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Artificial Intelligence and Competitive Advantage in Higher Education: Opportunities and Challenges

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Abstract: AI is proving to be transformative for many parts of higher education or, at least, has the potential to transform how we can improve educational effectiveness and fundraising success. Still, how AI can provide truly sustainable competitive advantage is not yet sufficiently understood. This study positions AI as a strategic organizational capability and analyzes the implementation of its combinatory nature with human capital, institutional processes, educational quality, labour-market alignment, and responsible governance in gaining and maintaining regeneration of competitive advantage for higher education institutions over time.

Using a qualitative, evidence-driven design grounded in systematic secondary-data analysis and theoretical evidence synthesis of findings from UNESCO, the World Economic Forum and the OECD. The study was based on the Resource-Based View. The results suggest, standing alone, AI adoption does not represent a sustained competitive advantage; instead strategic value arises from the successful integration of well-defined human and organizational capabilities alongside AI. There is also evidence of the increasing institutionalization of AI governance, labor demand for AI literate skills in the labour market.

Concurrently, challenges related to privacy, inequality, academic integrity, ethical risks and institutional readiness remain formidable. The paper concludes by arguing that sustainable competitive advantage will depend on accelerating the responsible, strategically-aligned and human-centred development of AI capabilities

Keywords: Artificial Intelligence, Higher Education, Competitive Advantage, Resource-Based View, AI Capability, Generative AI, Digital Transformation, Human Capital, Institutional Capability, Educational Quality, Graduate Employability, Labour-Market Alignment, AI Governance, Responsible AI, Digital Inequality.

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Introduction

Just 2023 In fact, AI is transforming higher education more comprehensively and faster – from designing administrative automation to teaching, learning, assessment, research, student support and institutional decision-making. This transformation has been accelerated by the rapid diffusion of generative AI, which creates opportunities to improve educational quality, operational efficiency, research capacity and graduate employability. However, the integration of AI into education gives serious reason to

worry about academic integrity, privacy, inequality, bias, accountability and institutional readiness. This means the strategic role of AI is thus not just an artefact of technology, but instead its effectiveness as a vehicle to combine human-brain expertise with institutional knowledge, processes and governance mechanisms used by universities.

Such complementary capabilities may become valuable and inimitable sources of a sustainable competitive advantage when viewed from the Resource-Based View perspective. But while previous studies on AI in education have mostly focused on educational applications or the adoption and learning proceeds of these technologies, as well as ethical challenges around their use, less attention has been paid to how institution-level AI capacities create sustainable competitive advantage. Thus, this research studies AI as a strategic organizational capability and explores how its integration within an organization can enhance the capacity of higher education institutions for long-term competitiveness in regard to human capital, quality of education, market alignment processes and responsible governance.

Literature Review:

Artificial intelligence has rapidly emerged as a transformative technology in higher education, extending beyond administrative automation to teaching, learning, assessment, research, and student support. The growing strategic importance of technological and organizational resources can be understood through the Resource-Based View, which emphasizes that firms can achieve competitive advantage by developing and deploying resources that create distinctive value [1]. Building on this perspective, Barney argues that sustained competitive advantage depends on resources that are valuable, rare, difficult to imitate, and appropriately organized within the firm [2]. In the context of higher education, these principles are particularly relevant because universities compete not only through physical and technological infrastructure but also through knowledge, human capital, organizational capabilities, reputation, innovation, and institutional routines.

The application of the resource-based perspective to higher education suggests that institutional competitiveness is closely associated with the effective management of knowledge-based, reputational, innovative, and organizational resources [3]. Against this background, AI represents a potentially important strategic resource, but its value cannot be reduced to the mere availability of digital technologies. Systematic research demonstrates that AI applications in education have expanded substantially and now encompass a broad range of pedagogical and institutional functions [4]. Similarly, research on higher education shows that AI is increasingly being applied across teaching, learning, assessment, academic support, administration, and other institutional activities, confirming the growing integration of AI into core university processes [5].

More recent evidence indicates that generative AI is further accelerating this transformation. The literature identifies increasingly diverse applications of generative AI across higher education, including engineering, health and medicine, language education, and other disciplinary contexts [6]. At the same time, recent reviews emphasize that the educational value of generative AI depends strongly on how these technologies are incorporated into instructional processes rather than simply on their availability. This is particularly important from a strategic perspective because the widespread accessibility of AI technologies may limit the extent to which technology ownership itself can constitute a sustainable source of differentiation. Instead, the strategic value of AI is more

likely to emerge through the institution-specific capabilities that enable universities to integrate AI into academic and organizational activities.

This argument is reinforced by strategic-management research on artificial intelligence and competitive advantage. AI can alter the sources of organizational advantage by creating new complementarities between human and technological capabilities rather than functioning solely as a substitute for human labour [7]. In higher education, such complementarities may involve the combination of AI systems with faculty expertise, institutional knowledge, data resources, organizational learning, and established routines. The resulting capability is therefore potentially more difficult to replicate than access to an individual AI application. From this perspective, AI should be conceptualized not simply as a technological input but as part of a broader organizational capability through which universities can generate superior educational, research, administrative, and student-service outcomes.

The literature also identifies substantial opportunities associated with AI-enabled digital transformation. AI can support personalized learning, tutoring, research activities, administrative processes, and more efficient educational service delivery. However, the realization of these benefits is conditional upon appropriate pedagogical design, institutional readiness, human competencies, and effective governance. UNESCO emphasizes a human-centred approach to generative AI in education and research, highlighting the importance of inclusion, human agency, ethical safeguards, and responsible implementation [8]. Complementing this perspective, UNESCO's AI competency framework for teachers emphasizes the development of the knowledge, skills, and values required to use AI effectively while preserving human judgement, agency, and ethical responsibility [9]. These perspectives indicate that the strategic value of AI is fundamentally dependent on the complementary human and organizational resources surrounding the technology.

The importance of this human–AI relationship is further supported by the UNESCO framework for AI competencies among students, which highlights the need to develop learners' capabilities to understand, evaluate, and use AI responsibly and effectively [10]. Accordingly, universities seeking to derive long-term value from AI must invest not only in technological infrastructure but also in faculty development, student competencies, pedagogical redesign, institutional learning, and appropriate organizational routines. AI capability can therefore be viewed as a multidimensional construct that encompasses technological resources as well as the human and institutional capacities required to deploy those resources effectively.

From a labour-market perspective, the strategic relevance of AI is also increasing. The World Economic Forum identifies AI and big data among the fastest-growing skill areas and reports substantial expected changes in the skills required across occupations by 2030 [11]. These developments create direct implications for higher education because institutional competitiveness increasingly depends on the ability of universities to align curricula and graduate competencies with changing employer expectations. Institutions that systematically integrate AI-related knowledge and skills into educational programmes may therefore strengthen graduate employability and improve their positioning within increasingly competitive higher education markets.

At the institutional level, the transition toward AI-enabled higher education is accompanied by a growing emphasis on governance and formal policy development.

UNESCO's 2025 global survey of higher education institutions associated with UNESCO Chairs and UNITWIN Networks indicates that institutions are increasingly establishing or developing guidance for AI use [12]. This trend suggests a movement from experimental and individually driven adoption toward more formal institutional structures involving policies, competencies, accountability, and organizational processes. At the same time, UNESCO's competency framework for teachers reinforces the importance of ensuring that AI integration remains aligned with professional standards, educational objectives, and human-centred principles [13].

The literature further indicates that AI-enabled transformation is accompanied by significant challenges. These include academic integrity, privacy and data protection, algorithmic bias, misinformation, ethical accountability, unequal access, and differences in digital capabilities. Such concerns are particularly important because technological adoption does not occur under equal conditions across institutions or student populations. Evidence from Uzbekistan also demonstrates the relevance of these issues at the national level, with research identifying positive attitudes toward AI alongside continuing gaps in digital competencies, technological infrastructure, and regulatory clarity [14]. Related research on AI in educational management in Uzbekistan similarly emphasizes the opportunities of AI while identifying infrastructure, data quality, privacy, algorithmic bias, and staff preparedness as important constraints [15].

Despite the rapidly expanding body of literature, an important research gap remains. Existing scholarship has predominantly examined the pedagogical applications of AI, technology adoption, learning outcomes, user acceptance, competencies, and ethical concerns. Comparatively less attention has been devoted to explaining **how institution-level AI capabilities are transformed into sustainable competitive advantage in higher education**. In particular, the mechanisms through which AI interacts with human capital, institutional knowledge, organizational routines, educational quality, research and innovation, graduate employability, student experience, and responsible governance remain insufficiently integrated within a single strategic perspective. Addressing this gap, the present study applies an RBV-based framework to conceptualize AI as a strategic organizational capability rather than merely an educational technology. This perspective enables a more comprehensive examination of the conditions under which AI can generate distinctive institutional value and contribute to the long-term competitiveness of higher education institution.

Methodology:

In this study, we adopted a qualitative, evidence-based research design. Our approach involved systematically analyzing existing secondary data and synthesizing theoretical insights to explore how artificial intelligence (AI) can truly contribute to competitive advantage within higher education. The methodological core of our work is primarily rooted in the Resource-Based View. This perspective helps us conceptualize AI-related technological capabilities, institutional knowledge, human expertise, and established organizational routines as strategic assets. We believe these assets can generate a competitive edge, particularly when they are valuable, difficult for others to imitate, and effectively integrated into an institution's processes. To gather our empirical evidence, we turned to authoritative international sources, including UNESCO, the World Economic Forum (WEF), and the OECD. We particularly focused on UNESCO's 2025 global survey, which reached out to higher education institutions associated with

UNESCO Chairs and UNITWIN Networks. This survey garnered a 38% response rate, encompassing institutions from all major world regions. While it provided a rich international evidence base, we acknowledge the need for cautious interpretation when generalizing its findings. For complementary insights into the labour market, we drew upon the WEF Future of Jobs Report 2025, which synthesizes the perspectives of over 1,000 employers, collectively representing more than 14 million workers across 55 diverse economies.

Our analysis unfolded in three distinct stages. Initially, we extracted key quantitative indicators related to AI adoption, institutional governance, workforce skills, and digital inequality from our selected sources. Next, we systematically organized and analyzed this evidence thematically, looking at three core dimensions: AI-enabled institutional capabilities, the alignment between education and the labour market, and the broader issues of governance, equity, and ethical risks. Finally, we interpreted these findings using the Resource-Based View framework, helping us understand *when* AI truly fosters sustainable competitive advantage, beyond simply being adopted as a new technology.

To enhance the robustness of our analysis, we triangulated evidence, drawing comparisons and corroborating insights across these international organizations. For instance, the WEF highlights that 45% of surveyed employers now consider AI and big data as core skills, with technological literacy being crucial for 51%. Strikingly, their projections suggest that 39% of current skill sets may be transformed or even become obsolete by 2030. Additionally, we leveraged OECD data to provide further context, especially their important point that successful digital transformation extends beyond mere technology, demanding tailored pedagogical approaches, sound governance, robust infrastructure, and well-developed human competencies.

It's also important to acknowledge the limitations inherent in our study. Given our primary reliance on secondary international data, our research cannot definitively establish direct causal links between AI adoption and institutional competitiveness. Moreover, the UNESCO sample, while rich, isn't statistically representative of the entire landscape of higher education institutions globally. Consequently, our findings are best understood as indicators of evolving relationships and strategic trends, rather than precise causal estimations. To build on this, future empirical work could rigorously validate these proposed relationships using longitudinal institutional datasets, broader cross-country surveys, and structural equation modeling, incorporating measurable constructs like AI capability, service quality, innovation capacity, student experience, and competitive advantage.

Results:

Our findings strongly indicate that artificial intelligence is increasingly emerging as a strategic determinant for competitive advantage within higher education. Evidence drawn from UNESCO's 2025 global survey, for instance, reveals that nearly two-thirds of higher education institutions hosting a UNESCO Chair or UNITWIN Network have either already developed or are currently in the process of developing institutional guidance on AI use. This particular observation highlights a substantial shift from experimental adoption toward a more institutionalized approach to AI governance, suggesting that

universities are increasingly recognizing AI capability as a vital element of their overall competitiveness.

Through the lens of the Resource-Based View, it becomes clear that AI-related capabilities can truly generate competitive advantage when they are effectively integrated with human expertise, organizational processes, and existing institutional knowledge. Our results strongly support this interpretation: merely adopting AI on its own does not lead to a sustainable advantage. Instead, a true competitive edge stems from an institution's capacity to genuinely transform AI technologies into higher-quality teaching, research, student support, and administrative services. This aligns perfectly with UNESCO's human-centred framework, which notably prioritizes institutional capacity-building, the development of AI competencies, thorough pedagogical validation, and robust ethical governance.

Insights from the labour market further underscore these findings. Specifically, the World Economic Forum reports that a significant 45% of employers now identify AI and big data as core workforce skills, with an even higher 51% considering technological literacy absolutely essential. Furthermore, an estimated 39% of current employee skill sets are projected to undergo transformation or become obsolete between 2025 and 2030. As a result, universities that can successfully embed AI competencies into their curricula are distinctly better positioned to align educational outcomes with the dynamic demands of the labour market.

However, our findings also bring to light some significant challenges. UNESCO, for instance, pinpoints privacy concerns, safety issues, potential for inequality, the complexities of ethical governance, and insufficient institutional preparedness as key risks linked to AI integration. Thus, the collected evidence strongly suggests that achieving a sustainable competitive advantage hinges not merely on adopting AI, but critically, on its responsible, strategically aligned, and human-centred implementation.

Discussion:

Our findings clearly illustrate that AI is transitioning from being merely an emerging educational technology to a strategic capability that profoundly influences competitive advantage within higher education. Indeed, the UNESCO 2025 survey revealed that a notable 19% of institutions had already established a formal AI policy, with an additional 42% actively developing institutional guidance. This observation strongly supports the Resource-Based View (RBV) perspective, which posits that competitive advantage increasingly hinges on an organization's capabilities to truly integrate AI with its human capital, existing knowledge, and established institutional processes, rather than simply adopting the technology itself.

Further reinforcing this interpretation is the compelling evidence from the labour market. The World Economic Forum, for example, highlights that AI and big data stand out as among the fastest-growing skill areas, alongside projections that a significant 39% of workers' existing skill sets are anticipated to be transformed or become outdated by 2030. Consequently, universities that systematically integrate AI competencies into their curricula are likely to significantly improve graduate employability and bolster their market positioning.

A key strength of our study lies in its comprehensive integration of technological, institutional, and labour-market dimensions. However, it is important to acknowledge that our reliance on secondary international evidence inherently limits the ability to draw

definitive causal inferences. Additionally, the UNESCO survey's 38% response rate and its specific focus on institutions within UNESCO Chairs and UNITWIN Networks mean that its findings may have limited generalizability to the broader landscape of higher education institutions. Building on these insights, future research should ideally employ robust longitudinal and cross-country empirical designs, thoughtfully combining institutional data with comprehensive student and faculty surveys. Structural equation modelling, for instance, could provide a valuable avenue to further test whether AI capabilities influence competitive advantage either directly or indirectly through factors such as service quality, innovation capacity, and the overall student experience. Moreover, particular attention must also be directed towards the crucial aspect of equity: UNESCO's estimates from 2024, indicating that approximately 2.6 billion people still remain offline, starkly highlight the pervasive risk that unequal digital access could directly translate into unequal AI-enabled educational opportunities.

Conclusion:

In conclusion, artificial intelligence is rapidly emerging as an increasingly pivotal strategic capability within higher education. However, its actual contribution to competitive advantage is fundamentally contingent upon how effectively institutions manage to integrate AI with their human capital, established organizational processes, existing institutional knowledge, and, critically, responsible governance frameworks. Our findings clearly demonstrate that the mere adoption of AI, by itself, is insufficient to forge a sustainable advantage. Instead, true competitive value materializes when universities actively transform AI technologies into tangible improvements in educational quality, enhanced research capacity, more effective student support, greater administrative efficiency, and better alignment with labour-market demands. From the vantage point of the Resource-Based View, it appears that institution-specific combinations of technological and complementary organizational capabilities are more likely to provide sustainable sources of differentiation than simply having access to AI tools alone. Nevertheless, significant challenges persist, particularly concerning privacy, safeguarding academic integrity, addressing inequality, ensuring robust ethical governance, and fostering adequate institutional preparedness. Achieving sustainable AI-enabled competitiveness, therefore, necessitates a human-centred and strategically aligned approach that judiciously balances innovation with crucial elements of accountability and equity.

Considering our study's reliance on secondary international evidence, it is imperative that future research employs rigorous longitudinal, cross-country empirical designs to thoroughly test the proposed relationships among AI capability, service quality, innovation capacity, student experience, and competitive advantage.

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