoned during tough transitions. Third, managing complexity with stakeholder diversity relies on genuine collaboration. Instead of bottlenecking every decision at the top, leaders share the workload by setting up cross-functional teams with the authority to solve local problems fast, while communicating openly so that staff, students, and community members feel heard and valued.

When leaders combine clear planning, emotional support, and shared decision-making, they drive sustainable adaptation across the entire institution. This delivers three practical, long-term results. The university maintains sustainable performance by delivering high-quality education and research without collapsing under stress. It protects staff well-being and psychological safety, ensuring that employees feel supported, respected, and mentally secure. Finally, it embeds policy and operational agility directly into the organizational culture, making future disruptions much easier to handle. Ultimately, this framework provides a clear path from panic to purposeful leadership, proving that the best way to handle an unpredictable future is by planning smart, supporting your people, and working together.

## 5. IMPLICATIONS OF THE STUDY

The synthesis extends leadership literature by demonstrating that VUCA and BANI serve as dual-diagnostic tools rather than standalone theories. It demonstrates that structural agility without psychological safety leads to leader burnout, while emotional support without strategic foresight leads to operational drift. University administrators should move away from top-down crisis management toward distributed governance task forces. Institutions must formalize mentoring, digital literacy training, and emotional intelligence coaching into regular leadership pathways. Policymakers (such as MOHE in Malaysia) must balance central quality oversight with institutional autonomy. Policy updates should embed horizon scanning, scenario laboratories, and stress-testing mechanisms before mandating systemic curricular shifts.

## 6. LIMITATIONS AND FUTURE RESEARCH

Several limitations must be acknowledged. First, the review was restricted to English-language peer-reviewed publications, potentially omitting relevant findings in other languages. Second, database retrieval was limited to Scopus, ERIC, and Google Scholar, which may exclude grey literature or government monographs. Third, combining qualitative empirical studies with conceptual articles introduces variation in evidence depth. Finally, as the proposed framework is conceptual and empirically unvalidated, future research should employ longitudinal, quantitative, or comparative designs across different higher education systems to test its empirical validity and impact on institutional outcomes.

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## 8. CONFLICT OF INTEREST STATEMENT

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

## 9. AUTHORS' CONTRIBUTIONS

All authors contributed to the conception, design, analysis, and writing of this study. Abd. Rasid Abd. Rahman contributed to the theoretical framing of VUCA–BANI leadership and provided critical intellectual review and manuscript refinement. Wan Hartini Wan Zainodin led the study design, PRISMA-guided data collection, NVivo-based thematic analysis, framework development, and manuscript writing, and served as corresponding author. Hamimda Agil supported study selection, thematic verification, and interpretation, particularly in stakeholder communication and leadership strategy. Linda Abd. Hamid contributed to conceptual mapping, cross-disciplinary interpretation, and validation of the leadership framework. All authors reviewed and approved the final manuscript.

## 10. DECLARATION OF GENERATIVE AI IN THE WRITING PROCESS

During the preparation of this work, the authors utilized Gemini to refine language quality, readability, and structural flow. Following the use of this tool, the authors thoroughly reviewed, revised, and validated all content, and take full responsibility for the ultimate accuracy, integrity, and original contributions of this publication

## 11. DATA AVAILABILITY/SUPPLEMENTARY MATERIALS

All secondary studies analyzed during this qualitative synthesis are cited within the article and its reference list. Additional methodological audit materials, including the systematic extraction matrix and CASP appraisal sheets, are available from the corresponding author upon reasonable request.

## 12. ETHICS STATEMENT

The authors declare that this qualitative meta-synthesis did not involve direct human or animal subjects. The research analyzed open-source, secondary academic publications following established systematic review protocols and institutional academic integrity standards at Universiti Teknologi MARA (UiTM).

## 13. FUNDING INFORMATION

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