A Literature Review on the Relationship Between Readiness and Acceptance of Technology and the Effectiveness of Online Learning Among Undergraduates of Sultan Idris Education University

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Abstract: This article presents a literature review on the relationship between technology readiness, technology acceptance, and the effectiveness of online learning, with a particular focus on undergraduates at Sultan Idris Education University (UPSI). The discussion is guided by the Technology Readiness Index (TRI) and the Technology Acceptance Model (TAM), which are widely used to explain individual differences in adopting technology. Previous empirical studies have highlighted both positive drivers—such as optimism, usefulness, and perceived ease of use—as well as challenges including discomfort and lack of technological confidence. Findings across the literature suggest that students' levels of readiness and acceptance are generally moderate, and these factors play a significant role in shaping the effectiveness of online learning. This review emphasizes the importance of understanding students' perspectives to inform higher education policies, particularly in improving the design, accessibility, and sustainability of e-learning initiatives in Malaysia.

Keywords: Online Learning; Technology Readiness; Technology Acceptance; Higher Education; Malaysia; Undergraduate Students

1. ICT in Higher Education and Online Learning

The integration of Information and Communication Technology (ICT) into higher education has become a defining feature of modern pedagogy. The Fourth Industrial Revolution (IR4.0) has accelerated the need for universities to cultivate digitally competent graduates equipped for a technology-driven workforce (Schwab, 2017; Ismail et al., 2019). Online learning is now regarded as not merely a supplementary tool but a critical component of higher education, offering flexibility, accessibility, and the potential to promote lifelong learning. Studies emphasize that successful ICT integration depends on students' digital literacy, educators' pedagogical readiness, and adequate technological infrastructure (Li et al., 2020; Goldschmidt, 2020). In Malaysia, ICT adoption has become more prominent during the COVID-19 pandemic, ensuring continuity of education despite disruptions to traditional classroom instruction.

2. E-Learning Policies in Malaysia

Malaysia has made significant policy commitments to advance e-learning in higher education. The *National e-Learning Policy (DePAN)* and the *Malaysia Education Blueprint (Higher Education) 2015–2025 (PPPMPT)* highlight the importance of blended learning, Massive Open Online Courses (MOOCs), and digital competency for students and academics (Shuhadah et al., 2023). These initiatives aim to position Malaysia as a regional leader in digital education. However, implementation challenges persist, particularly in ensuring equitable internet access, providing training for lecturers, and addressing the digital divide between rural and urban students (Abdul Aziz & Zuraina, 2020). Despite these issues, government strategies continue to emphasize digital transformation in higher education.

3. Factors Influencing Online Learning

The effectiveness of online learning is shaped by both enabling and constraining factors. On the positive side,

online learning promotes flexibility in scheduling, broader access to digital resources, and opportunities for collaborative and interactive learning (Dhawan, 2020; Sobaih et al., 2020). Students often appreciate autonomy and the ability to self-direct their learning through online platforms (Allam et al., 2020). Nonetheless, barriers are equally significant, including unstable internet connections, lack of sufficient digital devices, inadequate digital literacy, and reduced motivation or engagement in remote settings (Adnan, 2020; Efriana, 2021). These barriers create inequalities in student outcomes and highlight the importance of institutional and policy-level interventions to support online learners.

4. Theoretical Frameworks

The study of readiness and acceptance in online learning is grounded in several theoretical models. The **Technology Readiness Index (TRI)** (Parasuraman, 2000) assesses individuals' optimism, innovativeness, discomfort, and insecurity regarding technology use. The **Technology Acceptance Model (TAM)** (Davis, 1989) focuses on perceived usefulness and ease of use as predictors of technology adoption. **Social Cognitive Theory (Bandura, 1986)** emphasizes the role of self-efficacy and social influence in learning, while **Connectivism Theory** (Siemens, 2005) frames learning as a process of building networks and accessing distributed knowledge sources. These frameworks provide valuable insights into students' readiness and acceptance of online learning environments, explaining both motivations and barriers to adoption.

5. Empirical Studies on Readiness and Acceptance

Numerous studies have explored students' readiness and acceptance of technology in online learning. Sobaih et al. (2020) and Allam et al. (2020) reported that optimism and perceived usefulness were positively associated with successful online learning experiences. Conversely, discomfort and technological insecurity consistently appeared as barriers to effective adoption (Adnan, 2020; Bani Hidayat, 2020). In Malaysia, Zakaria et al. (2020) found that undergraduate students' readiness for online learning was generally moderate, reflecting disparities in access and digital preparedness. Similarly, Ganasan and Azman (2021) observed that while students recognized the benefits of online learning, gaps in acceptance and readiness limited their engagement. These findings suggest that both readiness and acceptance remain uneven, significantly influencing learning effectiveness.

6. Research Gap and Summary

While many studies have examined readiness and technology acceptance independently, fewer have explored their combined influence on online learning effectiveness. Moreover, limited research has focused on undergraduates in education-oriented institutions such as Sultan Idris Education University (UPSI). This represents a critical gap, as students in such institutions will themselves become future educators, making their online learning experiences particularly important. Overall, the literature suggests that while online learning holds promise for enhancing access and flexibility, its success depends significantly on students' readiness and acceptance, which remain constrained by infrastructural, pedagogical, and psychological challenges.

7. Conclusion

This literature review has examined the relationship between technology readiness, technology acceptance, and the effectiveness of online learning, with a particular focus on the Malaysian higher education context. The review highlights that while online learning offers opportunities for flexibility, accessibility, and lifelong learning, its success is heavily influenced by students' readiness and acceptance of technology. Theoretical frameworks such as the Technology Readiness Index (TRI), Technology Acceptance Model (TAM), Social Cognitive Theory, and Connectivism provide valuable insights into how individual perceptions shape engagement with online learning platforms.

Overall, the literature suggests that undergraduate students demonstrate moderate levels of readiness and acceptance, which in turn affects the overall effectiveness of online learning. Challenges such as unstable internet access, limited digital literacy, and socio-economic inequalities continue to hinder equitable outcomes. For higher education policymakers, particularly in Malaysia, these findings underline the importance of investing in digital infrastructure, training initiatives, and inclusive e-learning strategies. Future research should continue to explore

the interplay between readiness and acceptance across diverse institutional contexts, with emphasis on how these factors can be strengthened to enhance online learning effectiveness.

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