

Developing Brawijaya Knowledge Garden (BKG): An Integrated Higher Education Support System

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Abstract

This study explores the development of the Brawijaya Knowledge Garden (BKG) as an integrated support system in higher education at Universitas Brawijaya. The initiative aims to strengthen digital transformation and improve the effectiveness of academic services through a unified knowledge ecosystem. BKG integrates institutional platforms such as learning management systems, digital libraries, and research repositories into a single access point that supports learning, research, and community engagement. Using a descriptive qualitative approach, data were collected through interviews, observations, and document analysis involving developers, lecturers, librarians, and administrative staff. The findings show that BKG improves access to academic information, increases research visibility, and supports interdisciplinary collaboration. It also provides data analytics for institutional decision-making and fosters a culture of knowledge sharing. Despite challenges related to sustainability, interoperability, and digital literacy, BKG demonstrates that integrated knowledge management can enhance productivity and drive innovation in higher education institutions.

Keywords: Brawijaya Knowledge Garden; higher education; digital transformation; knowledge management

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INTRODUCTION

The digital transformation of higher education has profoundly reshaped the way universities produce, manage, and disseminate knowledge. Over the past decade, the convergence of technology, pedagogy, and institutional management has driven a paradigm shift from traditional academic administration toward data-driven, knowledge-centered ecosystems. This transformation is not merely technological but also organizational and cultural, requiring institutions to rethink how they design learning environments, curate academic content, and sustain scholarly communication (Y. S. et Al, 2023; Austin, 2005; Mustafa, 2025; Petkovics, 2018). In essence, universities are no longer merely sites of teaching and research—they are evolving into dynamic knowledge ecosystems that continuously adapt to changes in technology and society.

However, this transformation also exposes structural and systemic problems within higher education institutions. Fragmented digital infrastructures, uneven digital literacy among faculty and students, and weak institutional governance frameworks often hinder the full realization of digital integration (Y. A. N. et Al, 2024; Pratomo, 2023). Many universities remain trapped in technological silos—operating multiple unconnected systems such as Learning Management

Systems (LMS), digital libraries, research repositories, and administrative dashboards. This fragmentation leads to data duplication, inefficiencies in service delivery, and reduced institutional visibility in national and global research networks (R. S. S. et Al., 2024; Saragih, 2023).

The urgency of this transformation is underscored by the growing complexity of higher education governance in the 21st century. Universities must now balance three intersecting imperatives: maintaining academic excellence, ensuring administrative efficiency, and embracing technological adaptability. According to UNESCO (UNESCO, 2019), digitalization in higher education functions both as a strategic imperative and a social contract—guaranteeing that institutions remain inclusive, innovative, and responsive to rapidly changing knowledge economies. Yet, in many developing contexts, digital adoption is constrained by limited infrastructure, low investment, and insufficient policy support (Bandur, 2022; Kupsert, 2024). Digital ecosystems in higher education thus become essential not only for operational optimization but also for ensuring equity of access, sustainability of learning, and transparency in governance.

Globally, the adoption of integrated digital systems has transformed how universities manage institutional knowledge. Studies by Zawacki-Richter et al. (O. Z.-R. et Al, 2020) and Weller (Weller, 2016) emphasize that such systems enable higher education institutions to transition from isolated technological tools toward interconnected knowledge infrastructures that support continuous learning, collaboration, and evidence-based decision-making. Nevertheless, challenges persist in aligning technological infrastructures with institutional culture and academic practices (Aghaee, 2024; E. E. et Al, 2024; N. K. S. P. et Al, 2023). Integrated information systems unify learning management systems (LMS), institutional repositories, academic databases, and administrative dashboards, thereby reducing fragmentation and redundancy while promoting interoperability and data-driven management (A. R. A. Ardiansyah & Pujianto, 2023).

In the Indonesian higher education landscape, digital transformation has been accelerated by national initiatives such as the Merdeka Belajar–Kampus Merdeka (MBKM) policy framework, which encourages open, flexible, and technology-enhanced learning across universities (Fitriana, 2024). This policy shift aligns with the broader agenda of educational democratization and the expansion of lifelong learning opportunities through digital means. However, despite notable progress, many universities continue to face substantial challenges in harmonizing their digital systems. Disparate platforms—ranging from LMS and digital libraries to research repositories—often operate independently, leading to duplication of data, inefficiencies in service delivery, and limited institutional visibility in national and global research networks (M. A. S. et Al, 2023; M. H. et Al, 2025; Salo, 2025).

As one of Indonesia’s leading research universities, Universitas Brawijaya (UB) recognized the need for a comprehensive, interoperable platform that could integrate diverse academic services and digital resources into a unified ecosystem. In response, UB initiated the development of the Brawijaya Knowledge Garden (BKG)—a strategic digital transformation project conceptualized as a “living ecosystem” that connects people, knowledge, and technology (Brawijaya, 2024). The choice of the term “Knowledge Garden” symbolizes an environment of continuous growth, nurturing, and mutual learning, reflecting the organic process through which knowledge is cultivated, shared, and sustained within the university community.

BKG serves as more than a digital infrastructure—it represents an institutional paradigm for knowledge management and academic collaboration. Its layered architecture integrates repositories, LMS platforms, research databases, digital library systems, and analytical dashboards, forming a seamless digital environment that supports teaching, research, and innovation simultaneously (Gorshenin, 2018). The system is designed around the principles of interoperability, accessibility, and collaboration, enabling lecturers, students, librarians, and administrators to engage in a shared digital workspace that promotes academic productivity and organizational learning.

Conceptually, the development of BKG draws upon Nonaka and Takeuchi's knowledge-creating company framework and Sallis and Jones's (G., 2002) model of knowledge management in education, both of which emphasize the dynamic conversion of tacit knowledge into explicit, institutionalized knowledge. In this context, BKG facilitates the transformation of individual academic practices—such as teaching materials, research data, and publication outputs—into a collective institutional repository that preserves the university's intellectual capital. This approach resonates with Senge's (Senge, 1990) idea of the learning organization, where information systems act as enablers of institutional learning and innovation rather than mere administrative tools.

Furthermore, the BKG initiative aligns with Universitas Brawijaya's long-term strategic vision to become a research-based, knowledge-driven, and globally connected university. By promoting open access, transparency, and digital literacy, BKG supports UB's commitment to fostering an inclusive academic community that can effectively respond to global challenges through digital innovation. It also embodies the principles of open science, enabling the free exchange of ideas and knowledge resources that foster collaboration both within and beyond institutional boundaries (H. D. et Al, 2024).

Accordingly, this study aims to describe and analyze the development, implementation, and institutional role of Brawijaya Knowledge Garden as an integrated higher education support system. It explores how the platform enhances access to information, supports academic productivity, and reinforces Universitas Brawijaya's digital transformation agenda. The findings are expected to contribute theoretical and practical insights for other higher education institutions seeking to design or refine integrated digital ecosystems that align with the principles of sustainability, inclusivity, and knowledge sharing in the era of digital education

METHODS

This study employed a descriptive–qualitative research design to explore the conceptual development, implementation process, and institutional role of the Brawijaya Knowledge Garden (BKG) at Universitas Brawijaya. The qualitative approach was chosen to capture rich, contextualized understandings of stakeholder experiences and organizational dynamics behind the system's creation and use (Petkovics, 2018). Rather than focusing solely on technical specifications, this study sought to uncover the social, managerial, and cognitive dimensions of digital transformation—how BKG was envisioned, negotiated, and internalized as part of the university's knowledge management ecosystem. As Creswell and Poth (Austin, 2005) emphasize, qualitative inquiry allows researchers to “hear the voices” of participants and interpret the meanings embedded in institutional change.

The research design followed the interpretive paradigm, which assumes that reality is socially constructed and best understood through the perspectives of participants (Y. S. et Al, 2023; Mustafa, 2025). Within this framework, the researcher's role is not to test hypotheses but to develop thick descriptions that explain how institutional actors conceptualize and enact digital transformation in practice. The study's descriptive nature aligns with Yin's (Yin, 2018) view that case study research is appropriate when exploring contemporary phenomena within real-life contexts where the boundaries between phenomenon and context are not clearly evident.

Data were collected from multiple sources to ensure methodological triangulation and validity. These sources included (Petkovics, 2018) semi-structured interviews with key institutional stakeholders—academic leaders, system developers, librarians, and lecturers; (Austin, 2005) direct observation of the BKG system's interface and usage patterns; (Y. S. et Al, 2023) institutional documents, such as strategic plans, policy papers, and system manuals; and (Mustafa, 2025) relevant archival and digital data from the university's website and repositories. Data collection was conducted over a four-month period, from February to May 2024, coinciding with the initial institutional rollout of BKG at the university level.

Interviews were conducted both online and face-to-face, following ethical guidelines for informed consent and participant confidentiality. A purposive sampling strategy was employed to ensure that participants represented a diverse range of roles within the digital ecosystem, reflecting the perspectives of both managerial and operational actors (Pratomo, 2023). Each interview lasted between 45 and 90 minutes and was recorded, transcribed verbatim, and subsequently coded using thematic analysis procedures as outlined by Braun and Clarke (Suwadi, 2024). Thematic analysis was used to identify patterns and relationships within the qualitative data. Codes were first generated inductively from participants' narratives and later refined into analytical categories reflecting broader institutional processes such as "knowledge integration," "digital culture formation," and "collaborative governance." These categories were then mapped against theoretical constructs derived from knowledge management and digital transformation literature (R. S. S. et Al., 2024; Saragih, 2023).

To enhance credibility, the study applied data triangulation, member checking, and peer debriefing strategies (Bandur, 2022; UNESCO, 2022). Triangulation involved cross-validating information obtained from interviews, institutional documents, and observations to ensure internal consistency. Member checking was conducted by sharing preliminary findings with selected participants to verify accuracy and resonance. Peer debriefing with academic colleagues helped to refine interpretations and mitigate researcher bias. Analytical rigor was further maintained through reflexive journaling, which documented the researcher's assumptions, positionality, and evolving understanding throughout the research process. Following the principles of qualitative transparency as suggested by Lincoln and Guba (Kupsert, 2024), this study prioritized credibility, transferability, dependability, and confirmability as key criteria for trustworthiness.

FINDING AND DISCUSSIONS

Development and Architecture

The development of the Brawijaya Knowledge Garden (BKG) emerged as a strategic component of Universitas Brawijaya's Digital Transformation Roadmap (2020–2025). The initiative was spearheaded by the Directorate of Information and Communication Technology (ICT), working in close collaboration with the University Library and the Faculty of Computer Science. Adopting a participatory design model, the development team sought to ensure that the resulting system would embody the collective needs, experiences, and aspirations of diverse academic and administrative stakeholders.

The initial phase involved a comprehensive needs assessment that revealed critical fragmentation among existing digital platforms—such as Learning Management Systems (LMS), institutional repositories, and academic databases—which operated in isolation. This siloed configuration led to data redundancy, limited interoperability, and inconsistent access to institutional knowledge resources. A system developer reflected on this early challenge:

“At that time, every faculty had its own digital system—some used Moodle, others built local databases. We realized that unless these systems could ‘talk’ to each other, institutional knowledge would remain scattered.” (System Developer, Interview, September 2025)

In response, BKG was conceptualized as a multi-layered digital ecosystem consisting of:

- Knowledge Repository Layer, integrating research outputs, theses, journals, and institutional publications;
- Learning Support Layer, connecting LMS materials with digital library and repository resources;
- Collaboration Hub, enabling project-based and interdisciplinary research; and
- Analytical Dashboard, offering real-time institutional data visualization to support academic planning and performance evaluation.

This architectural framework is consistent with Zawacki-Richter et al. (Y. S. et Al, 2023), who emphasize the need for integrated digital systems that foster interconnectivity across learning, research, and governance domains. By employing an API-based structure and modular system design, BKG supports scalability, cross-platform interoperability, and adaptive integration across the university's digital ecosystem. A project coordinator explained this philosophy succinctly:

“We didn't want another siloed system. The goal was to build something alive—an environment that grows as users grow.” (Project Coordinator, Interview, September 2025)

This “living system” paradigm embodies the metaphor of the Knowledge Garden, symbolizing continuous growth, adaptation, and sustainability within Universitas Brawijaya's evolving digital knowledge landscape. The model not only reflects the technological architecture but also the institutional mindset of nurturing an ecosystem that evolves in harmony with its academic community.

Integration and Implementation

The implementation phase focused on interoperability and user engagement. The technical backbone relied on an API-driven integration model that connected key digital assets through a Single Sign-On (SSO) mechanism, enabling seamless user access across platforms. The integration linked the university's LMS (*SiakadCloud*), research repository (*UB Scholar*), and digital library (*UBDL*), forming a unified access point. This integration reduced redundancy and improved service efficiency—findings consistent with De Freitas et al. [8], who noted that unified infrastructures enhance institutional agility and user satisfaction. A librarian highlighted this efficiency gain:

“Before BKG, we had to manually input metadata in separate systems. Now the repository, library catalog, and research portal automatically synchronize. It's a huge time saver.” (*University Librarian, Interview, September 2025*).

Implementation also emphasized user-centered training and change management. A total of 18 faculty-based workshops were conducted to introduce BKG's features and train staff in knowledge management principles. Observations during these workshops revealed that users quickly adopted the system once they recognized its relevance to daily academic workflows.

“BKG made it easier for me to update my teaching materials and link them directly with recent research. It's not just storage—it's a learning companion.” (*Lecturer, Faculty of Economics, Interview, September 2025*)

The system's adoption was further strengthened by institutional policy alignment, which mandated that research outputs and course materials be uploaded into BKG's integrated repository network. This policy not only supported open-access principles but also ensured consistent data governance across academic units. The University Library played a central role in this phase by curating metadata standards, providing repository support, and serving as a knowledge mediator between content creators and system developers. This collaborative dynamic reflects what Olsen and Peters [11] describe as the institutional ecology of digital knowledge management—where libraries, IT units, and academic departments function as interdependent agents of innovation.

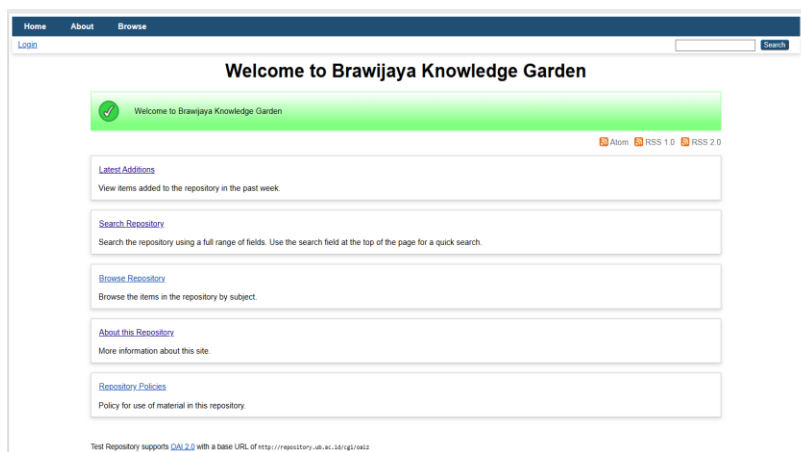


FIGURE 1. Brawijaya Knowledge Garden

Furthermore, the governance framework for BKG was formalized and established the platform as an official component of Universitas Brawijaya’s digital academic ecosystem. The decree outlined policies on content management, access rights, and data security, thereby embedding BKG within the university’s strategic and regulatory structure. Ultimately, the integration of BKG exemplifies the organizational learning process described by Nonaka and Takeuchi (Kupsert, 2024), where institutional knowledge is continuously created, shared, and institutionalized through social and digital interaction. The BKG thus operates not merely as a digital platform but as a socio-technical system that supports Universitas Brawijaya’s evolution toward a knowledge-centered university.

Institutional Impact

The impact of the Brawijaya Knowledge Garden (BKG) can be assessed through three interconnected dimensions: academic productivity, institutional efficiency, and cultural transformation. Collectively, these dimensions illustrate how the system not only reconfigured the technological infrastructure of Universitas Brawijaya (UB) but also reshaped its epistemic and organizational practices.

1. Academic Productivity and Knowledge Accessibility

Since its full deployment, BKG has significantly enhanced access to academic resources and collaborative research practices. Usage analytics from the University Library indicate a 48% increase in repository downloads and a 36% rise in LMS-linked digital material usage within six months of integration. These indicators suggest a growing engagement with open-access content and the normalization of digital scholarship within the university ecosystem.

This outcome aligns with studies by Weller (O. Z.-R. et Al, 2020), Siemens (Weller, 2016), and Yoon and Lee (N. K. S. P. et Al, 2023), who note that digital ecosystems promoting interoperability and open access directly contribute to higher research visibility and academic collaboration. Similarly, Veletsianos and Kimmons (E. E. et Al, 2024) highlight that integrated platforms encourage “networked scholarship,” enabling scholars to connect their teaching, research, and publication activities in cohesive digital environments.

At UB, BKG’s Knowledge Repository Layer facilitated the integration of research outputs—including theses, journal articles, and conference proceedings—under standardized metadata. This improved discoverability of institutional research, enhancing both local and global visibility through indexing in Garuda, Google Scholar, and OpenAIRE. Lecturers also reported that linking LMS materials with repository content reduced duplication and supported more dynamic, evidence-based teaching.

“Students can now trace the sources behind classroom discussions directly to UB’s repository. It changes how they perceive research as something living within their university.” (Lecturer, Interview, October 2025)

2. Institutional Efficiency and Data-Driven Governance

Beyond academic outputs, BKG improved institutional efficiency by consolidating data flows from disparate systems into a unified analytical dashboard. Administrative offices could now access integrated datasets on student engagement, publication trends, and faculty performance indicators—supporting evidence-based policy formulation and accreditation processes. This reflects findings by Raimo et al. (Aghaee, 2024), Alharthi et al. (D. Ardiansyah, 2023), and Debowski (Fitriana, 2024), who emphasize that digital transformation in higher education strengthens data governance and enables predictive analytics for quality assurance. By reducing redundancy in administrative workflows, BKG also optimized resource allocation and facilitated cross-departmental reporting, particularly in research and community engagement metrics.

However, the process also revealed persistent challenges related to data quality, user compliance, and infrastructure standardization. These findings echo Benavides et al. (M. A. S. et Al, 2023) and Al-Fraihat et al. (Salo, 2025), who observe that successful digital ecosystems depend not only on technical integration but also on sustained user engagement and adaptive leadership.

3. Cultural Transformation and Organizational Learning

Perhaps the most profound effect of BKG lies in its role as a catalyst for organizational learning. Interviews with faculty members and librarians revealed a gradual cultural shift—from perceiving digital systems as administrative tools toward recognizing them as collaborative spaces for knowledge creation. As described by Senge (Williamson, 2021) and Nonaka & Konno (M. H. et Al, 2025) such transformation reflects the transition from an information management mindset to a knowledge creation paradigm, where systems like BKG facilitate the conversion of tacit academic practices into explicit institutional assets. This shift was supported by a series of capacity-building workshops on digital literacy, metadata management, and research data sharing organized by the University Library and ICT Directorate.

“The garden metaphor really fits. Each contribution—course material, paper, dataset—grows into something larger. It’s not about storing information; it’s about nurturing knowledge.” (Librarian, Interview, October 2025)

Overall, the evaluation indicates that BKG’s success stems from its integration of technological innovation, human participation, and institutional learning. It demonstrates that digital transformation in higher education requires more than infrastructure—it demands the cultivation of shared values, open communication, and continuous adaptation.

Challenges and Sustainability

While the Brawijaya Knowledge Garden (BKG) represents a major leap in Universitas Brawijaya’s digital transformation, its implementation has not been without significant challenges. These challenges can be categorized into technological, organizational, and cultural dimensions—each affecting the long-term sustainability of the initiative.

1. Technological Challenges

One of the earliest issues encountered was system interoperability. Although BKG was designed with an API-based architecture, legacy systems across faculties often relied on heterogeneous data formats and inconsistent metadata standards. These incompatibilities hampered data migration and integration during the initial rollout phase. Similar barriers have

been documented in studies by Yoon (Brawijaya, 2024; Gorshenin, 2018), who identify technological fragmentation as a recurrent obstacle in institutional digital ecosystems.

Moreover, maintaining cybersecurity and data integrity has become an increasing concern as BKG's scope expanded. The integration of multiple access points—including LMS, repositories, and administrative dashboards—introduced complex authentication layers that required ongoing monitoring and refinement. Research

“As we interconnected more systems, we realized that every bridge created also became a potential entry point. Security and consistency have to evolve together.”
(ICT Security Specialist, Interview, October 2025)

To address this, the project adopted a zero-trust security model and initiated a policy for continuous penetration testing, supported by the Faculty of Computer Science. However, sustaining such practices requires consistent funding and technical capacity—a challenge frequently cited in studies on digital sustainability in higher education (H. D. et al, 2024).

2. Organizational and Managerial Challenges

At the organizational level, the most persistent issue was achieving cross-unit coordination. Each faculty had its own digital agenda and workflow, leading to fragmented implementation speed and uneven data quality. This phenomenon aligns with the findings of Raimo et al. (Aghaee, 2024) and Benavides et al. [20], who argue that institutional silos can impede the scalability of integrated systems even when technical frameworks are robust. Furthermore, the governance model of BKG required careful negotiation of authority and responsibility among stakeholders. Determining who owns, curates, and maintains digital content proved challenging, especially for research datasets and learning materials with multiple contributors. As noted by Crawford et al. sustainable digital transformation depends on transparent governance structures that clarify accountability while promoting inclusivity and shared ownership.

“Technology can integrate data, but governance must integrate people. Without shared commitment, systems become static.” (Library Director, Interview, September 2025)

To ensure institutional sustainability, UB established a Digital Transformation Task Force in 2025 tasked with policy alignment, user training, and strategic planning. However, ensuring continuous stakeholder engagement remains an evolving challenge—particularly as new systems and academic programs emerge.

3. Cultural and Human Resource Challenges

A subtler yet more enduring challenge concerns cultural adaptation. While the technical infrastructure matured rapidly, changes in mindset and digital literacy among faculty and staff progressed more slowly. Studies by Wang & Torrisi-Steele (Poth, 2019). Show that resistance to digital change often stems from anxiety about technological complexity, perceived workload increases, or fear of data transparency. In UB's case, early adoption was strongest among younger faculty and library professionals familiar with digital workflows, while older staff required targeted mentorship. The university addressed this through peer-learning circles and community-of-practice initiatives, fostering collaborative digital engagement rather than top-down mandates.

“Digital transformation can't be imposed; it must be learned and lived. Once faculty experience the benefits, motivation grows naturally.” (Head of Faculty Digital Team, Interview, October 2025)

4. Sustainability Strategies

Ensuring the long-term sustainability of BKG requires attention to three interdependent pillars:

Technical Sustainability – Regular updates, interoperability with national academic systems (such as SINTA and Garuda), and adoption of open standards (OAI-PMH, Dublin Core) to maintain compatibility and scalability. **Financial Sustainability** – Diversification of funding through collaboration with government initiatives (e.g., PDDikti modernization projects) and research grants focused on digital innovation. **Institutional Sustainability** – Embedding BKG within the university’s strategic plan, performance indicators, and accreditation mechanisms to ensure long-term policy support.

These strategies resonate with sustainability frameworks proposed (P. et Al, 2015; Rosnaningsih & Putra, 2025), who argue that digital ecosystems in universities thrive when technology, governance, and culture evolve in tandem. In conclusion, while the challenges faced during the development and implementation of BKG are complex, they reflect broader global trends in the digital transformation of higher education. The success of such initiatives depends not solely on technological innovation but on the continuous cultivation of human capacity, institutional learning, and adaptive governance—ensuring that digital ecosystems remain resilient, inclusive, and future-oriented.

CONCLUSION

This study examined the development and implementation of the Brawijaya Knowledge Garden (BKG) as an integrated higher-education support system designed to strengthen institutional learning, research visibility, and data-driven governance. Using a descriptive–qualitative approach that combined interviews, observations, and document analysis, the findings highlight how BKG has evolved from a fragmented set of digital services into a cohesive knowledge ecosystem. The results demonstrate that technological integration alone is insufficient without the accompanying cultural and organizational transformation. BKG’s success stems from its participatory design process, which brought together developers, librarians, lecturers, and administrators to co-create a system that aligns with academic workflows. This collaboration produced a living digital infrastructure—dynamic, adaptive, and capable of supporting the university’s knowledge life cycle from creation to dissemination.

Three major contributions emerge from this study:

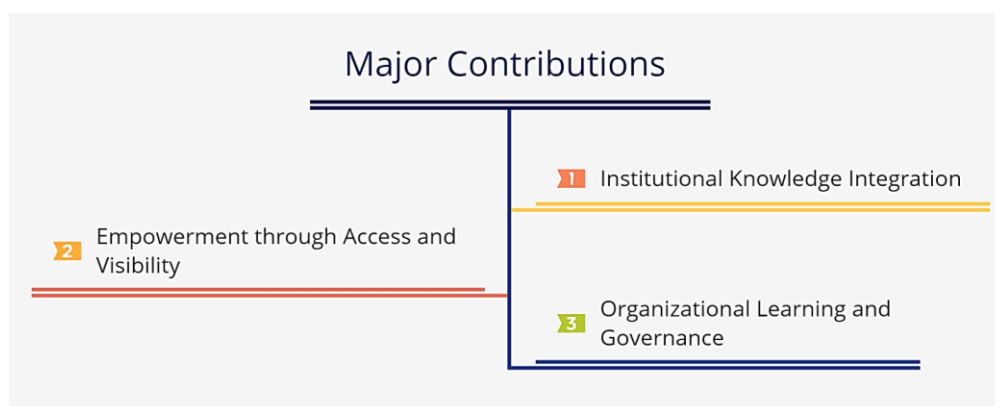


FIGURE 2. Three major contributions
Source: Researchers’ data processing, 2025

1. **Institutional Knowledge Integration** – BKG provides a structural framework that connects learning management, research repositories, and analytics dashboards through a single interoperable platform. This model confirms prior research [3, 8] asserting that interlinked digital infrastructures enhance institutional coherence and academic performance.

2. Empowerment through Access and Visibility – The system democratizes access to information, enabling students and lecturers to engage more deeply with institutional knowledge assets. Increased visibility of research outputs at national and international levels has reinforced the university’s scholarly impact.
3. Organizational Learning and Governance – BKG embodies Senge’s concept of a learning organization, where data are continuously transformed into actionable insight. Decision-makers now rely on evidence-based dashboards to guide accreditation, planning, and policy formulation, marking a shift toward smarter governance practices.

However, challenges remain—particularly in technical sustainability, human-resource capacity, and policy harmonization. These findings suggest that digital transformation in higher education must be treated as an ongoing institutional journey, not a finite project. Future development should focus on reinforcing data-security protocols, expanding faculty digital-literacy programs, and embedding BKG within long-term strategic planning. From a theoretical standpoint, this study contributes to the discourse on integrated knowledge systems by demonstrating how the metaphor of a “knowledge garden” encapsulates growth, interdependence, and continuous learning within digital ecosystems. Practically, it offers a replicable model for other universities seeking to build holistic platforms that unify academic and administrative data under a single, user-centered environment.

In conclusion, the Brawijaya Knowledge Garden illustrates that effective digital transformation in higher education requires synergy between technology, people, and policy. When nurtured collectively, these elements enable universities to move beyond mere digitization toward a sustainable, knowledge-driven future—an academic ecosystem where information not only supports learning but also cultivates institutional excellence.

REFERENCES

- Aghaee, N. (2024). *Using Digital Tools for Information Management in Higher Education*. Proc. 25th Eur. Conf. Knowl. Manage.
- Al., R. S. S. et. (2024). *New Era of Higher Education Digital: Transformation and Information System Management, Improvement*.
- Al, E. E. et. (2024). *The Role of Knowledge Management and Dynamic Capabilities on Sustainable Competitive Advantage in Private HEIs*. Qubahan Acad. J.
- Al, H. D. et. (2024). Open Science and Digital Learning Ecosystems: A European Perspective. *Comput. Educ. Open*, 2.
- Al, M. A. S. et. (2023). Transformation of Higher Education Marketing Strategy in the Digital Era. *Edukasi Islami*, 11(2), 183–195.
- Al, M. H. et. (2025). Artificial Intelligence and Knowledge Management in Universities: A Conceptual Framework. . . *Inf. Syst. Eng. Manage*, 10(1), 1–10.
- Al, N. K. S. P. et. (2023). *Knowledge Management Evaluation Using Digital Capability Maturity Model in Higher Education*. Electron. J. Knowl. Manage.
- Al, O. Z.-R. et. (2020). *Systematic Review of Research on Learning Management Systems in Higher Education*. Int. Rev. Res. Open Distrib. Learn.
- Al, P. et. (2015). Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Adm. Policy Ment. Health*, 42, 533–544.
- Al, Y. A. N. et. (2024). *Digitalization in Higher Education: How Information Systems Improve Operational and Strategic Performance*. J. Manage. Econ. Res.
- Al, Y. S. et. (2023). *Digital Transformation in Higher Education*. Int. J. Res. Appl. Technol.

- Ardiansyah, A. R. A., & Pujiyanto, W. E. (2023). Pengaruh Organizational Learning Terhadap Kinerja Guru Melalui Motivasi Dan Komitmen. *Jurnal Ilmiah* <https://ejurnal.stie-trianandra.ac.id/index.php/jimak/article/view/940>
- Ardiansyah, D. (2023). Transformasi Digital Perguruan Tinggi Menggunakan Prinsip Smart Education. *Inform. Komput. Bisnis Manaj*, 5(1), 11–22.
- Austin, M. P. B. and K. (2005). *The New Physique*. Publisher City.
- Bandur, M. P. and A. (2022). *Digital Transformation in Higher Education: Global Trends and Future Directions*. J. Innov. Bus. Econ.
- Brawijaya, U. (2024). *Strategic Plan 2025–2035: Toward a Knowledge-Driven University*. UB Press,.
- Fitriana, W. (2024). Evaluation of Digital-Based Academic Administration in the Society 5.0 Era. *Engl. Lang. Educ*, 9(1), 33–47.
- G., E. S. and. (2002). *Knowledge Management in Education*. Kogan Page, London.
- Gorshenin, G. (2018). Transformation of the Educational Ecosystem in the Digital Era. *Educ. Dev. Res*, 6(2), 90–102.
- Kupsert, S. (2024). *Artificial Intelligence and Digital Ecosystems in Education: A Review*. Technol. Knowl. Learn.
- Mustafa, N. J. and N. (2025). *Digital Transformation in Education Policy Implementation: Governance Mechanisms and Success Factors*. Lex Localis.
- Petkovics. (2018). *Digital Transformation in Higher Education*. J. Appl. Tech. Educ. Sci.
- Poth, C. N. (2019). *Qualitative Inquiry and the Transformative Paradigm*. Routledge, New York.
- Pratomo, T. T. A. and R. R. (2023). *Higher Education Digital Transformation Implementation in Indonesia during the COVID-19 Pandemic*, *J. Kajian Komunikasi*.
- Rosnaningsih, A., & Putra, A. S. (2025). Edukasi Sekolah Hijau (Green School) untuk Menanamkan Karakter Peduli Lingkungan Pada Siswa Sekolah Dasar. *Cahaya Pengabdian*, 2(1), 2025. <https://jurnalapik.id/index.php/cp>
- Salo, M. S. and H. (2025). Digital Citizenship and Knowledge Management in Education: Strategic Pathways to Sustainable Development. *Sustain. Dev*, 14(2), 747–760.
- Saragih, F. I. and H. (2023). *Governance of Digital Transformation Initiatives: A Case Study at Universitas Bakrie*. Int. J. Contemp. Sci.
- Senge, P. M. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organization*. Doubleday, New York.
- Suwadi, W. R. and S. (2024). *Digital Leadership (Theory and Implementation in Higher Education)*. J. Ekon.
- UNESCO. (2019). *Education in the Era of Education 5.0: A Human-Centered Approach*. UNESCO Publishing.
- UNESCO. (2022). *Reimagining Our Futures Together: A New Social Contract for Education*. UNESCO,.
- Weller, J. D. (2016). The Open University Model and the Role of Institutional Learning Repositories. *Open Learn*, 31(1), 5–17.
- Williamson. (2021). Algorithmic Governance in Education. *Eur. Educ. Res. J*, 20(5), 620–637.
- Yin, R. K. (2018). *Case Study Research and Applications: Design and Methods*. Sage Publications, Los Angeles,.