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CONCEPTUAL FRAMEWORK OF ISLAMIC EDUCATION IN THE DIGITAL ERA: CHALLENGES, OPPORTUNITIES AND STRATEGIES

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ABSTRACT

The development of the digital era has brought significant changes in various aspects of life, including in the Islamic education system. This paper examines the transformation of technology in Islamic education, the challenges faced, and the opportunities that can be utilized to improve the quality of Islamic education in the digital era. This study employs a literature-based methodology. Data collection was carried out from various literature in the form of scientific articles, books, and various other sources. In the midst of the unstoppable flow of globalization and the digital revolution, the world of Islamic education faces unprecedented challenges and opportunities. Technological transformation has fundamentally changed the way we learn, teach, and understand religious knowledge. This change not only touches on the technical aspects of learning but also presents a new paradigm in transmitting Islamic values to the digital generation. This study suggests several strategies for navigating the digital era, including implementing system changes in Islamic educational institutions to facilitate digital transformation. In addition to core competencies, educators must also possess supporting qualifications and competencies, such as agility, innovation, creativity, anticipation, experimentation, open-mindedness, and networking skills. This allows Islamic educational institutions in the digital age to be managed according to everyone's expectations.

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1. INTRODUCTION

The digital age has spurred a significant transformation in human communication, labor, and education (Li, 2020; Goulart et al., 2022). Islamic education, a crucial pillar in shaping the Muslim youth, must adapt to technological advancements while preserving the core values of Islamic teachings. The technological change in Islamic education is an essential requirement to address contemporary difficulties and cultivate a proficient Muslim generation in the digital age (Suroso et al., 2021; Lundeto et al., 2021; Pahrudin et al., 2023).

The Digital Era is a sector that integrates automation technology with cyber technology (Tyagi et al., 2020). This is a trend in automation and data interchange within manufacturing technology, encompassing cyber-physical systems, the Internet of Things (IoT), cloud computing, and cognitive computing. The Digital Era generates "intelligent manufacturing facilities" (Atieh et al., 2023). In a modular smart factory, cyber-physical systems oversee physical operations, generate virtual replicas of the physical environment, and execute decentralized decisions.

Cyber-physical systems interact and cooperate with one another and with people concurrently via the Internet of Things (IoT) (Pivoto et al., 2021). Cloud computing facilitates the provision and utilization of internal and inter-organizational services by several stakeholders throughout the value chain. The world's industrialization commenced in the late 18th century with the introduction of steam power and the invention of the power loom, fundamentally transforming production methods, a time referred to as the Industrial Revolution 1.0 (Groumpos, 2021; Thomes, 2022).

A century later, electricity and assembly lines facilitated mass production, known as the Second Industrial Revolution. The industrial revolution 3.0 commenced in the 1970s, driven by advancements in computer-based automation that enabled the programming of machines and networks (Sharma & Singh, 2020; Handayani et al., 2020). Indonesia is presently embarking on the Digital Age Revolution. The midpoint of this century (the digital revolution) was characterized by the convergence of technologies and the obfuscation of boundaries between physical, digital, and biological realms. The Industrial Revolution 4.0 period is marked by a decrease in the physical activities associated with specific geographic locations (Liao et al., 2023; Hassoun et al., 2023; Kuok et al., 2024). This is due to the transition of all human activities from manual to digital formats.

Islamic education, with a history exceeding 14 centuries, has undergone numerous phases of transition (Azra, 2017; Sabic-El-Rayess, 2020). The transition from the halaqah model in mosques to the structured madrasah system reflects the adaptations made in response to the exigencies of each era. The digital age introduces a surge of extensive and swift transformation (Ismail et al., 2023; Xing et al., 2023). Smartphones, the internet, social media, and diverse digital learning platforms have introduced a novel dimension to Islamic education (Firdaus et al., 2023; Diana et al., 2024).

This shift can be observed from multiple perspectives. The accessibility of religious knowledge has become increasingly democratic. Previously, learning the Qur'an required direct interaction with a teacher; however, there are now numerous applications that enable autonomous study. Secondly, pedagogical approaches have evolved to be more interactive and multimedia-based (Abdulrahaman et al., 2020; Li et al., 2023; Dziubaniuk et al., 2023). Islamic studies are no longer confined to traditional lectures; they can now be disseminated through films, infographics, podcasts, or educational games.

Therefore, based on the above conception and description, this paper examines the transformation of technology in Islamic education, the challenges faced, and the

opportunities that can be utilized to improve the quality of Islamic education in the digital era.

2. METHOD

This research employs a literature review methodology. A literature study involves data collection conducted in the field (library) through the examination of various texts that provide pertinent information related to the research topic. Observation, interviews, and documentary analysis are also part of the process. Subsequently, the information is condensed, exhibited, and articulated in accordance with study protocols. The methodology employs many literary analyses. The material employed comprises periodicals and publications that endorse the conceptualization of managing Islamic educational institutions in the context of the digital age.

The researcher developed a conceptual framework for Islamic educational institutions to address the digital era (Challenges, Opportunities, and Strategies). Moreover, the researcher formulated a concept to enhance the adaptation of Islamic educational institutions and educators in the digital age.

3. RESULTS AND DISCUSSION

This article will discuss the transformation of technology in Islamic education, the challenges faced, and the opportunities that can be utilized to improve the quality of Islamic education in the digital era.

The digital era presents intricate obstacles for Islamic teaching. There is a necessity to uphold essential Islamic principles and teachings. Conversely, there is a call to include contemporary technology into the educational process. Digital change is imperative, not merely optional (Fitzgerald et al., 2014).

The term "digital era revolution" comprises two words: revolution and industry. In the Big Indonesian Dictionary (KBBI), "revolution" denotes a swift transformation, whereas "industry" refers to the endeavor of executing the production process. The combination of the two words signifies a rapid alteration in the production process. This swift transformation seeks to enhance both the volume of things produced (quantity) and the caliber of production outcomes (quality) (Voskerichyan & Baiming, 2024).

Industry 4.0, an evolution of Industry 3.0, incorporates connectivity tools for data acquisition and processing, automated networking devices, the Internet of Things (IoT), big data analytics, cloud computing, and cybersecurity as its fundamental components in the digital age (Jiang et al., 2022). These connectivity gadgets are linked to tangible industrial apparatus. The objective is to transmit and receive data in accordance with designated commands, either manually or autonomously using artificial intelligence. In the digital era, IoT devices are referred to as IIoT (Industrial Internet of Things), which were formerly highly effective for internal monitoring. In the framework of Industry 4.0, these IoT devices can be linked to a WAN network via a cloud infrastructure (Majid et al., 2022). In a cloud environment, data can be processed and sent to other entities. This necessitates automation and orchestration inside a hybrid cloud environment,

aimed at facilitating developers and operational teams in enhancing performance and services. Moreover, the occurrence of disruptive innovation has led to the obsolescence of certain occupations due to their replacement by machines. Currently, the responsibilities of check-in counter personnel at numerous international airports have been assumed by equipment capable of immediately addressing passenger requirements, including scanners for passport and visa verification, as well as printers for generating boarding passes and luggage tags. The creation of new vocations, such as YouTuber, website developer, blogger, and game developer, is another significant consequence.

Technological transformation in Islamic education

The incorporation of technology in Islamic education has resulted in numerous methodological advancements (Malik, 2020; Taufik, 2020). Blended learning integrates the benefits of in-person instruction with the adaptability of online education. Students may access lecture materials, engage in virtual conversations, and submit assignments using the Learning Management System (LMS) (Singh et al., 2022).

Artificial intelligence (AI) and big data are increasingly being utilized to customize learning experiences (Luan et al., 2020). Intelligent systems can assess students' learning patterns and offer recommendations for resources that align with their capabilities and learning preferences. Virtual reality (VR) and augmented reality (AR) technology facilitate an immersive experience in the study of Islamic history and worship rituals (Musolin et al., 2024).

The accelerating advancement of technology will persist in transforming the realm of Islamic education. Innovative technologies like the metaverse, blockchain, and generative AI create novel opportunities in religious education (Anoraga, 2024; Tsuria & Tsuria, 2024). Nevertheless, amidst this current of change, the fundamental nature of Islamic education as a cultivator of character and values must persist as the primary guiding principle.

The future of Islamic education will progressively integrate traditional wisdom with technological innovation (Sahin, 2018). Learning models will become increasingly individualized, adaptive, and focused on experiential learning. Global collaboration among Islamic educational institutions will facilitate the development of a more enriched and inclusive learning ecology.

Challenges Faced and Solutions

Challenges faced

While digital transformation offers numerous advantages, it also poses considerable problems (Oliveira & De Souza, 2022). The digital gap remains a reality in numerous locations. Not all Islamic educational institutions have sufficient access and technology infrastructure. Secondly, the digital proficiency of educators must be perpetually enhanced to maximize technology's effectiveness in education (Beardsley et al., 2021).

A further problem is achieving equilibrium between technical advancement and the core principles of Islamic education. The concepts of etiquette in knowledge acquisition, teacher-student dynamics, and the significance of scientific lineage must be preserved in a manner suitable for the digital age. Cybersecurity and the authenticity of

information are significant issues due to the prevalence of hoaxes and deceptive content online (Habib et al., 2019).

Solutions to the challenges faced

Solutions to the obstacles encountered must effectively address the existing problems. The subsequent ideas are proposed to address the issues of Islamic education in the digital era (Abdullah, 2017; Taufik, 2020).

1. Infrastructure development necessitates coordination among many stakeholders, including government and private sector entities. Furthermore, a digitization initiative for madrasas and Islamic boarding schools is essential, alongside the establishment of Islamic educational technology institutes (Suharto & Fatmawati, 2022).
2. Enhancing HR capacity by implementing continuous training initiatives, collaborating with technology specialists, and establishing an Islamic edtech practitioner community for discourse
3. Establishing a quality control entity to ensure quality assurance in Islamic education is crucial for standardization and quality control. Additionally, we need to accredit digital information for educational purposes and develop standards for Islamic educational technology (Nasir, 2021).

Opportunities to Improve the Quality of Islamic Education in the Digital Era

Globalization of Islamic Education

Digital technology facilitates the global dissemination of Islamic education (Sheikh Khairudin & Mohammad, 2021). Islamic educational institutions may provide distance learning programs accessible to Muslims globally (Shofiyyah et al., 2023; Adiyono & Anshor, 2024).

Personalization of Learning

Technology facilitates a tailored educational approach that aligns with the individual abilities and requirements of each learner. Artificial intelligence-based adaptive learning systems can enhance the learning process (Pardosi et al., 2024).

Efficiency and Effectiveness

Technology utilization can enhance efficiency in educational administration and improve efficacy in the learning process (Müller & Wulf, 2024). An Islamic education-focused learning management system (LMS) can facilitate a more organized approach to educational administration (Mukhibat & Wilujeng, 2021; Isti'ana, 2024).

4. CONCLUSION

Technological transformation in Islamic education is inevitable in the digital era. The challenges that arise need to be faced with the right strategy and commitment to continue to innovate without losing fundamental values. The success of this transformation will be determined by the ability of Islamic educational institutions to adapt technology wisely and

sustainably, and more importantly, digital transformation must be seen as a means, not an end. Technology is a tool that helps achieve the main goal of Islamic education: to form a generation that is knowledgeable, has noble character, and can make a positive contribution to civilization. With this understanding, Islamic education can continue to develop in line with the demands of the times while maintaining its fundamental essence.

As suggested, the development of a national policy approach requires awareness and cognitive maturity. Furthermore, public education must be modified to address the demands of experts in the digital age. Islamic educational institutions play a crucial role in addressing the challenges of the digital era, particularly concerning the values instilled, as the digital age is not devoid of negative consequences; hence, the influence of religion is essential for mitigation.

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