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Towards an Agile Governance Framework for Public Universities: Insights from Exploratory Factor Analysis

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ABSTRACT

The evolving landscape of higher education demands governance models that are adaptive, transparent, and responsive to diverse stakeholder needs. Traditional governance structures in public universities often exhibit rigidity, fragmented decision-making, and limited adaptability to rapid technological, administrative, and pedagogical changes. Although agile governance has attracted considerable attention, its application within higher education remains relatively underexplored. This study proposes and empirically validates a multidimensional agile governance framework specifically tailored to public universities. Using a purposive sampling approach, data were collected from 150 staff members across faculties, campuses, and departments of a single Malaysian public university, and subsequently analysed using Exploratory Factor Analysis (EFA). The analysis identified nine core dimensions of agile governance: Responsiveness, Limited Formalities, Continuous Improvement, Consistency, Efficiency, Flexibility, Values Inculcation, Transparency, and Risk Management. Theoretically, this study extends the concept of agile governance by contextualising it within higher education and addressing the paucity of empirical instruments for assessing agility in university governance. Practically, the proposed framework provides university leaders with a structured, evidence-based guide for prioritising and embedding agility within institutional processes. By integrating ethical values, transparency, iterative learning, and proactive risk management, universities can cultivate governance practices that are both responsive and sustainable, while also anticipating potential implementation challenges.

1. Introduction

Governance in public universities has traditionally been guided by hierarchical decision-making, bureaucratic processes, and state control. While these traditional models ensure stability and accountability, they have increasingly been criticised for their rigidity and limited capacity to respond

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to the rapidly changing educational, technological, and societal landscape [1,2]. In the era of digital transformation and global competition, universities are expected to adapt swiftly, foster innovation, and engage diverse stakeholders in decision-making processes. Consequently, higher education institutions are exploring alternative governance approaches that emphasise flexibility, collaboration, and strategic responsiveness, leading to the emergence of agile governance as a promising framework [3–5].

Agile governance, which originated from agile software development principles, focuses on adaptability, responsiveness, and stakeholder engagement in decision-making [3–5]. Within the context of public universities, agile governance refers to the application of these principles to institutional management and policy implementation. It promotes iterative decision-making, decentralised leadership, and continuous improvement to align university operations with evolving educational demands and societal expectations [6,7]. This approach enables universities to remain resilient amid uncertainty, promote inclusive participation, and strengthen strategic capacity through collaboration among faculty members, administrators, students, and external partners [4,8].

Despite the growing recognition of agile governance, its application in higher education remains limited. Previous studies have highlighted several research gaps that constrain its effective implementation. First, ambiguity persists in defining governance models that can balance institutional authority and academic autonomy within complex university structures [2]. Second, reforms in internal governance alone are insufficient to achieve strategic transformation unless they are integrated with broader policy frameworks [1]. Moreover, the adoption of agile practices in public universities has not been extensively examined, particularly in terms of how such practices can enhance innovation, reduce bureaucratic inertia, and improve institutional responsiveness [9, 10].

Given these challenges, there is a pressing need for empirical studies that identify and validate the key dimensions of agile governance applicable to public universities. Such studies can provide a theoretical foundation for understanding how agile principles manifest within institutional governance and offer practical guidance for policymakers and university leaders in adopting agile-oriented reforms. Therefore, the aim of this study is to explore and establish the underlying construct structure of agile governance in public universities using Exploratory Factor Analysis (EFA). Specifically, the study seeks to explore the key dimensions of agile governance practices, identify and validate the primary constructs based on exploratory factor loadings, and propose a conceptual and empirically informed agile governance framework grounded in the identified factor structure, which reflects institutional adaptability, stakeholder engagement, and strategic alignment within the complex governance landscape of higher education.

2. Literature Review

2.1 Governance Models in Public Universities: Traditional vs. Agile Approaches

Traditional governance in public universities is characterised by hierarchical structures, bureaucratic administrative processes, and significant state control. Within these systems, decision-making authority is highly centralised, supported by formalised lines of authority and accountability [1,11]. The collegial model, meanwhile, upholds shared governance ideals, emphasising consensus-building and academic autonomy in decision-making [11,12]. Although these structures protect academic values and ensure regulatory compliance, they are often constrained by rigid administrative procedures that hinder adaptability and responsiveness, especially in rapidly changing higher-education environments [12,13]. Additionally, strong state involvement and regulatory oversight frequently limit institutional autonomy, reducing the capacity of universities to innovate

and strategically navigate external pressures such as digitalisation, globalisation, and funding shifts [14,15].

In contrast, agile governance reflects principles drawn from agile methodologies and contemporary public-sector reforms, prioritising flexibility, rapid responsiveness, decentralised decision-making, and innovation-driven cultures. This governance orientation diverges from rigid bureaucratic systems by devolving authority to smaller, dynamic, self-managed teams that can act quickly and autonomously [16,17]. Agile governance approaches promote organisational adaptability and institutional capacity to respond swiftly to emerging risks and opportunities [13,18,19]. They also encourage continuous improvement and institutional learning, aligning governance practices with entrepreneurial and innovation-oriented values [4,12,20]. By minimising bureaucratic layers, agile governance frameworks streamline processes, support collaboration, and enhance administrative efficiency and organisational preparedness for transformation [13,18]. Overall, the evolution from traditional to agile governance models highlights the increasing need for public universities to cultivate governance systems that are not only compliant and accountable but also flexible, strategic, and innovation-driven in addressing complex environmental demands.

2.2 Agile Governance in Public Universities: Conceptual Foundations and Evolution

Agile governance in public universities refers to the application of agile principles, originally developed in software engineering, to institutional leadership, decision-making, and administration. This governance philosophy emphasises flexibility, iterative improvement, rapid responsiveness, and active stakeholder engagement to address dynamic academic, technological, and socio-economic environments effectively [3–5]. In essence, agile governance prioritises adaptability, collaborative culture, and continuous innovation, positioning universities to remain responsive and resilient amid evolving challenges and opportunities.

The evolution of agile governance in higher education is closely linked to global shifts in the governance landscape. Governance in higher education encompasses the structures, processes, and relationships through which policies are developed, implemented, and monitored at institutional and national levels. As the higher-education sector expands in scale, internationalisation, and complexity, universities increasingly face pressure to enhance flexibility, autonomy, and strategic agility. Recognising these realities, Malaysia's Ministry of Higher Education has stressed the importance of empowered governance systems to strengthen institutional competitiveness and advance efficiency, distinction, and academic excellence [21]. This reflects a broader sectoral understanding that traditional governance approaches alone are insufficient to address rapidly changing stakeholder expectations, digital transformation, and global competition.

Rising uncertainty and complexity across the public sector further reinforce the need for agile governance models that support responsive, innovative, and sustainable institutional management [22]. Consequently, agile governance represents a paradigm shift from compliance-centric and bureaucratic governance toward more adaptive and proactive institutional systems. By embracing agile principles, public universities are better positioned to navigate disruptions, optimise administrative efficiency, and drive enduring institutional transformation aligned with global higher-education reforms.

2.3 Applications of Agile Governance in Public Universities

Agile governance serves as a catalyst for strategic transformation in higher education by aligning institutional objectives with agile practices that promote innovation, strategic capacity, and

organisational resilience [4,23]. Within the complex landscape of public universities, this governance approach provides a structured yet flexible mechanism to address pressing challenges such as constrained funding, rapid technological advancement, and the evolving demographics of student populations [23]. Through the adoption of agile principles, universities can remain adaptive and responsive while upholding accountability to their institutional missions and regulatory frameworks. The concept of the "Agile School" illustrates how agile governance can be operationalised within higher education settings to stimulate institutional innovation and transformation. This model emphasises continuous improvement, stakeholder engagement, and adaptive decision-making processes that collectively enhance institutional effectiveness [24].

The notion of educational process maturity further reflects an institution's capacity to design and refine processes that evolve through feedback, reflection, and collaboration. As institutions achieve higher levels of process maturity, they become more responsive to shifts in education policy, student expectations, and societal needs, ensuring that governance mechanisms remain relevant and progressive. Digital transformation has also become a critical enabler of agile governance in universities. The integration of agile methodologies within digital management systems enhances data-driven decision-making, optimises administrative operations, and enriches teaching and learning experiences [13]. By embedding agile governance principles into digital initiatives, institutions can ensure that technology adoption aligns closely with strategic goals. This alignment allows universities to respond swiftly to emerging technologies, adapt pedagogical innovations, and foster a culture of continuous improvement. Ultimately, agile governance in higher education facilitates the creation of dynamic, responsive, and collaborative institutional environments capable of thriving in conditions of uncertainty and change.

2.4 Key Challenges of Implementing Agile Governance in Public Universities

Implementing agile governance in public universities involves overcoming several interrelated challenges, including structural and cultural barriers, technological limitations, resource constraints, governance and policy complexities, and issues related to strategic alignment.

2.4.1 Structural resistance

Resistance to change remains one of the major challenges in implementing agile governance. Organisational inertia entrenched administrative practices, and reluctance among staff to embrace new models hinder transformation efforts [25]. The complex and bureaucratic structures typical of public universities also restrict flexibility and slow the decision-making processes necessary for agile implementation [26].

2.4.2 Cultural challenges

The adoption of agile governance requires a fundamental shift in academic culture among faculty and leadership. Traditional governance norms and academic hierarchies can impede this transition [27]. Furthermore, agile governance depends heavily on collaboration and engagement among diverse stakeholders. However, the persistence of siloed structures and limited cross-functional collaboration poses significant barriers to creating a collaborative environment [7,28].

2.4.3 Technological challenges

The digital transformation that accompanies agile governance requires robust and adaptable IT infrastructure. Many universities face difficulties in maintaining the technological systems necessary to support agile practices [29,30]. In addition, ensuring cybersecurity and developing digital literacy among staff and students are critical components of a successful agile transition. These areas require ongoing investment and strategic planning [30].

2.4.4 Resource constraints

Resource limitations represent another significant challenge. Insufficient funding and lack of institutional support often impede full-scale implementation of agile governance. Financial resources are essential for training, infrastructure enhancement, and process redesign [23,31]. Administrative and leadership commitment is also crucial to overcoming resistance and ensuring sustained institutional transformation [32].

2.4.5 Governance and policy issues

Policy and regulatory frameworks may not always align with agile governance principles, thereby restricting institutional flexibility [6]. Establishing accountability and transparency mechanisms within a flexible governance system remains a complex challenge. Universities must balance empowerment and autonomy with the need for oversight and responsibility [28].

2.4.6 Strategic alignment

For agile governance to be effectively implemented, it must align with the university's mission and strategic objectives. Achieving this alignment requires deliberate planning, regular review, and integration with existing institutional systems. Without such alignment, agile initiatives risk becoming isolated efforts rather than contributing to overall strategic goals [7,29].

2.5 Core Principles of Agile Governance in Public Universities

Agile governance in public universities encompasses multiple interconnected dimensions that collectively enhance institutional capacity to respond to change, promote stakeholder engagement, and ensure effective decision-making. These dimensions reflect the principles of flexibility, transparency, collaboration, and accountability that underpin adaptive governance in higher education.

2.5.1 Adaptability and responsiveness

Adaptability and responsiveness are central to agile governance. They represent the ability of universities to adjust to technological, regulatory, and environmental changes while maintaining alignment with institutional objectives [3,4]. Agile governance supports iterative processes and continuous adaptation, allowing institutions to respond rapidly to emerging challenges and opportunities [6]. According to Akkaya and Tabak [33], responsiveness is the organisational capability to act quickly and appropriately in reaction to technological or environmental shifts. It involves the ability to identify and address needs promptly and effectively, ensuring that governance structures

remain aligned with educational trends, policy developments, and stakeholder expectations. Speed and innovation are integral to this process, with speed referring to the timeliness of decision-making and innovation reflecting the quality and creativity of institutional responses [34,35]. Embedding adaptability and responsiveness in governance systems enhances real-time decision-making, curriculum innovation, program redesign, and strategic resource reallocation. Adaptability further requires a supportive culture that fosters knowledge sharing, openness, and readiness for change [35]. The capacity to creatively and promptly respond to unforeseen developments strengthens innovation, strategic alignment, and institutional resilience. Together, adaptability and responsiveness enable universities to remain relevant, competitive, and sustainable in an increasingly dynamic and unpredictable higher education landscape.

2.5.2 Stakeholder engagement

Stakeholder engagement is a fundamental pillar of agile governance. It involves the active participation of faculty members, administrators, students, and external partners in shaping institutional policies and strategies [4,36]. Active stakeholder involvement fosters inclusivity and ensures that governance decisions reflect diverse perspectives, enhancing both legitimacy and quality of outcomes. Lestari *et al.,* [7] assert that stakeholder engagement promotes trust, mutual accountability, and shared ownership, which are crucial for successful implementation of agile practices. This participatory model facilitates social learning and collective problem-solving, leading to innovative and adaptive governance solutions. By fostering collaboration across hierarchical levels, agile governance creates a cohesive academic community where administrative and academic objectives are integrated to achieve institutional excellence.

2.5.3 Decentralised decision-making

Decentralised decision-making is a defining feature of agile governance. It involves delegating authority from centralised hierarchies to distributed and participatory structures [1,37]. This redistribution of power allows for faster decision-making, reduces administrative bottlenecks, and promotes local innovation. Matu and Brennan [37] argue that empowering faculties or departments enhances institutional responsiveness by enabling decisions that reflect local contexts. Decentralization also facilitates leadership development across multiple levels, fostering shared responsibility and collective learning. According to Frølich *et al.,* [1], maintaining a balance between autonomy and accountability is critical to sustaining effective governance. Hence, decentralised decision-making strengthens institutional agility by combining strategic oversight with operational flexibility.

2.5.4 Flexibility

Flexibility enables universities to adjust effectively to internal and external changes [13,18,19]. Sanchez [38] defines flexibility as the capacity to respond optimally to environmental variation, while Kundi and Sharma [39] view it as the continuous ability to adjust to unforeseen circumstances. Flexibility also requires an open mindset that values alternative perspectives, creative problem-solving, and adaptive planning [33]. Organisational flexibility is reflected in flatter structures, team-oriented leadership, and informal communication networks [40,41]. These features encourage collaboration and knowledge sharing, resulting in faster responses and greater institutional cohesion.

2.5.5 Reduced bureaucracy

Reduced bureaucracy is a key enabler of agility within university governance. Traditional bureaucratic systems, characterised by rigid hierarchies and procedures, often hinder innovation and timely responses. Agile governance aims to minimise such constraints, improving operational efficiency and institutional learning [13,18]. Simplifying procedures and empowering lower decision-making levels enable universities to allocate resources more efficiently and promote creativity. Reduced bureaucracy thus enhances flexibility and efficiency while preserving accountability and strategic coherence.

2.5.6 Accountability

Accountability safeguards integrity within agile governance frameworks. It ensures that increased flexibility does not compromise transparency or institutional responsibility. Christopher [14] and Louis and Carl [42] emphasise that effective accountability mechanisms require clear roles, performance indicators, and transparent reporting systems. These mechanisms ensure that agility aligns with institutional goals and public expectations. Embedding accountability in agile systems promotes ethical leadership, responsible innovation, and the credibility of governance practices, thereby reinforcing institutional legitimacy.

2.5.7 Quality management and continuous improvement

Quality management and continuous improvement serve as the cornerstone of agile governance by cultivating transparency, accountability, and a culture of sustained excellence. Through iterative assessment and self-evaluation, agile governance reinforces quality assurance mechanisms to ensure that institutional outcomes remain aligned with evolving academic standards and societal expectations [43,44]. In dynamic educational environments, operational excellence initiatives play a crucial role in driving institutional competitiveness and responsiveness [45]. Managerial enablers such as Total Quality Management (TQM), Total Productive Maintenance (TPM), Kaizen, Kanban, and Supply Chain Management provide structured approaches to systematic improvement and process optimisation [45,46]. Harraf *et al.,* [47] emphasise that agility functions as a continuous improvement mechanism that enhances adaptability across all levels of the institution. Agile governance, therefore, integrates feedback loops, reflective practices, and iterative planning to strengthen decision-making and institutional responsiveness [3,6]. Collectively, these practices establish a learning-oriented framework that enables universities to evolve continuously through reflection, innovation, and performance excellence.

3. Methodology

This study employed a two-phase methodological approach. In the first phase, an extensive review of prior literature and publications on governance and organisational agility was undertaken to formulate the research objectives and conceptual framework. Literature on agile practices, public-sector governance, and higher-education management was analysed to identify key indicators or predictors relevant to agile governance dimensions. Through this synthesis, nine dimensions were identified as critical predictors of agile governance in public universities: Responsiveness, Limited Formalities, Continuous Improvement, Consistency, Efficiency, Flexibility, Values Inculcation, Transparency, and Risk Management. These dimensions formed the conceptual foundation for the

study. Based on these dimensions, 44 measurement items were developed to reflect the conceptual meaning and behavioural indicators of each domain (Table 1). Items were designed according to established scale development guidelines, ensuring clarity, relevance, and comprehensive coverage of each construct.

Table 1
Dimensions of Agile Governance and Sample Items

Dimension	Sample Item	Number of Items
Responsiveness	*Communication within the department utilises the latest and effective technologies to ensure fast and accurate dissemination of information*	5
Limited Formalities	*Alternative methods are provided to ensure service delivery can continue during unforeseen circumstances*	5
Continuous Improvement	*Benchmarking activities are conducted to generate innovation and improvements in work processes*	4
Consistency	*Committees make decisions based on established rules and terms of reference in force*	5
Efficiency	*Staff are encouraged to be innovative and creative in enhancing efficiency through the use of the latest technologies*	5
Flexibility	*Work processes are adapted, reviewed, and updated according to current conditions and needs*	5
Values Inculcation	*Staff are given adequate explanation and exposure regarding the importance of organisational and individual values*	5
Transparency	*Decisions and information are communicated transparently and promptly to all staff*	5
Risk Management	*A Risk Committee is established to manage and monitor the department's risk level*	5

In the second phase, content validation was conducted through engagement with 18 internal governance experts. Their feedback and recommendations were carefully reviewed and incorporated to strengthen the instrument and ensure content validity across both overall and dimension-specific constructs. Subsequently, a pilot study was conducted with 150 staff members from different faculties, campuses, and departments of the Malaysian public university under study. Purposive sampling was employed to target participants with relevant governance experience, ensuring the sample was knowledgeable about university governance processes. Data were collected online using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Finally, the EFA was conducted using SPSS to determine the underlying factor structure and remove low-loading items. Principal component analysis with Varimax rotation was used for factor extraction. Factor loading thresholds followed conventional guidelines, with 0.30–0.40 considered acceptable and values above 0.50 highly significant [48]. Varimax rotation and principal component analysis were adopted during factor extraction. The study adhered to recommended EFA benchmarks, including Kaiser-Meyer-Olkin (KMO) value > 0.60, significant Bartlett's Test of Sphericity ($p < 0.05$), eigenvalues > 1.0, cumulative variance explained > 60%, and Cronbach's alpha > 0.60 [48, 49].

4. Results

Table 2 presents the descriptive statistics for the nine agile governance dimensions. Mean scores ranged from 3.96 to 4.43, indicating that respondents generally agreed on the presence of agile governance practices across all constructs.

Table 2
Descriptive statistics of agile governance dimensions

Sub-construct	Mean	Std. Deviation	N
VAL1	3.96	.722	150
VAL2	4.03	.680	150
VAL3	4.01	.645	150
VAL4	4.13	.658	150
VAL5	4.06	.697	150
EFF1	4.43	.523	150
EFF2	4.41	.570	150
EFF3	4.36	.605	150
EFF4	4.31	.533	150
EFF5	4.33	.573	150
RES1	4.35	.569	150
RES2	4.27	.598	150
RES3	4.41	.593	150
RES4	4.30	.632	150
RES5	4.23	.628	150
RISK1	4.12	.623	150
RISK2	4.22	.589	150
RISK3	4.29	.597	150
RISK4	4.13	.642	150
RISK5	4.09	.679	150
TRAN1	4.17	.642	150
TRAN2	4.23	.592	150
TRAN3	4.21	.678	150
TRAN4	4.17	.730	150
TRAN5	4.13	.698	150
IMP1	4.23	.689	150
IMP2	4.21	.638	150
IMP3	4.28	.614	150
IMP4	4.33	.662	150
IMP5	4.22	.633	150
FOR1	4.35	.520	150
FOR2	4.35	.518	150
FOR3	4.31	.581	150
FOR4	4.31	.517	150
FOR5	4.35	.518	150
CON1	4.30	.528	150
CON2	4.30	.610	150
CON3	4.27	.542	150
CON4	4.24	.598	150
CON5	4.25	.507	150
FLE1	4.25	.590	150
FLE2	4.29	.560	150
FLE3	4.35	.567	150
FLE4	4.31	.645	150

Note: VAL: Values Inculcation; EFF: Efficiency; RES: Responsiveness; RISK: Risk Management; TRAN: Transparency; IMP: Continuous Improvement; FOR: Limited Formalities; CON: Consistency; FLE: Flexibility

EFA was conducted to identify the underlying dimensions of agile governance in public universities. Principal component extraction with Varimax rotation was applied, and nine factors were retained consistent with the theoretical framework: Values Inculcation (VAL), Efficiency (EFF), Responsiveness (RES), Risk Management (RISK), Transparency (TRAN), Continuous Improvement (IMP), Limited Formalities (FOR), Consistency (CON), and Flexibility (FLE). In line with the guidelines by Hair et al. [48], items with factor loadings of 0.50 and above were retained. As presented in Table 3, the Kaiser–Meyer–Olkin (KMO) value was 0.933, exceeding the recommended minimum value of 0.60 and indicating excellent sampling adequacy. Bartlett's Test of Sphericity was significant (χ^2 = 7337.652, df = 946, $p < .001$), confirming that the correlation matrix was suitable for factor analysis. Nine components with eigenvalues greater than 1 were extracted, collectively explaining 81.903% of the total variance, demonstrating a strong and well-structured factor solution. The reliability analysis further indicated high internal consistency, with Cronbach's alpha values ranging from 0.869 to 0.945, surpassing the recommended threshold of 0.70 [48,49].

Table 4 shows that all retained items demonstrated acceptable to strong factor loadings. Values Inculcation items loaded between 0.731 and 0.837, while Efficiency items ranged from 0.693 to 0.794. Responsiveness items loaded between 0.648 and 0.781, and Risk Management items ranged from 0.613 to 0.788. Transparency items loaded between 0.603 and 0.779. Within the Continuous Improvement construct, three items (IMP1, IMP4, and IMP5) met the minimum loading threshold, ranging from 0.607 to 0.713, while two items (IMP2 and IMP3) were removed due to low loadings. Limited Formalities items loaded between 0.568 and 0.686. For Consistency, four items (CON1, CON3, CON4, and CON5) loaded between 0.582 and 0.700, whereas CON2 was removed due to cross-loading, ensuring clearer factor separation and improved discriminant validity. Flexibility items loaded between 0.510 and 0.747, satisfying the minimum retention criteria [48].

Overall, the final EFA results support a robust nine-factor structure for agile governance. The deletion of low-loading and cross-loading items strengthened construct clarity, improved discriminant validity, and enhanced the internal reliability of the measurement instrument. These findings provide strong empirical support for the multidimensional nature of agile governance in public universities and validate the relevance of its nine core dimensions.

Table 3
Sampling adequacy, total variance explained, and reliability statistics

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.					0.933				
Bartlett's Test of Sphericity	Approx. Chi-Square				7337.652				
	df				946				
	Sig.				0.000				
Construct	VAL	EFF	RES	RISK	TRAN	IMP	FOR	CON	FLE
Eigenvalues	5.189	5.128	5.06	4.099	3.715	3.344	3.194	3.179	3.129
% of Variance	11.793	11.655	11.501	9.317	8.443	7.6	7.258	7.225	7.111
Cumulative %	11.793	23.448	34.949	44.266	52.709	60.309	67.568	74.793	81.903
Cronbach Alpha	0.943	0.938	0.933	0.912	0.929	0.945	0.923	0.94	0.869

Table 4
Exploratory factor loadings for agile governance constructs

Sub-construct	VAL	EFF	RES	RISK	TRAN	IMP	FOR	CON	FLE
VAL1	0.731								
VAL2	0.811								
VAL3	0.837								
VAL4	0.752								
VAL5	0.787								
EFF1		0.693							
EFF2		0.785							
EFF3		0.794							
EFF4		0.711							
EFF5		0.725							
RES1			0.659						
RES2			0.686						
RES3			0.648						
RES4			0.781						
RES5			0.732						
RISK1				0.613					
RISK2				0.691					
RISK3				0.706					
RISK4				0.788					
RISK5				0.781					
TRAN1					0.738				
TRAN2					0.732				
TRAN3					0.779				
TRAN4					0.665				
TRAN5					0.603				
IMP1						0.713			
IMP2				Deleted – low factor loading					
IMP3				Deleted – low factor loading					
IMP4						0.671			
IMP5						0.607			
FOR1							0.568		
FOR2							0.626		
FOR3							0.612		
FOR4							0.686		
FOR5							0.653		
CON1								0.582	
CON2				Deleted - cross-loading					
CON3								0.624	
CON4								0.688	
CON5								0.7	
FLE1									0.51
FLE2									0.747
FLE3									0.606

Sub-construct	VAL	EFF	RES	RISK	TRAN	IMP	FOR	CON	FLE
FLE4									0.701
Extraction Method: Principal Component Analysis.									

Note: VAL: Values Inculcation; EFF: Efficiency; RES: Responsiveness; RISK: Risk Management; TRAN: Transparency; IMP: Continuous Improvement; FOR: Limited Formalities; CON: Consistency; FLE: Flexibility

5. Discussion

The findings from the EFA provide robust empirical support for a multidimensional conceptualization of agile governance in public universities. The nine-factor structure, comprising Values Inculcation, Efficiency, Responsiveness, Risk Management, Transparency, Continuous Improvement, Limited Formalities, Consistency, and Flexibility, closely aligns with both theoretical and practical perspectives on agile governance in higher education [3–5]. The emergence of these specific dimensions reflects both the conceptual framework developed from prior literature and the contextual characteristics of the Malaysian public university under study, where ethical conduct, procedural flexibility, and operational efficiency are particularly salient. This structure underscores that agility is not a singular attribute, but rather a constellation of interrelated practices that collectively enhance institutional adaptability, responsiveness, and resilience in increasingly complex environments.

The high factor loadings and reliability scores demonstrate strong construct validity and internal consistency across all dimensions. Of particular note, Values Inculcation and Transparency highlight that agility should not be pursued at the expense of foundational principles of good governance. Embedding organisational values and ensuring transparent decision-making safeguard ethical, accountable, and mission-aligned practices, thereby reinforcing stakeholder trust and preserving institutional integrity [12,14,42]. In essence, agility and good governance are complementary rather than mutually exclusive, as effective adaptive governance depends on a solid foundation of ethical and transparent practices. These dimensions also differentiate this model from traditional governance frameworks, which often focus primarily on hierarchical control or procedural compliance without explicitly embedding ethical and transparency considerations.

Efficiency and Responsiveness further illustrate how agile governance operationalises adaptability. These dimensions reflect the need for streamlined processes, rapid decision-making, and timely reactions to environmental shifts, echoing prior literature on process maturity, digital transformation, and institutional responsiveness in universities [13,24,33–35]. Complementing these, Continuous Improvement ensures that agility is paired with a sustained commitment to quality. Iterative evaluation, feedback, and process enhancement enable universities to adapt rapidly without compromising institutional performance or operational excellence [43,46].

Risk Management emerged as a critical dimension for sustaining agile governance. While agile practices promote innovation and experimentation, they inherently introduce uncertainty and potential vulnerabilities. Structured risk oversight provides a mechanism to anticipate, mitigate, and respond to emerging threats, ensuring that flexibility is balanced with long-term sustainability and institutional resilience [6,28].

The dimensions of Limited Formalities, Consistency, and Flexibility further capture the inherent balancing act in agile governance. Reduced bureaucratic layers enhance operational efficiency and responsiveness, while maintaining Consistency ensures alignment with institutional standards and strategic objectives. Flexibility allows adaptation to evolving conditions, thereby reinforcing the iterative and dynamic nature of governance [1,13,19]. The empirical necessity of removing cross-

loading items, such as CON2, further illustrates why certain dimensions emerge distinctly in this context and how they operationally differ from constructs in other governance models.

Collectively, these findings underscore that agile governance is most effective when integrated with principles of good governance, continuous quality improvement, and proactive risk management. By embedding ethical values, transparency, continuous learning, and risk consciousness into agile practices, the public university can achieve governance systems that are both responsive and sustainable. For practical implementation, university leaders should consider prioritising certain dimensions based on institutional context and readiness. This multidimensional framework provides practical guidance for institutional leaders seeking to operationalise agility, enabling universities to navigate digital transformation, global competition, and environmental uncertainty while maintaining academic integrity and strategic coherence [3,12,23]. Leaders should also anticipate potential challenges, including staff resistance, resource constraints, and the need for ongoing training and monitoring, to embed these dimensions effectively. Overall, this model extends existing governance literature by combining agility with core governance principles in a way that is contextually grounded for public universities, highlighting both theoretical and practical contributions.

6. Conclusion

This study empirically validates a nine-dimensional framework of agile governance in public universities, comprising Values Inculcation, Efficiency, Responsiveness, Risk Management, Transparency, Continuous Improvement, Limited Formalities, Consistency, and Flexibility. The findings demonstrate that agility in higher education is a multidimensional construct, integrating interrelated practices that enhance institutional adaptability, resilience, and strategic responsiveness in complex and dynamic environments. Theoretically, this research contributes to the body of knowledge by extending agile governance concepts from public administration into higher education and addressing the lack of instruments for evaluating agile practices in universities. The agile governance framework bridges this gap, highlighting the importance of embedding agility within foundational governance principles, continuous quality improvement, and proactive risk management [3,12,23].

Practically, the study provides university leaders with a structured, data-driven model to operationalise agile governance. By integrating ethical values, transparency, iterative learning, and risk awareness into governance processes, institutions can achieve systems that are both responsive and sustainable. This framework supports strategic decision-making, administrative efficiency, stakeholder engagement, and institutional resilience in the face of digital transformation, global competition, and environmental uncertainty.

Nonetheless, the study has certain limitations. Data were collected from a single public university, which may constrain the generalisability of the findings. The sample size, along with the cross-sectional and self-reported nature of the data, may also introduce bias and limit the ability to draw causal inferences. Future research should extend the framework to multiple institutions, adopt longitudinal designs, and triangulate data sources to examine the sustained impact of agile governance on performance, innovation, and sustainability.

In conclusion, this study not only validates a multidimensional agile governance framework but also provides actionable and contextually relevant guidance for scholars and practitioners. By integrating agility with enduring governance principles, public universities are better positioned to cultivate responsive, innovative, and sustainable governance capable of meeting the challenges of the contemporary higher-education landscape.

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