

REVIEW ARTICLE

STRATEGIC WORKFORCE AGILITY IN HIGHER EDUCATION: THE ROLE OF DIGITAL COMPETENCY, HRM PRACTICES, AND LEADERSHIP IN MALAYSIAN PUBLIC UNIVERSITIES

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ABSTRACT

Higher education institutions across the globe are navigating a landscape marked by rapid technological shifts, intensifying competition for both talent and financial resources, and a student population whose expectations around digital integration and learning flexibility continue to evolve. These pressures are compounded by persistent budgetary constraints and the sort of external shocks, from pandemics and economic volatility to geopolitical instability, that have become increasingly difficult to ignore or predict. Within this context, the ability of academic staff to read emerging trends, adjust their practices before change is forced upon them, and maintain effectiveness through periods of ambiguity has emerged as something more than an individual asset; it is increasingly understood as an organizational imperative for universities seeking stability and relevance. Malaysia’s public universities provide a particularly layered illustration of these dynamics. Tasked with realizing the objectives of the Malaysia Education Blueprint 2015-2025, which calls for accelerated digital pedagogy, curriculum innovation, deeper international engagement, and stronger alignment between educational outcomes and national socioeconomic goals, these institutions operate within a centralized policy framework and bureaucratic structures that do not always reward rapid adaptation. Resource disparities between research-intensive universities and smaller regional campuses further complicate matters, as does the sheer breadth of responsibilities expected of academic staff. These conditions do not simply make agility more difficult; they make it more essential, particularly where teaching quality, research output, student engagement, and international competitiveness are concerned. This paper puts forward a theoretical framework that treats workforce agility as a mediating variable, one that sits between a set of antecedent conditions, including individual digital capability, human resource management practices at the institutional level, and the nature of leadership support available, and a range of academic and organizational outcomes, such as pedagogical innovation, research productivity, adaptability, and alignment with national priorities. Institutional IT preparedness is positioned here as a moderating factor, one that influences how strongly those antecedents translate into agility. The framework draws on the resource-based view of the firm and dynamic capabilities theory, offering a way to think about how individual competencies and organizational strategy interact within environments where resources are limited and policy demands are pronounced. In practical terms, the paper also sketches out what university leaders and policymakers might take from this, particularly around building academic workforces that are better equipped to respond to disruption. It closes by suggesting lines of empirical inquiry, both quantitative and qualitative in nature, that could test and refine these ideas within the Malaysian higher education setting.

KEYWORDS


workforce agility, higher education, Malaysian public universities, digital competency, HRM practices.

1. INTRODUCTION

Higher education institutions all over the world are going through big changes in their structures and environments. Universities have had to change how they work because of the rapid growth of technology, the increasing competition for students, talent, and research funding around the world, changing societal expectations about the goals and methods of university education, ongoing financial problems in many public systems, and repeated external shocks like the COVID-19 pandemic, geopolitical instability, and more climate-related disruptions (Altbach and de Wit,

2018; Crawford et al., 20). Academic staff have always been in charge of making, sharing, and using knowledge. They now have a wider range of responsibilities that are less stable and require them to constantly change how they do things in school, research, administration, and everyday life (Watermeyer et al., 2021).

The Malaysia Education Blueprint 2015–2025 for Higher Education presented public universities a strategy that would assist them grow and the country as a whole. The aim is to propose educators must shift how they teach so that new concepts and inventiveness come first and that digital tools need to be used appropriately. It emphasises the need to

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improve international cooperation, increase research output, and always work toward the goals set out in the Shared Prosperity Vision 2030 (Ministry of Education Malaysia, 2015). In Malaysia, public universities operate within a system characterised by centralised policy directives, multiple administrative tiers, and an inequitable allocation of resources, particularly between research-oriented and regional institutions. It is consistently challenging to achieve the right balance between the demand for academic freedom and the expectation for successful outcomes (Chang et al., 2019; Chang and Sirat, 2018).

Workforce agility is defined as a complex individual capability that includes the proactive anticipation of changes in the external environment, the adaptive reconfiguration of role-specific behaviours and related skill sets, and the resilient maintenance of performance effectiveness in uncertain conditions (Sherehiy and Karwowski, 2014; Petermann and Zacher, 2022). Within Malaysian public universities, this agility is evident in various dimensions: the ability of academic staff to transition fluidly between different teaching methodologies; the sustained scholarly output despite resource disruptions; the prompt adjustment to changing performance evaluation standards and funding structures; and the creative modification of educational practices to align with new national development priorities and labour market demands (Chan and Muthuveloo, 2022).

The development of agility in academic staff carries important consequences for results at both the university and national levels. On the institutional side, academics who possess greater agility help raise the standard of teaching, keep research work moving forward without major interruptions, increase how actively students participate and how employable they become after graduation, improve the university’s position in international rankings, and allow the institution to respond more quickly and effectively to changes in government policies and directives (Ahmad and Alzoraiki, 2023). At the national level, having a more flexible academic workforce strengthens Malaysia’s chances of successfully meeting the goals for human capital development and innovation that are set out in the higher education blueprint and in the country’s longer-term development plans.

Although workforce agility clearly carries substantial strategic weight in higher education, the body of theory explaining its main precursors, the processes through which it operates, and the situational factors that constrain it has so far stayed fairly thin most noticeably when it comes to public universities in middle-income settings like Malaysia. A good deal of earlier work across different kinds of organizations has singled out digital skills, well-designed HR practices, and positive leadership approaches as important contributors to how agile employees can become. Still, what stands out is how few studies have pulled these pieces together into solid, context-aware models that really take account of the particular policy pressures, governance setups, cultural expectations, and resource limitations that shape public higher education in Malaysia. This shortfall points to a real opportunity for more grounded, locally attuned

scholarship that can strengthen both conceptual clarity and useful guidance for practice in such environments.

Current literature on higher education adaptation often misses a crucial connecting piece, which this concept paper aims to address. This paper proposes an integrated framework that positions workforce agility as the vital bridge between a triad of inputs (individual digital skills, institutional HRM practices, and leadership support) and broader academic and organizational outcomes. Crucially, the proposed model does not assume these inputs operate in a vacuum. Instead, it introduces institutional IT readiness as a moderator, recognizing that tech infrastructure actively shapes how well these initial factors translate into genuine agility. Grounded in dynamic capabilities theory and the resource-based view, this approach untangles how adaptability functions at both the staff and institutional levels during periods of sector-wide volatility. Ultimately, this framework aims to do more than just advance theoretical debates. It is designed to give Malaysian university administrators, HR professionals, and policymakers a concrete conceptual tool to foster staff adaptability and build lasting institutional resilience.

2. LITERATURE REVIEW

At first, workforce agility was primarily enquired concerning in the industrial and manufacturing sectors. It was clear that the goal was to help companies deal with unstable markets and keep up with how quickly technology changes (Sherehiy and Karwowski, 2014; Muduli, 2017). The idea has only recently made its way into higher education and other knowledge-based organisations. Being agile in this situation means more than just being able to change quickly. Along with that, it means being able to spot new trends, adapt your work to new situations, and keep working even when things aren't clear (Petermann and Zacher, 2022). These adaptability skills are clearly shown by how modern universities combine fresh ways of teaching, researching, running the school, and working with outside groups. Because these places are now linked to each other, sudden and often unexpected changes in the world are more likely to affect them (Castañeda and Selwyn, 2018; Watermeyer et al., 2021).

Workforce agility started out as an important plan in the business and industrial world to help companies deal with unstable markets and fast technological change (Sherehiy and Karwowski, 2014; Muduli, 2017). Over time, this idea has been taken to fields like higher education that focus on knowledge and the public sector. In these settings, agility is much more than quick reactions—it’s a complex skill that involves spotting upcoming trends early, shifting how professionals work to meet new goals, and staying productive even when facing a lot of uncertainty (Petermann and Zacher, 2022). At modern universities, you can see this agility most clearly where creative teaching, research, administrative work, and community partnerships come together. Since these areas are closely linked, they’ve become more sensitive to sudden, often surprising disruptions that define today’s global environment (Castañeda and Selwyn, 2018; Watermeyer et al., 2021).

Table 1: Definitions and Dimensions of Core Constructs

Construct	Definition	Key Dimensions	Supporting Sources
Workforce Agility	A multidimensional individual capability reflecting proactive anticipation of change, adaptive behavioral flexibility, and resilient performance under uncertainty	(1) Proactivity, (2) Adaptability, (3) Resilience	Petermann and Zacher, 2022; Sherehiy and Karwowski, 2014
Digital Competency	Advanced capability to critically, creatively, and ethically use digital technologies in teaching, research, and collaboration	(1) Technical proficiency, (2) Digital pedagogy integration, (3) Virtual collaboration, (4) Data-driven decision-making	Redecker, 2017; Castañeda and Selwyn, 2018
HRM Practices	Institutional systems and policies that shape employee development, evaluation, empowerment, and recognition	(1) Professional development, (2) Empowerment, (3) Adaptive performance systems, (4) Workload flexibility	Athamneh and Jais, 2023
Leadership Support	Leadership behaviors that foster psychological safety, autonomy, and adaptive change	(1) Transformational leadership, (2) Empowering leadership, (3) Resource mobilization	Amundsen and Martinsen, 2014; Chong, 2024
Institutional IT Preparedness	Organisational-level readiness of digital infrastructure and support systems	(1) Infrastructure reliability, (2) LMS capability, (3) Technical support, (4) Digital policy alignment	Bond et al., 2020

2.1 Dynamic Capabilities and the Resource-Based View as Theoretical Foundations

The framework developed in this study is anchored in two interrelated theoretical perspectives that together provide a solid basis for understanding adaptive processes in higher education. Dynamic capabilities theory posits that organisations sustain their ability to compete and adapt by establishing stable routines that enable them to identify changes in the external environment, capture valuable opportunities arising from those changes, and reorganise internal resources and activities under conditions marked by considerable uncertainty (Eisenhardt and Martin, 2000). In higher education, these skills are demonstrated in various ways. Consequently, these institutional capabilities necessitate strategic adaptations in response to evolving policy landscapes, financial constraints, and the impact of global university rankings. As a result, scholars are compelled to consistently adjust their teaching methodologies, research priorities, and participation in both institutional and community service activities. Workforce agility occupies a central position in this framework as a key micro-level foundation of dynamic capabilities. It empowers academic staff to carry out the interrelated processes of sensing emerging signals, seizing identified opportunities, and effecting necessary transformations as routine elements of their professional practice instead of as infrequent or crisis-driven actions (Petermann and Zacher, 2022).

The resource-based view (RBV) strengthens this theoretical base by suggesting that a lasting competitive advantage comes from resources and capabilities that are valuable, rare, hard to copy, and not easily replaced (Barney, 1991). Within Malaysian public universities, digital competency constitutes a valuable and progressively scarce individual resource, whereas HRM practices and leadership support form institutionally embedded capabilities that are difficult for competing institutions to imitate rapidly. When these are deliberately combined and applied, they cultivate workforce agility as a superior capability that supports sustained institutional performance in a heavily regulated and resource-constrained environment.

2.2 Digital Proficiency

Digital competency nowadays goes beyond mere technical know-how and is understood as a broader, more advanced set of abilities that involve critical thinking, creative application, and ethical engagement with digital tools in teaching, learning, and research environments (Redecker, 2017). This encompasses skilled use of learning management systems, data-informed instructional planning, virtual research teamwork, open-access publishing practices, and purposeful integration of technologies such as artificial intelligence, learning analytics, and virtual reality into pedagogy and assessment (Castañeda and Selwyn, 2018). The demand for this kind of proficiency within Malaysian public universities really ramped up when COVID-19 forced a move to online learning. This shift exposed significant shortcomings in both faculty preparedness and the support provided by the institutions themselves. Recent empirical findings show that stronger digital competency links consistently to improved adaptive performance among Malaysian academics and public-sector staff, with the association growing stronger under conditions of real empowerment and regular access to training (Nadzim et al., 2022). Despite these efforts, the unevenness in digital infrastructure, training programs, and consistent policy across different institutions continues to hinder its full development as a basis for workforce adaptability.

2.3 Human Resource Management Practices

Human resource management practices that foster workforce agility normally feature systematic professional development, performance

evaluations rewarding adaptability and creativity, empowerment-oriented job structures, fair workload allocation, and reward systems that value persistence and a growth-oriented outlook (Athamneh and Jais, 2023). Such practices hold special relevance in higher education owing to the pronounced autonomy, intrinsic drive, and diverse responsibilities typical of academic roles, where HRM design can either facilitate or obstruct agility. Malaysian public universities exhibit notable variation in HRM approaches. Some maintain a largely compliance-based model focused on research metrics and strict promotion rules, while others incorporate more developmental and adaptable elements (Chan and Muthuveloo, 2022). This variation is significant because poorly supportive HRM settings frequently produce role overload, burnout, and change resistance, all of which erode workforce agility.

2.4 Support from Leadership

Leadership is widely recognised as a key enabler of employee agility, chiefly through its role in building psychological safety, securing necessary resources, and actively promoting norms that encourage adaptive responses. Transformational leadership cultivates shared vision and stimulates intellectual stimulation, while empowering leadership grants meaningful autonomy, entrusts staff with substantial responsibilities, and works to reduce unnecessary administrative hurdles (Chong, 2024; Amundsen and Martinsen, 2014). In higher education settings, effective leaders commonly serve as boundary-spanners who secure external resources, facilitate collaboration across units, and model agile behaviours in their own conduct. Within Malaysian public universities, however, the actual scope of leadership influence is shaped by the broader governance environment, where department heads and deans must operate inside national policy directives and established institutional hierarchies that often limit independent decision-making. Evidence indicates that leaders at the departmental level who demonstrate strong digital competence, maintain clear and open communication during crises, and actively back staff professional growth contribute noticeably to greater faculty adaptability and improved morale (Ahmad, 2025).

2.5 Institutional IT Readiness as a Moderating Factor

Institutional IT preparedness operates as a critical boundary condition affecting the strength of the proposed antecedent-agility linkages. Adequate broadband access, up-to-date learning management platforms, efficient technical support, and policies that encourage digital uptake all reinforce the contributions of digital competency, HRM practices, and leadership to workforce agility (Bond et al., 2020). Inadequate IT infrastructure, however, tends to diminish or cancel out the benefits of strong individual abilities or effective leadership, leading to a pronounced misalignment between capability and context. The marked variation in IT resource distribution across Malaysian public universities, most evident in the contrast between urban research universities and regional campuses, therefore represents a structural feature that must be explicitly incorporated into any framework seeking to explain workforce agility in this setting.

3. THE CONCEPTUAL FRAMEWORK

This paper develops a conceptual framework that assembles the principal antecedents from the literature into a mediated model crafted for the Malaysian public higher education environment. Workforce agility operates as the central mediator, converting individual and institutional factors into tangible academic and organisational outcomes. Institutional IT preparedness is positioned as a significant moderator that regulates the potency of the antecedent-agility connections. Figure 1 illustrates the proposed framework.

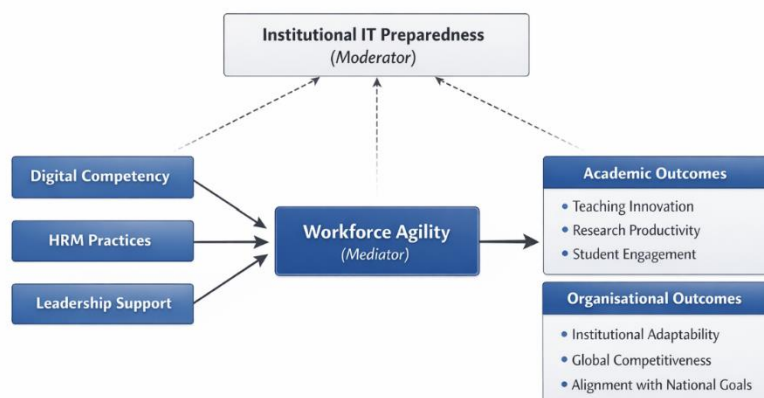


Figure 1: Suggested Conceptual Framework

3.1 Fundamental Assertions

Proposition 1: Digital Competency to Workforce Agility

Digital competency is expected to exert a direct positive effect on workforce agility. Faculty members who possess strong command over digital tools and platforms tend to be better equipped for foreseeing

disruptions in teaching and research, making rapid adjustments to their instructional methods and collaborative arrangements, and preserving effective performance amid technological shifts or policy changes. In Malaysian public universities, where levels of digital adoption vary considerably across institutions, this linkage is likely to prove particularly strong among academics in teaching-focused positions and those based at regional campuses (Nadzim et al., 2022).

Table 2: Summary of Propositions and Expected Directions

Proposition	Relationship	Expected Direction	Theoretical Basis
P1	Digital Competency → Workforce Agility	Positive	RBV; Dynamic Capabilities
P2	HRM Practices → Workforce Agility	Positive	RBV
P3	Leadership Support → Workforce Agility	Positive	Dynamic Capabilities (micro-foundations)
P4	Institutional IT Preparedness × Antecedents → Workforce Agility	Positive moderation	Contingency logic within Dynamic Capabilities
P5a	Workforce Agility → Academic Outcomes	Positive	Dynamic Capabilities
P5b	Workforce Agility → Organisational Outcomes	Positive	RBV and Dynamic Capabilities

Proposition 2: Human Resource Management Practices → Workforce Agility

Supportive HRM practices are expected to exert a positive influence on workforce agility. Practices encompassing continuous professional development, performance systems rewarding adaptability, empowerment in decision-making, balanced workload distribution, and recognition of innovative work help establish the structural and motivational conditions that enable academics to experiment, learn, and recover from setbacks. In Malaysian public universities, where HRM often emphasises compliance and research metrics over developmental flexibility, bolstering these practices could provide a practical means of strengthening workforce agility (Chan and Muthueloo, 2022; Athamneh and Jais, 2023).

Proposition 3: Leadership Support → Workforce Adaptability

It is posited that leadership support exerts a beneficial direct influence on workforce agility. Transformational and empowering leadership behaviors such as articulating a compelling vision for digital and pedagogical innovation, ensuring psychological safety for risk-taking, mobilising resources, and exemplifying adaptive behaviors—cultivate an organisational climate that facilitates agile responses. In the hierarchical yet progressively decentralised governance of Malaysian public universities, the roles of department heads and deans are pivotal in converting national policy directives into implementable changes at the faculty level (Chong, 2024).

Proposition 4: Institutional IT Preparedness as a Moderating Variable

Institutional IT preparedness is suggested to moderate the intensity of the relationships among the three antecedents and workforce agility. A resilient IT infrastructure (dependable connectivity, modern learning management systems, accessible technical assistance, and supportive policies) enhances the influence of digital competency, HRM practices, and leadership support on agility. Inadequate IT readiness, conversely, generates a capability bottleneck that undermines these pathways, despite robust individual skills or institutional support. Considering the recorded inequalities in digital infrastructure among Malaysian public universities, this moderating effect is anticipated to be especially significant (Bond et al., 2020).

Proposition 5: Workforce Agility Leads to Outcomes

Workforce agility is posited to mediate the relationships between the antecedents and two categories of outcomes:

- i. Academic outcomes: improved teaching innovation (e.g., implementation of active and blended learning methodologies), sustained or elevated research productivity (e.g., through virtual collaboration and open-access dissemination), and enhanced student engagement (e.g., through adaptive and personalised learning experiences).
- ii. Organisational outcomes: enhanced institutional adaptability to policy and environmental shifts, improved global competitiveness and ranking performance, and stronger alignment with national higher education development goals.

The mediation framework is based on dynamic capabilities theory: agility functions as the means by which individual and institutional resources are restructured to create performance benefits in volatile environments.

3.2 Boundary Conditions and Contextual Specificity

The framework explicitly recognises the boundary conditions specific to Malaysian public higher education. These encompass:

- Policy embeddedness: national directives, such as the Malaysia Education Blueprint targets, serve as external catalysts that require agility while potentially imposing constraints through compliance obligations.
- Resource heterogeneity: unequal access to funding, facilities, and professional development among research universities (e.g., Universiti Malaya, Universiti Kebangsaan Malaysia) and regional institutions.
- Cultural and governance factors, such as collectivist orientations, respect for hierarchy, and bureaucratic inertia, may influence the manifestation of empowering leadership and individual proactive behaviours.
- The contextual elements are not regarded as distinct variables in the core model but are acknowledged as influencing the overall strength and configuration of the proposed pathways.

4. DISCUSSION AND IMPLICATION

This paper proposes a theoretically anchored framework suited to workforce agility in Malaysian public higher education. The model positions agility as the core mediator that channels digital competency, HRM practices, and leadership support toward meaningful academic and organisational outcomes, while treating institutional IT preparedness as a moderator of antecedent-agility links, thus addressing several gaps in existing studies. It moves away from fragmented treatment of single antecedents and instead offers an integrated depiction of how these factors combine and succeed one another to produce adaptive faculty behaviour and institutional resilience. The Malaysian public university context, including policy constraints, resource variation, governance layers, and cultural elements, is woven directly into the theorising rather than left as background. This approach answers longstanding calls for context-specific theory development in higher education management, especially in middle-income non-Western environments where institutional conditions diverge from those in Anglo-American research universities. Positioning IT preparedness as a moderator brings attention to an important but under-examined boundary condition. The framework shows that high digital competency or strong leadership yields limited agility gains when connectivity is unreliable, platforms are outdated, or support is inadequate, conditions still common in many Malaysian regional campuses. This view questions universalist claims in agility research and highlights the need for greater infrastructural equity in national higher education policy.

4.1 Theoretical Implication

The framework enriches dynamic capabilities theory by spelling out specific micro-foundations, namely individual digital competency and adaptive behaviours, that underpin macro-level organisational reconfiguration within a heavily policy-regulated field. It likewise strengthens the resource-based view through its treatment of workforce agility as a higher-order capability emerging from the deliberate combination of resources that, taken separately, remain insufficient on their own, including digital skills, HRM systems, and leadership behaviours. In doing so the model bridges individual and organisational

levels of analysis, offering a multi-level lens particularly well suited to public-sector knowledge-intensive institutions. The framework also advances workforce agility theory in higher education by clearly identifying distinct outcome domains relevant to academic work and national development priorities, such as pedagogical innovation, sustained research activity, student engagement, and institutional competitiveness. This level of specification counters the frequent critique that agility research remains overly broad and insufficiently attuned to the particular features of different sectors.

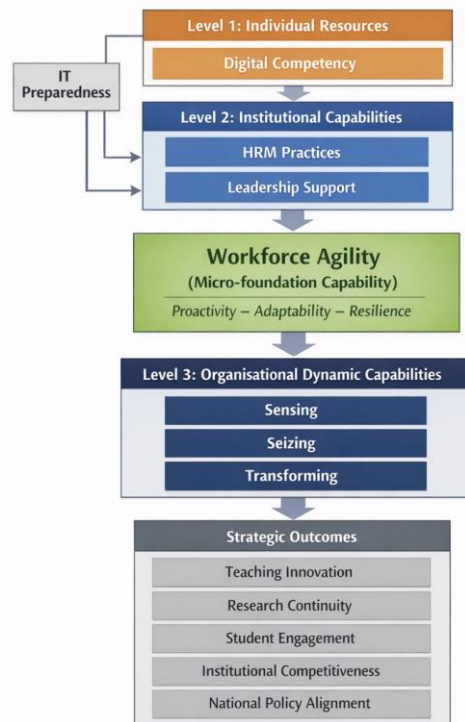


Figure 2: Multi-Level Integration of Resource-Based View and Dynamic Capabilities Theory in Explaining Workforce Agility in Malaysian Public Universities

4.2 Practical Implications

The framework identifies several high-impact areas where university leaders and HRM professionals in Malaysian public universities can intervene effectively. To strengthen digital competency, institutions should combine targeted technical training with sustained support mechanisms such as peer mentoring schemes, dedicated centres for digital pedagogy, and structured incentives that encourage faculty to experiment with new tools. HRM systems require realignment so that adaptability receives greater weight than sheer output volume; this could involve adopting more flexible workload arrangements, incorporating recognition of pedagogical innovation into promotion criteria, and shifting performance conversations toward empowerment and development. Leadership development initiatives need to emphasise transformational and empowering styles, with particular attention given to building digital fluency and effective crisis communication capabilities. At the national level the framework stresses the importance of pursuing greater infrastructure equity through strategic investments in reliable broadband access, cloud-supported teaching platforms, and consistent technical support across all public universities, thereby maximising the benefits derived from existing efforts in faculty training and leadership enhancement. Finally, national policy tools could usefully introduce agility-related indicators into institutional performance assessments, moving beyond traditional reliance on research and publication counts to include measures of adaptive teaching practices and organisational responsiveness.

4.3 Constraints of the Conceptual Framework

This conceptual paper develops its framework through logical synthesis and careful integration of existing evidence rather than through new primary empirical data. The propositions rest on established theoretical foundations combined with recent scholarship specific to Malaysia and therefore call for subsequent empirical work to test the comparative strength of the proposed relationships as well as the precise character of the mediation and moderation processes involved. The model deliberately omits several potential antecedents such as psychological capital, organisational culture and peer networks together with additional outcomes including academic well-being and knowledge transfer to industry. These elements remain open for inclusion and examination in future studies.

5. CONCLUSION

Malaysian public universities occupy a strategic position in national development, charged with producing skilled graduates, generating knowledge, and promoting innovation amid growing global uncertainty. Workforce agility among academics is increasingly viewed as a vital capability enabling these institutions to achieve their mandates despite fast-paced technological, policy, and societal changes. This paper offers a conceptual framework that positions workforce agility as the mediator linking digital competency, HRM practices, and leadership support to important academic and organisational outcomes, with institutional IT preparedness included as a moderator. Rooted in dynamic capabilities theory and the resource-based view, the model delivers a theoretically coherent and contextually appropriate explanation of agility development in Malaysian public higher education. It enriches scholarly conversation by supplying a multi-level integrated perspective suited to a middle-income public university system and provides practical guidance through clearly defined intervention points for university leaders and policymakers. Future empirical research based on quantitative methods with mediation and moderation across institutions, qualitative studies of agility experiences in diverse faculty roles, or mixed-methods designs will be required to verify, adjust, and broaden the propositions advanced here. Universities that systematically build agile academic workforces will be better equipped to manage uncertainty, preserve academic standards, and contribute more substantially to Malaysia's vision of inclusive, innovative, and globally competitive higher education.

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