

Transformation of Islamic Higher Education: Policy Strategy, Challenges, and Opportunities

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ABSTRACT: *This study aims to identify policy strategies, research trends, challenges, and opportunities to transform Islamic Religious Higher Education (PTAI) to increase global competitiveness and relevance. This study uses a qualitative paradigm with a literature study approach to analyse the institutional transformation of Islamic higher education. Data were collected by searching for scientific articles in leading databases, such as Scopus and Garuda Kemendikbud. The analysis used content analysis techniques to identify central themes and synthesise data descriptively. The study's results identified several important aspects related to policy strategies, research trends, and challenges and opportunities, including (1) Digital Transformation of Islamic Education, where PTAI needs to develop a curriculum that is in line with technology and ensure that the quality of teaching is maintained. The Diffusion of Innovation Theory explains that factors such as relative advantage, observability, complexity, trialability, and technology compatibility influence the adoption of technology in PTAI; (2) A sustainable Adaptive Education Model based on transformational learning theory, which emphasises the importance of critical reflection on social and environmental changes in order to prepare students to face global challenges; (3) Development of Digital Skills to support the transformation of higher education, by the Theory of Educational Technology; (4) Innovation and Entrepreneurship that focuses on increasing the competitiveness of PTAI, based on the theory of educational entrepreneurship. The implications of this study indicate that PTAI needs to adopt technology and adaptive education models to increase global competitiveness. The study's limitations lie in the limited library sources of international scientific articles. The suggestion for further research is to explore the practical implementation of PTAI transformation in various countries, focusing on field studies.*

Penelitian ini bertujuan untuk mengidentifikasi strategi kebijakan, tren penelitian, tantangan, dan peluang transformasi Pendidikan Tinggi

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Keagamaan Islam (PTAI) untuk meningkatkan daya saing dan relevansi global. Penelitian ini menggunakan paradigma kualitatif dengan pendekatan studi pustaka untuk menganalisis transformasi kelembagaan pendidikan tinggi Islam. Pengumpulan data dilakukan dengan mencari artikel ilmiah pada basis data terkemuka, seperti Scopus dan Garuda Kemendikbud. Analisis menggunakan teknik analisis isi untuk mengidentifikasi tema sentral dan mensintesis data secara deskriptif. Hasil penelitian mengidentifikasi beberapa aspek penting terkait strategi kebijakan, tren penelitian, serta tantangan dan peluang, meliputi (1) Transformasi Digital Pendidikan Islam, dimana PTAI perlu mengembangkan kurikulum yang sejalan dengan teknologi dan memastikan kualitas pengajaran tetap terjaga. Teori Difusi Inovasi menjelaskan bahwa faktor-faktor seperti keunggulan relatif, observabilitas, kompleksitas, trialabilitas, dan kompatibilitas teknologi memengaruhi adopsi teknologi di PTAI; (2) Model Pendidikan Adaptif berkelanjutan berbasis teori pembelajaran transformasional, yang menekankan pentingnya refleksi kritis terhadap perubahan sosial dan lingkungan untuk mempersiapkan siswa menghadapi tantangan global; (3) Pengembangan Keterampilan Digital untuk mendukung transformasi pendidikan tinggi, dengan Teori Teknologi Pendidikan; (4) Inovasi dan Kewirausahaan yang berfokus pada peningkatan daya saing PTAI, berdasarkan teori kewirausahaan pendidikan. Implikasi dari penelitian ini menunjukkan bahwa PTAI perlu mengadopsi teknologi dan model pendidikan adaptif untuk meningkatkan daya saing global. Keterbatasan penelitian ini terletak pada terbatasnya sumber pustaka artikel ilmiah internasional. Saran untuk penelitian lebih lanjut adalah untuk mengeksplorasi implementasi praktis transformasi PTAI di berbagai negara, dengan fokus pada studi lapangan.

Keywords: *Transformation, Islamic Higher Education, Policy Strategy, Challenges, Opportunities.*

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I. INTRODUCTION

Education is a conscious and planned effort to build a whole person by transferring knowledge, skills, and values passed down across generations. In the era of globalisation marked by the development of science and technology, education becomes a strategic means to improve the quality of human resources effectively and efficiently, in line with the objectives of national education in Law No. 20 of 2003 concerning National Education System Law (SISDIKNAS), namely to form faithful individuals, pious, have noble character, are creative, and responsible (Tolchah & Arfan Mu'ammam, 2019; Usman et al., 2017). Education is the key to national progress and a means to create a civilised and cultured society, with change as an inevitability that must be accepted and managed positively to improve the quality of life (Abd, 2024).

Islamic education must be built on a solid spiritual and moral paradigm with the Qur'an as the primary reference in order to prevent civilisation from losing its spiritual anchor, which can have a destructive impact on human life. This paradigm is realised through

various forms of Islamic education, such as Islamic boarding schools, madrasahs, and Islamic schools, and institutional transformations, such as the birth of the State Islamic University (UIN) as a result of changes from the State Islamic Institute (IAIN) (Sibawaihi et al., 2024). UIN, which currently has 17 units, functions as a university that teaches religious knowledge and general knowledge, with the management of religious study programs under the Ministry of Religion and general knowledge under the Ministry of National Education. This variety of Islamic education reflects the community's response to the dynamics of social, cultural, historical, and political policies that support the development of Islamic education.

Islamic Religious Colleges (PTAI) face significant challenges in the era of the Industrial Revolution 4.0, marked by the development of internet technology and global competition that demands high-quality standards for its graduates (Imran & Mardhiah, 2023). The change from PTAI to UIN results from a long struggle by Indonesian Muslims to create a superior educational institution. PTAI also functions as a centre of civilisation that produces intellectuals. However, challenges arise from the orientation of some institutions that only focus on commercial aspects without strengthening the quality of facilities, infrastructure and resources (Sibawaihi et al., 2024). In addition, Islamic studies at PTAI often face obstacles in implementing a synthetic and objective approach because many researchers tend to maintain beliefs without criticism, even though religion needs to be studied neutrally to identify anomalies in its history (Abdullah, 2017).

The institutional transformation of Islamic Religious Colleges (PTAI) is a response to globalisation, digitalisation, and national policies such as the Independent Learning Campus Independent Curriculum (MBKM). In Islamic colleges, institutional transformation is expected to face the challenges of globalisation and empower people from socio-cultural backwardness (Sibawaihi et al., 2024). This transformation involves structural changes, governance, and institutional vision, such as teaching education to research-based education, as seen in the changes in institutions such as Institute of Teacher Training and Education (IKIP) to State University, State Islamic College (STAIN) to State Islamic Institute (IAIN), and IAIN to State Islamic University (UIN). This change is triggered by society's dynamics that continue to develop from internal factors such as mindset and external factors such as the social environment. In the context of Islamic education, transformation aims to create progress based on character, culture, and achievement in order to be able to compete with modern schools (Sumanti et al., 2024). This change in education is also important to narrow the gap between the rapid development of society and the slower-adapting education system so that transformation needs to be carried out comprehensively to support national and international competitiveness (Harun et al., 2021).

Through a literature review, researchers aim to understand relevant policy strategies that influence the direction of the transformation of Islamic Religious Higher Education (PTAI). This study aims to answer the question of why the institutional transformation of PTAI is important, the underlying theory, and the implications of the theory for institutional development.

Literature review research related to the transformation of Islamic higher education institutions (PTAI) has an urgency to identify research trends, including curriculum innovation based on Islamic values, strengthening competitiveness through international accreditation, and technology integration in learning. In addition, the

literature review allows mapping of challenges, such as limited human resources, organisational culture resistance, and access to technology, while also finding strategic opportunities, such as international cooperation and educational technology innovation, which can support institutional transformation as a whole.

II. METHOD

This study uses a qualitative paradigm focusing on the in-depth and interpretive understanding of descriptive data. This paradigm was chosen because the aim is to explore the institutional transformation of Islamic higher education in a detailed manner based on relevant literature sources. The qualitative approach allows for a broader and deeper exploration of information by the topic's characteristics, which is complex and dynamic (Khaldi, 2017).

The type of research used is qualitative research with a library research approach. This approach aims to collect, analyse, and synthesise data from various library sources related to the phenomenon of institutional transformation in Islamic higher education. Literature studies are conducted by tracing published articles, journals, and books to gain deeper insights into this topic (Snyder, 2019).

The subjects of the study are various relevant library sources, such as scientific articles published in reputable international journals, such as those indexed in Scopus. The objects of the study are concepts, phenomena, and practices related to the institutional transformation of Islamic higher education institutions reflected in these library sources. The selection of international journals indexed by Scopus ensures that the data used has high credibility and international relevance.

The data collection technique was carried out by searching for relevant articles through Publish or Perish (PoP) using the keyword "transformation of educational institutions", which resulted in 30 articles. Further selection was carried out from these articles to obtain 20 relevant articles. In addition, a search through the Garuda Kemendikbud database was carried out with similar keywords, but no articles were found that matched the criteria of this study.

Data validity testing uses source triangulation techniques, which compare and verify information from various library sources. This aims to ensure the consistency and validity of the data used. In addition, a critical analysis of the quality and credibility of library sources is carried out to ensure that the data obtained can be accounted for.

Data analysis uses a content analysis approach, which involves identifying key themes, categorising information, and synthesising data from various library sources that have been collected. The results of this analysis are then compiled descriptively, logically, and systematically to provide a clear and comprehensive understanding of the institutional transformation of Islamic higher education. This approach ensures that the research results can answer the formulation of the problems set precisely and in-depth (Mayring, 2015).

III. RESULT AND DISCUSSION

The results of library research through Publish or Perish (PoP) using the keyword "transformation of educational institutions" produced 20 articles from reputable international journals indexed in Scopus as follows:

**Table 1. Research of Literature Review
on The Topic Transformational of Educational Institution**

No	Author	Research result
1	Odularu	Research on the transformation of higher education institutions (HEIs) shows that the COVID-19 pandemic has accelerated the use of technology for online learning globally, creating opportunities and adaptation challenges for all parties involved. Digital platforms such as video conferencing, educational apps, and online curricula have become key strategies to support new methodologies in e-learning. HEIs have responded to this challenge by mobilising resources, providing training, and providing technical support to academics. This transformation underscores the importance of developing e-learning technologies to meet global teaching and learning expectations. However, the long-term impact of this shift on HEIs is still unclear. The research recommends developing adaptive educational models responsive to unexpected changes to create conducive and sustainable learning environments (Odularu et al., 2022).
2	Useche	This study focuses on cultural differences and analyses business students' sustainability transformation expectations towards higher education institutions (HEIs) in the US and Germany. Using a mixed qualitative-quantitative design, the study involved 239 students and identified 19 sustainability topics in HEIs, including integrating sustainability in production, consumption, gender equality, and inclusion as essential requirements for sustainability transformation. US students valued staff development and institutional support more than German students. These variations in expectations were influenced by the level of student engagement in sustainability issues and significantly impacted their behavioural intentions towards HEIs. The study recommends a contextual approach based on Kano categories and calls for further research through longitudinal designs and multiple cultural contexts (Useche et al., 2022).
3	Renz & Hilbig	This study shows that during the COVID-19 crisis, educational institutions shifted to online learning to respond to changing conditions due to strict quarantines. Although the adoption of online learning has increased, the impact has not reached the expected significant transformation. However, this crisis provides an opportunity to improve online education systems and prepare for future crises. Sustainable digital transformation requires developing relevant skills, with a dynamic capability-based approach used to understand educational institutions' responses to changing environments during the pandemic (Renz & Hilbig, 2023).
4	Zhashkenova	Research on the transformation of educational institutions in Kazakhstan shows that the development of the digital economy is increasingly relevant to the formation of digital entrepreneurship and the role of modern technologies in improving national education. These technologies contribute to the modernisation of education,

No	Author	Research result
		improving the quality of training of future specialists and promoting the convergence of education and science. However, implementing these technologies requires revising existing approaches to education and analysing their impact on society. A careful educational policy that considers modern trends is expected to balance the labour market and prevent social collapse, focusing on developing a balanced educational policy in digitalisation and implementing cluster policies in the digital economy (Zhashkenova, 2021).
5	Du et al.	Research on the transformation of educational institutions in Kazakhstan shows that the development of the digital economy is increasingly relevant to the formation of digital entrepreneurship and the role of modern technologies in improving national education. These technologies contribute to the modernisation of education, improving the quality of training of future specialists and promoting the convergence of education and science. However, implementing these technologies requires revising existing approaches to education and analysing their impact on society. A careful educational policy that considers modern trends is expected to balance the labour market and prevent social collapse, focusing on developing a balanced educational policy in digitalisation and implementing cluster policies in the digital economy (Du et al., 2023).
6	Gull et al.	This study examines the influence of adaptive culture on organisational resilience in higher education institutions, focusing on the role of digital transformation as a connecting mechanism. The study addressed the gap in previous research on organisational resilience in challenging situations, including the pandemic. Data were collected through questionnaires completed by 294 teaching faculty members in South Asia and analysed using SEM. The results showed a significant positive relationship between adaptive culture and organisational resilience, with digital transformation as a mediator. These findings provide important insights for policymakers and academics to develop adaptive cultures to enhance organisational resilience, primarily through the implementation of digital transformation. This study is the first to investigate the role of digital transformation in connecting adaptive culture and organisational resilience (Gull et al., 2024).
7	Kryshtanovych et al.	This study aims to model the main stages of sustainable development through the digital transformation of educational institutions in a region. Global trends in society, education, science, and the economy indicate a shift towards digitalisation, which is key to the successful functioning of regions and countries. The digitalisation of higher education is considered a prerequisite for sustainable development in the region. The coupled model of sustainable development developed in this study integrates digital transformation with the characteristics of the educational environment. Although this study is limited to one region, the results indicate the importance of digitalisation in achieving sustainable development, and further research needs to expand the scope to ensure sustainability in other sectors (Kryshtanovych et al., 2023).
8	Madhav & Baron	This study examines the curriculum transformation in Islamic Higher Education (IHE), focusing on decolonisation through a second-level cybernetics-based approach. A software engineering course was used

No	Author	Research result
		as a pilot, where conversation theory (CT) helped reduce value judgments and facilitate reflective discussions between participants. The study highlights the importance of contextual awareness in using technology to address the needs of poor communities through projects such as "Coding for a Cause" and "Decolonising the Web". Initial findings indicate significant differences between public and private HEIs in terms of motivation and approach to decolonisation, as well as the important role of full-time staff in supporting this agenda, while part-time staff are less engaged. Furthermore, the study highlights the importance of epistemological change and integrating the UN Sustainable Development Goals (SDGs) into the curriculum to create sustainable, inclusive learning experiences. Although many challenges remain, IHEIs are key in promoting this change (Madhav & Baron, 2022).
9	Rakhmatov & Nizamov	Research on the transformation of educational institutions shows that the development of innovative entrepreneurial activities plays an important role in increasing the competitiveness of higher education institutions. Attention to the supporting factors and conditions in the advanced transformation model is key to encouraging the success of innovative entrepreneurial activities, which directly contribute to the competitiveness of educational institutions (Rakhmatov & Nizamov, 2020).
10	Lekishvili & Kikutadze	In the last decade, higher education institutions have faced significant challenges, mainly due to the impact of the COVID-19 pandemic, which has exacerbated external pressures such as political, demographic, financial and technological changes. In the post-pandemic situation, educational institutions must redefine their missions, values and operational models to achieve strategic goals. University leaders must develop new working methods, improve communication, restructure resources and provide clear direction while still paying attention to the well-being of staff and students. This transformation process requires a new managerial approach supported by a modern Management Information System (MIS) and involving the entire academic community and stakeholders to find the best solutions in facing the "new normal" (Lekishvili & Kikutadze, 2023)".
11	Pedro & Teixeira	This study analyses the impact of digital transformation on educational institutions using a bibliometric review approach, PRISMA, and Global Innovation Index (GII) data from 50 countries. The results of the linear regression analysis indicate that digital transformation positively impacts educational institutions, although each element of technological input shows different behaviour. This study also identifies managerial strategies and policies that can be applied to optimise digital transformation in educational institutions (Pedro & Teixeira, 2021).
12	Galikhanov et al.	Considering global trends, this study discusses the transformation of educational institutions through public-private partnerships (PPP) in the Russian Federation. The study identifies PPP mechanisms as a tool for improving the quality of education, especially in technical education, through collaboration between businesses, authorities and educational institutions. The proposed PPP model includes developing educational content, improving the qualifications of

No	Author	Research result
		academic staff, improving academic mobility, and strengthening international relations. The authors emphasise the importance of the involvement of authorities in supporting institutions of additional professional education (APE) and addressing the strategic challenges of the real sector. The study's results offer a reproducible model for developing innovative and relevant education (Galikhanov et al., 2021).
13	Kierzyk & Pólkowski	The research on transforming educational institutions during the pandemic focuses on implementing distance learning based on information and telecommunication technologies at Jan Wyzykowski University, Poland. The study covers the legal, organisational, and technical aspects of distance learning and a literature review of e-learning methods and tools, including e-learning solutions 3.0 to 5.0. The research methodology analyses distance learning and builds a conceptual framework of e-learning systems 5.0. The study's results highlight the importance of technological adaptation and conceptualisation of learning systems as priorities for future education development (Kierzyk & Pólkowski, 2021).
14	Truong	Research on digital transformation in Vietnamese higher education institutions (HEIs) reveals the importance of technology adoption to support the transformation process, although there are still knowledge gaps in this area. Using a qualitative case study approach, the research involved in-depth interviews with 12 education and technology professionals and focus group discussions with digital transformation experts. Thematic analysis results show that digital transformation in Vietnamese HEIs is influenced by infrastructure, technology adoption, and IT integration challenges. The research also highlights the potential of technologies such as e-learning, artificial intelligence, and blockchain to improve education quality and drive innovation (Truong, 2024).
15	Jonathan & Magd	Research on educational institutional transformation shows that the COVID-19 pandemic has forced higher education institutions globally, including in the Middle East and Africa, to shift from face-to-face to online learning. This transformation requires the use of digital technologies and automation, although many institutions face significant challenges related to infrastructure and technology investment. Analysis of various studies reveals the profound impact of the pandemic crisis on the education sector in the region, driving a shift in teaching and learning methods that are now more digitally based (Jonathan & Magd, 2024).
16	Albarracín Vanoy	This study examines the transformation of higher education institutions by integrating artificial intelligence (AI) in logistics teaching for international business. The study highlights the importance of adapting to the changing global business environment using AI-based tools, such as simulation and predictive analytics, which have been shown to improve students' practical skills, interactivity, and engagement. Using research reviews, case studies, and practical experiences, the results show that the application of AI supports a positive evolution in logistics education. However, challenges related to teacher training and data management remain concerns. This transformation effectively prepares students to face

No	Author	Research result
		logistics challenges in the global business world (Albarracín Vanoy, 2023).
17	Sazonova & Mikhailova	This study examines the transformation of higher education systems by integrating technologies and digital solutions, focusing on the transition to personalised individual education in a digital environment. The study's central hypothesis is that education based on the inverted pedagogical design model prioritising outcome groups in the work program will be more effective. The study aims to develop adaptive individual educational trajectories for students in the ever-evolving information and digital environment. The article proposes a multi-level methodological system to support high-quality individual education, allowing productive strategies to be integrated into an adaptive educational system that personalises learning according to students' needs, interests and characteristics (Sazonova & Mikhailova, 2024).
18	Kikutadze et al.	Georgia, which joined the Bologna Process in 2005 and signed an association agreement with the European Union in 2014, has undertaken significant educational reforms, especially in higher education. The EU-Georgian Association agreement agenda 2021–2027 emphasises the importance of developing the digital economy, innovation, and digital skills and literacy. In response, Georgia launched a digital transformation in higher education institutions, including implementing distance learning through Zoom, Jitsi, Google Meet, and Microsoft Teams. However, challenges emerged related to the lack of digital skills among students and staff, non-compliance with academic integrity norms in online education, and issues with infrastructure and internet access. Therefore, higher education institutions in Georgia continue to develop and implement digital strategies to ensure the sustainability and effectiveness of the digital education transformation (Kikutadze et al., 2023).
19	Goarty & Gupta	This study aims to understand the factors influencing digital transformation in administrative and academic processes in higher education institutions (HEIs) using the Technology-Organization-Environment (TOE) and Technology, Pedagogy, and Content Knowledge (TPACK) frameworks. Using a qualitative approach through semi-structured interviews, this study identified eleven factors influencing digital transformation, grouped into four dimensions of the framework: technology, organisation, environment, and teacher knowledge. The findings show that organisational and technological factors influence digital transformation in administrative processes. In contrast, in academic processes, environmental factors and teacher knowledge play a more significant role (Goarty & Gupta, 2023).
20	Byankin et al.	This study aims to study the digitalisation experience in higher education institutions and develop recommendations for digital transformation strategies. The approach involves reviewing strategic tasks and determining priority areas for digital development based on analysing the university's level of digitalisation and internal factors. The study results show that the key factors influencing the choice of digitalisation strategy are the level of advancement of digital technologies in the educational environment and the competence of teaching staff in using digital technologies and distance learning. The

No	Author	Research result
		study also proposes indicators for assessing the level of digitalisation and tactical steps needed to implement digital transformation strategies in universities. These recommendations are expected to be applied in developing and implementing digitalisation in higher education institutions (Byankin et al., 2021).

From the results of the literature review presented, several important themes related to the transformation of educational institutions can be concluded, covering various aspects, from the impact of the COVID-19 pandemic to the adoption of technology and innovation in learning. The following is an in-depth analysis of the study findings:

Digital Transformation of Islamic Education

The COVID-19 pandemic has accelerated digital transformation in various educational institutions, including higher education and Islamic education. This change is mainly reflected in adopting technologies such as e-learning, educational applications, and video conferencing platforms that are the backbone of online learning (Kierzyk & Pólkowski, 2021; Odularu et al., 2022). Research shows that the pandemic has not only accelerated the use of technology but also pushed educational institutions to redefine their operational models to meet global demands (Jonathan & Magd, 2024; Lekishvili & Kikutadze, 2023).

This digital transformation presents both opportunities and challenges. On the one hand, technology enables broader, more flexible, and adaptive access to education. On the other hand, adaptation challenges arise in the form of infrastructure readiness, technical support, and the ability of teachers and students to utilise technology effectively (Odularu et al., 2022). Higher education institutions need to mobilise resources to ensure a smooth transition, including supporting the sustainability of digital-based teaching.

In Islamic education, this transformation opens up opportunities to increase accessibility to learning, especially for students spread across remote areas. Technology allows for in-depth study of Islamic teaching materials without being hampered by geographical limitations. However, strengthening the Islamic curriculum and the quality of teaching remains a primary concern so as not to be disrupted by technological limitations. Further research is needed to understand the long-term impact of this transformation on the development of Islamic education in Islamic Higher Education Institutions (PTAI) (Odularu et al., 2022).

Based on Rogers' Diffusion of Innovation (DOI) Theory, the adoption of educational technology can be analysed through five important innovation attributes: relative advantage, observability, complexity, compatibility, and trialability (Menzli et al., 2022; Pinho et al., 2021).

a. Relative Advantage

The pandemic has provided significant benefits through technologies such as e-learning, educational applications, and video conferencing platforms, enabling more expansive, flexible, and adaptive access to education. In Islamic education, these technological benefits help expand access to teaching materials without being limited by distance and time. Therefore, relative benefits are a major driving factor for adopting educational technology.

b. Observability

The success of technology in enhancing the learning experience and overcoming geographical limitations makes the results of technology use more visible to teachers, students, and decision-makers in educational institutions. As observability increases, technology adoption in higher education and Islamic education increases.

c. Complexity

While technology enables wider access, the main challenges faced are the complexity of use and readiness of infrastructure and the skills of teachers and students in utilising the technology. While adopting technology accelerates learning, these challenges must be addressed by designing more user-friendly technology and providing adequate training.

d. Trialability

The ability to try out technology before full adoption is important. Islamic universities and educational institutions must provide opportunities for technology trials so that users can experience direct benefits, increase confidence, and reduce barriers to adoption.

e. Compatibility

Educational technology must be adapted to the needs and culture of existing education, including in Islamic education. Technology compatibility with existing curricula will encourage broader use, so educational institutions need to optimise technology design to support the goals of teaching and developing Islamic education.

Based on the Diffusion of Innovation (DOI) Theory analysis, Islamic universities and educational institutions must focus on several important aspects to ensure sustainable digital transformation. First, technology simplification must be done to make it more accessible and usable by teachers and students. In addition, adequate technology training and trials are essential to increase user confidence in the adopted technology. Furthermore, technology compatibility with curriculum needs must be improved, followed by strengthening the aspect of deepening Islamic teaching materials to maintain the quality of teaching (Menzli et al., 2022; Pinho et al., 2021).

Adaptive Education Model for Digital and Social Transformation

Adaptive and sustainable educational approaches are increasingly needed to face the challenges of digital transformation and rapid social change. Implementing technology-based educational models can support the sustainability of education in the future, with a focus on flexibility and responsiveness to unexpected changes (Kryshtanovych et al., 2023; Useche et al., 2022). This is relevant not only for general education but also for the context of Islamic religious education.

Research by Useche et al. revealed that student expectations regarding sustainability differ based on cultural context. Students in the US place more value on staff development and institutional support, while students in Germany place more focus on integrating sustainability into the curriculum (Useche et al., 2022). These findings demonstrate the importance of a context-based approach to address sustainability challenges in higher education. In the context of Islamic Religious Higher Education (PTAI), this can be implemented by integrating social and environmental values into an Islamic-based curriculum.

In addition, the desire-based approach in PTAI can strengthen students' character through teaching the values of equality, gender inclusion, and social entrepreneurship. Gull et al. emphasise that an adaptive culture in PTAI, which includes a readiness to adapt to environmental changes and new challenges, is essential to enhancing organisational resilience (Gull et al., 2024). By developing a culture responsive to new needs, PTAI can ensure that its institutions survive and thrive in the face of digital transformation and dynamic social change.

The results of the literature review study show that an adaptive and sustainable educational approach is needed to face the challenges of digital transformation and rapid social change, including in the context of Islamic Higher Education (PTAI). Based on the theory of transformational learning, this transformation requires mastery of technology and demands the development of students' social-emotional, intellectual, and critical skills to anticipate unexpected changes (Wilson, 2024).

Transformational learning theory emphasises the importance of critical reflection on the assumptions underlying students' understanding of social, economic, and cultural systems (Wilson, 2024). In the context of PTAI, this means that students are invited to understand the challenges of sustainability, including the integration of Islamic values into technology-based education. This critical reflection allows students to evaluate and adjust their approach to social and environmental change, producing innovative and value-based solutions to global challenges.

Transformational learning theory in PTAI can be applied by integrating Islamic values into a sustainability-based curriculum, such as teaching about environmental responsibility, equality, and social entrepreneurship that align with the principles of justice and sustainability in Islam. In addition, experiential learning through the direct involvement of students in sustainability projects in local communities, such as mosque-based environmental programs or Sharia economic empowerment, can broaden their views and demonstrate the practical application of Islamic values. This approach is also strengthened by critical reflection to build student character, including gender inclusion, social justice, and adaptability, so they can recognise systems of oppression and contribute as ethical and inclusive agents of change.

Research by Gull et al. underlines the importance of an adaptive culture in PTAI to face the challenges of digitalisation and social change (Gull et al., 2024). If grounded in transformational learning theory, this culture can help institutions develop the resilience and flexibility needed to survive and thrive. This includes adopting technology-based educational models responsive to new needs while maintaining the relevance of Islamic values.

Digital Skills Development for Higher Education Transformation

Digital transformation in education requires developing digital skills among students and teachers to maximise the potential of technology. Research shows that increasing these digital capabilities is a critical factor in supporting the effectiveness of digital transformation (Galikhanov et al., 2021; Sazonova & Mikhailova, 2024). In addition to technology, the success of transformation also depends on an adaptive organisational culture, which can increase the resilience of educational institutions in facing crises such as pandemics (Gull et al., 2024).

A dynamic capability-based approach is needed to ensure the sustainability of digital transformation in the education sector. Renz & Hilbig and Kryshtanovych et al.

underline that the digitalisation of higher education not only promotes sustainable development but also improves the quality of training and supports the integration of education and science (Kryshtanovych et al., 2023; Renz & Hilbig, 2023). Zhashkenova (2021) adds that the success of digitalisation depends on careful education policies to balance the labour market and prevent negative social impacts (Zhashkenova, 2021).

The application of artificial intelligence (AI) and other digital solutions in education has become the focus of several studies, especially in creating more personalised, interactive and data-driven learning experiences. These technologies are seen as improving students' practical skills while preparing them for the challenges of the global business world (Albarracín Vanoy, 2023; Truong, 2024).

Albarracín Vanoy (2023) highlights the contribution of AI in enhancing interactivity and practical skills, especially in logistics education. This study shows how AI-based tools can optimise learning through a data-driven approach. In addition, Truong (2024) underlines the great potential of technologies such as e-learning, AI, and blockchain in driving educational innovation and improving the quality of learning (Truong, 2024).

Although the implementation of this technology faces challenges, such as the need for teacher training and data management, its integration is considered a strategic step to support student readiness in facing the ever-evolving global dynamics (Albarracín Vanoy, 2023; Truong, 2024).

Despite increasing technology adoption in education, infrastructure challenges and teaching readiness remain significant barriers. Research by Renz, Hilbig, and Truong highlights the need for intensive training for lecturers and students, especially in Islamic Higher Education Institutions (PTAI) (Renz & Hilbig, 2023; Truong, 2024). By utilising technologies such as AI, e-learning, and other digital-based platforms, the learning process can be significantly enriched and encourage the effectiveness of education at PTAI.

Digital transformation in higher education, including in Islamic Religious Colleges (PTAI), requires the development of digital skills among both students and teachers. Along with research results showing that increasing digital skills is an important factor in the effectiveness of digital transformation (Galikhanov et al., 2021; Sazonova & Mikhailova, 2024), Educational Technology Theory supports this by emphasising the role of technology as a mediator in the cultural dialogue that enriches the educational process (Wegerif & Major, 2024). In the context of PTAI, mastery of technology and digital skills will enable more dynamic dialogue, both on a local and global scale, which is essential in responding to the challenges of the Digital Age.

In addition to technological mastery, an adaptive organisational culture—as highlighted in research by Gull et al. (2024)—is an important aspect in supporting the success of digital transformation. In this theory, technology-based education relies on pedagogical and technical designs that enable flexible and responsive interactions with educational needs across time scales and places (Gull et al., 2024). At PTAI, this is reflected in the importance of creating a culture that supports adopting technology to ensure institutional resilience in the face of challenges, as seen in the pandemic crisis.

Educational Technology Theory proposes the importance of educational design that combines both pedagogical and technical aspects to create learning experiences that are effective and relevant to global challenges (Wegerif & Major, 2024). The dynamic capability-based approach mentioned by Renz & Hilbig and Kryshtanovych et al. is in

line with this idea, where the digitalisation of higher education, including in the context of PTAI, not only drives sustainable development but also improves the quality of training and supports the integration of education and science (Kryshtanovych et al., 2023; Renz & Hilbig, 2023).

However, infrastructure challenges and teaching readiness are still significant obstacles that need to be overcome by providing intensive training to lecturers and students (Renz & Hilbig, 2023; Truong, 2024). In the context of Educational Technology Theory, this challenge can be answered by integrating educational technology into curriculum design that connects Islamic higher education with the latest technologies, such as AI, e-learning, and other digital platforms (Wegerif & Major, 2024). This technology enriches the learning process and strengthens the intercultural dialogue in PTAI classrooms, enabling broader and deeper interactions between students and the material and instructors.

Innovation and Entrepreneurship to Improve PTAI Competitiveness

Research by Rakhmatov and Nizamov and Galikhanov et al. emphasises the importance of innovative and entrepreneurial activities in increasing the competitiveness of educational institutions (Galikhanov et al., 2021; Rakhmatov & Nizamov, 2020). The development of a transformation model that supports entrepreneurship is considered effective in strengthening the connection between educational institutions and the industrial sector, enabling students to develop skills relevant to the job market's needs.

Galikhanov et al. also underlines the importance of public-private partnerships (PPPs) as a strategic approach to improving the quality of education, especially in engineering education (Galikhanov et al., 2021). In Islamic Higher Education Institutions (PTAI), cross-sector collaboration, including with the technology sector, can accelerate curriculum modernisation and the development of educational technology. For example, partnerships with the technology industry enable access to AI-based learning tools and innovative e-learning platforms. In addition, the hands-on practice opportunities offered through these collaborations can help students hone skills relevant to the world of work (Galikhanov et al., 2021).

Analysis of the research results shows an alignment between the findings expressed by Rakhmatov and Nizamov and Galikhanov et al. with the theory of educational entrepreneurship, which emphasises the importance of developing an entrepreneurial spirit and innovation among students. Both studies highlight the importance of a transformation model that supports entrepreneurship in strengthening the competitiveness of educational institutions, especially in Islamic Higher Education (PTAI). In this context, the theory of educational entrepreneurship explains that developing entrepreneurship through innovative learning will prepare students with practical skills needed in the world of work. This includes the ability to think creatively, solve problems, and innovate skills that are important in facing the dynamics of an ever-changing market (Zhang et al., 2021).

Regarding public-private partnerships (PPPs), the research findings support the educational entrepreneurship theory that shows the importance of cross-sector collaboration in supporting the modernisation of higher education. In PTAI, collaboration with the industry and technology sectors, including using artificial intelligence-based learning tools and e-learning platforms, aligns with the theory's goal of optimising teaching methods for entrepreneurship and innovation. These partnerships

provide opportunities for students to engage in practical projects that hone industry-relevant skills and strengthen their connections to the world of work (Zhang et al., 2021).

In the context of the transformation of Islamic higher education institutions, applying educational entrepreneurship theory through innovative and entrepreneurial activities can accelerate the process of curriculum modernisation in PTAI. This develops academic competence and equips students with an entrepreneurial spirit that can improve their performance in the business world. Along with a strong entrepreneurial spirit, students at PTAI can more easily identify business opportunities, create innovations, and overcome challenges faced in the world of work.

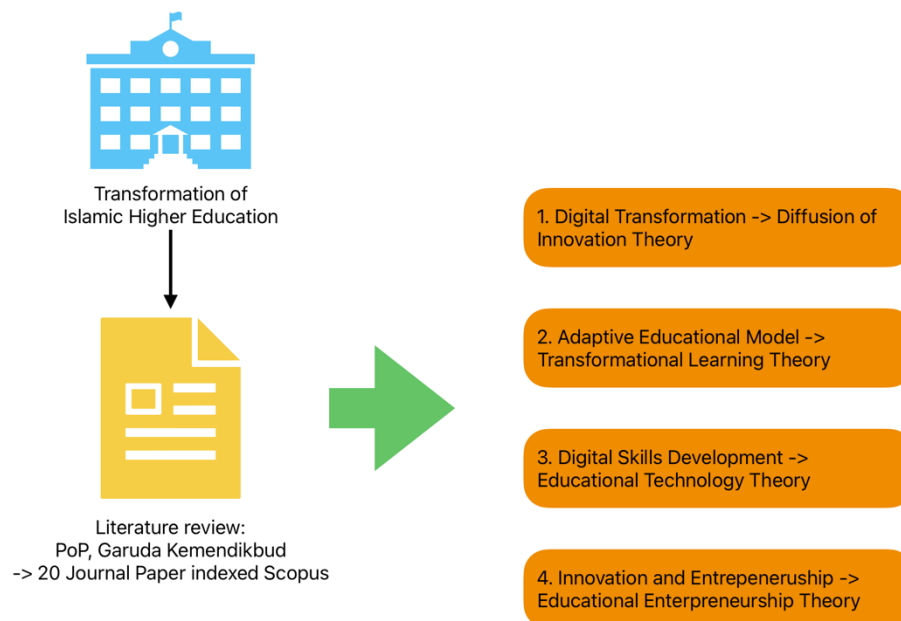


Figure 1. Research Results Literature Review Transformation of Higher Education Institutions

Figure 1 illustrates the findings of several educational themes regarding institutional transitions that can be concluded from the literature review results.

IV. CONCLUSION

Institutional transformation of Islamic Religious Colleges (PTAI) is crucial in facing global challenges and social changes, primarily related to the digitalisation of education. Based on the results of the literature research, several important aspects that need to be considered are: (a) Digital transformation accelerated by the COVID-19 pandemic, which encourages the adoption of technology in Islamic education. Key strategies include using e-learning and video platforms, which provide wider access and flexibility, especially in remote areas. However, challenges arise in infrastructure readiness, limited user training, and technology compatibility with the curriculum. With the Diffusion of Innovation Theory approach, institutions can ensure the suitability of technology with the curriculum and increase training and trials for sustainability; (b) Adaptive and sustainable education models to face rapid change. This model includes the integration of Islamic values in a sustainability-based curriculum. The challenges lie in mastering technology and developing critical student skills, while the opportunities

are building an adaptive culture and student character; (c) Development of digital skills for students and teachers to maximise technology. Challenges related to infrastructure and intensive training can be overcome by utilising technologies such as AI and e-learning that improve the quality of learning; (d) Innovation and public-private partnerships (PPP) that can improve student skills according to the needs of the world of work through industry practices and connections. Theoretically, applying the Diffusion of Innovation Theory and transformational learning provides a framework for understanding technology adoption and critical reflection of Islamic values. Practically, it is important to strengthen digital skills training for teachers and students and adapt technology to the Islamic context. The limitations of this study lie in its limited focus on literature studies and secondary data analysis, so it does not explore the direct application in the field in depth. Further research is suggested to involve field studies to examine the implementation of digital transformation and adaptive education models in PTAI.

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