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The Effectiveness Index of Online Distance Learning Environments in Malaysia

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Abstract

The adoption of online learning platforms in educational institutions across Malaysia has advanced significantly, with an increasing number of public and private providers integrating these platforms into their offerings. This study aims to develop an Effectiveness Index to assess the performance of Open and Distance Learning (ODL) students in the environments of public and private higher education institutions. The index captures key dimensions such as the quality of academics, system performance, and the services provided, with a particular emphasis on student retention within the online learning framework. This research, conducted between September and December 2024, engaged respondents who were students enrolled in Malaysia Online Learning programs across various in Malaysia. Through comprehensive data collection and analysis, the study aimed to assess the effectiveness of ODL in fostering a conducive and engaging learning environment. The results indicate that the index value exceeding 0.85 highlights the university's success in maintaining a high standard of online education. This demonstrates that online learning platforms in Malaysia has established itself as a leading and reputable provider of online learning, ensuring that students benefit from quality education while achieving strong retention rates. By continuously enhancing its online learning framework and addressing key factors influencing student satisfaction and engagement, this online education system is well-equipped to adapt to the evolving demands of modern education.

Keywords: Online Learning, Index OUM-OL, Learning Framework, Malaysia Education Framework.

Introduction

The country's rapid economic growth has led to an increasing demand for skilled labor across various industries. As industries evolve, the need for analytical expertise, effective decision-making, and strategic planning becomes paramount. To meet these demands, the education sector has rapidly adapted by offering programs that align with the specific needs of the

workforce. In recent years, technology has played a significant role in shaping the education industry. Online learning has emerged as a powerful solution, offering flexible and accessible education for individuals seeking to develop their skills. This mode of learning allows students to learn at their own pace, bridging geographical and logistical barriers. Natural language processing (NLP), a subset of artificial intelligence, has become a game-changing instrument in education, providing creative answers to age-old problems. Additionally, the use of digital platforms enhances interactive learning, providing students with real-time access to resources, collaboration opportunities, and personalized feedback. Given that digital reading tools and resources can improve the effectiveness of academic reading and research-related activities, instructors have actively included them into their courses (Arshad & Ameen, 2017). Furthermore, online learning offers a tailored approach to education, focusing on the practical application of knowledge. It promotes critical thinking and problem-solving skills, which are essential for success in today's competitive job market. Open University Malaysia (OUM) is a prominent institution in Malaysia that provides flexible, accessible, and quality education to individuals from every background. Established in 2000, OUM offers a wide range of programs, including undergraduate, postgraduate, and professional courses, tailored to meet the diverse needs of learners. As industries continue to evolve, the integration of technology in education ensures that learners are well-equipped with the necessary skills to adapt and excel in their respective fields. Open University Malaysia as a leading in online learning education provider with the good reputations in Malaysia. As a pioneer in remote learning, Open University Malaysia is dedicated to empowering people via high-quality instruction and supporting their development on both a personal and professional level. The rapid growth of the education industry, driven by technological advancements, has created opportunities for students to acquire relevant skills that meet the demands of modern industries. Online learning stands as a key component in shaping a more inclusive, efficient, and future-ready educational system. This study contributes to the broader conversation on educational innovation by introducing a data-driven model designed to evaluate the effectiveness of Open and Distance Learning (ODL) across diverse educational settings.

Literature Review

However, another crucial concern is making sure ODL programs are of a high standard. According to Zainal et al (2020) the suitability of instructional design, evaluation techniques, and the overall educational experience have been brought up by the quick growth of online learning. Institutions must establish robust quality assurance frameworks to maintain academic standards and ensure that ODL courses meet the same criteria as traditional face-to-face programs. Meanwhile, Mok (2019) to promote a feeling of community and keep students actively engaged in their education, institutions need to come up with creative teaching methods. Trouble shooting, feelings of isolation, distractions environment and time management is one of the challenge online learning rather than face to face (Lattea, 2023). In additional Ayob et al (2022) The transition of Malaysia from a manufacturing-based economy to a digital one presents both opportunities and challenges. Furthermore, understanding these perceptions can contribute to the development of effective teaching practices and support systems that enhance student engagement in online learning contexts. This study seeks to bridge the existing research gap by examining the experiences and viewpoints of educators, thereby providing valuable insights into the intricacies of engagement in synchronous online classes. This paper motivation to examine The Effectiveness of Online Distance Learning for Learning Environments in Malaysia.

The global COVID-19 pandemic over the past two years has profoundly impacted nearly every country and all segments of society. This crisis has constrained individuals' ability to adapt to changing work environments, while also bringing significant structural and functional changes to the education system. According to Kanapathy et al. (2021) the advantages of flexibility and accessibility offered by online learning, there are specific obstacles to promoting sustainability. Meanwhile, the findings Mohaideen et al (2022) this study inform managerial initiatives aimed at enhancing academic staff attitudes toward online education, ultimately improving job satisfaction. A significant challenge lies in motivating learners to take responsibility for their own learning, as many are accustomed to passive information delivery from their prior educational experiences. Ranjan (2020) faculty collaboration is crucial in this transition towards, the changes in education are driven by technological advancements, and pedagogical understandings have emerged through accumulated teaching experience.

Moreover, research by Piaralal, Vs, Rethina, Nor Munira and Hidayati (2024) highlights the importance of satisfaction as a mediating factor in ODL effectiveness. This study reveals that system quality, sociability quality, and self-managed learning significantly influence student satisfaction, which in turn impacts their intention to continue learning in an ODL environment. However, it also identifies challenges such as self-managed learning having no direct impact on continuance intention, indicating gaps in preparing students for autonomous learning. These findings further emphasize the necessity for ODL programs to enhance interactive and supportive environments, which are critical for retaining students and ensuring program sustainability.

In addition, Derahman et al. (2024) emphasize the importance of assessing the effectiveness of ODL in specific disciplines, particularly in engineering courses like the Final Year Project (FYP). Their study found that engineering students generally preferred ODL over traditional classroom learning, with 45.7% of students expressing satisfaction with ODL. However, the study identified significant challenges in overwork and practical coursework that requires hands-on experience, which is more challenging in an online environment. This highlights a gap in current ODL programs, particularly in disciplines requiring practical application, where further research and development of appropriate pedagogical strategies are necessary. Their findings underscore the need for discipline-specific adaptations in ODL frameworks to ensure that the hands-on and technical nature of courses like FYP is not compromised.

Furthermore, Culduz (2024) discusses the broader benefits and challenges associated with e-learning, online education, and distance learning. The study emphasizes that while e-learning offers flexibility and accessibility, it also presents significant challenges such as student motivation, engagement, and the need for quality instructional design. The findings stress the importance of overcoming these challenges to ensure the sustainability and success of ODL programs. Specifically, Culduz (2024) identifies the need for stronger support systems and robust technological infrastructure to facilitate effective online learning environments. This research further complements the ongoing exploration of ODL effectiveness by identifying foundational factors that support student engagement and the overall success of online education programs.

Ramli et al. (2023) also contribute to the discourse on ODL by exploring how students' self-esteem is impacted by online learning from a gendered perspective. Their study delves into

the differences between male and female students in relation to their self-esteem in an ODL context. According to their findings, male students generally reported higher self-esteem than female students, suggesting gender-based differences in how students adapt to the challenges of ODL. The research by Ramli et al. (2023) provides important insights into the psychological aspects of online learning but does not fully address the broader challenges faced by students in online learning environments, such as engagement, satisfaction, and retention across disciplines. While Ramli et al. (2023) focus primarily on the psychological impact of ODL, particularly concerning self-esteem and gender differences, this study takes a broader approach by examining the effectiveness of ODL environments from an engagement and satisfaction perspective. Additionally, this study aims to address the discipline-specific challenges and the role of technology, instructional design, and support systems in enhancing ODL effectiveness, areas which Ramli et al. (2023) do not explore in depth. Therefore, the research gap lies in examining ODL effectiveness not only from a psychological and gendered lens but also through the lens of engagement, satisfaction, and sustainability, with a focus on adapting ODL programs to specific disciplinary needs.

The findings from these studies collectively underline the importance of creating an interactive and supportive environment within ODL frameworks to enhance student engagement and retention. The role of technology, instructional design, and the quality of support systems are critical factors in ensuring the success and sustainability of ODL programs. Moreover, while Ramli et al. (2023) highlight psychological aspects, this study broadens the scope by emphasizing student satisfaction, engagement, and discipline-specific challenges, essential for ensuring a well-rounded and sustainable ODL experience.

In conclusion, the review of literature highlights that creating a conducive and engaging learning environment in ODL requires a comprehensive approach, addressing not only psychological and gendered differences but also focusing on student satisfaction, engagement, and the specific needs of different disciplines. Institutions must implement quality assurance mechanisms, adopt innovative teaching methods, and strengthen supportive technological infrastructures to optimize the effectiveness of ODL programs. By bridging the gaps identified in current research, this study contributes to the ongoing discourse on sustainability and innovation in education, offering key insights into adapting ODL programs to better meet the evolving needs of diverse student populations and disciplines.

Methodology

This study evaluates the effectiveness of online learning in public and private higher education institutions that offer online education at the tertiary level. An index model, suggestion OUM-OL, was developed as a measurement tool to assess the current status of development and the performance of the education provider. Our study improvement the model extending Technology Acceptance Model proposed by Lin and Yu (2023) which improvement model proposed by Davis (1989). According to Lin and Yu (2023) to a deeper understanding of the external factors affecting students' acceptance and use of digital academic reading tools, offering valuable insights for researchers, educators, students, and technology designers aiming to enhance digital learning experiences in higher education.

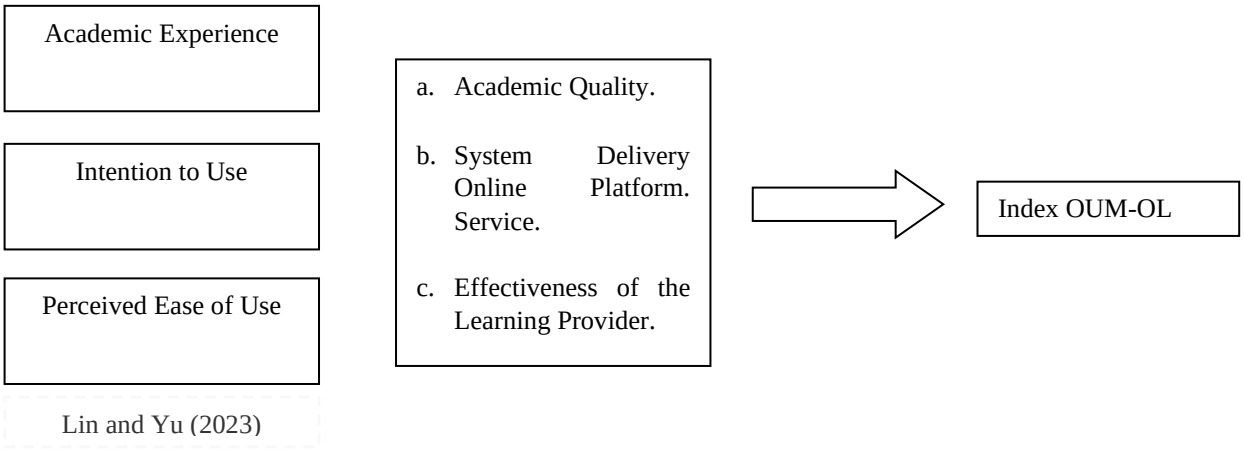

Figure 1: Development of a Index Framework for Enhanced Online Learning

The process of developing our research framework, as illustrated in Figure 1, was adapted from Lin and Yu (2023). It integrates the Technology Acceptance Model (TAM) proposed by Davis (1989) with a focus on the educational perspective. We develop academic experience with academic quality index, intention to use to system delivery online platform index and perceived ease of use to effectiveness of the learning provider index. We propose a three-dimensional index for OUM-OL to assess the current status of online learning effectiveness. This index aims to ensure the continuous improvement and development of the online learning system, aligning with the mission of becoming a leading higher education provider with a high-quality academic system. The measurement of index from the relative importance index is a statistical tool commonly used to prioritize variables or factors based on their importance.

Relative Important Index = $\frac{\sum w}{x\,(n)}$

Where:
w: Weight assigned to each response (e.g., Likert scale from 1 to 5).
x: Highest possible weight 5-point Likert scale.
n: Total number of respondents.

According to Covert et al. (2020), presents the concept of additive importance measures, which define feature importance based on the amount of predictive power a feature contributes. In addition to improving the validity and comparability of study results, this will help make better decisions in a variety of fields.

Results and Discussion

The survey included 397 respondents, all of whom were students from public and private higher education institutions across Malaysia. The table 1 provides a detailed breakdown of various demographic categories along with their corresponding frequencies and percentages. Of these, 77.58% were female, and 22.42% were male. The age distribution showed that 50.38% were aged 25-34, while 33.25% were aged 35–44. A majority of respondents were married (55.92%), followed by single respondents (35.01%). Our analysis reveals that the program of study had the greatest influence on enrolment 43.32% of respondents choosing

this university. Academic reputation (11.59%), location/proximity to home (13.60%) and recommendations from others (12.34%).

Table 1
Demographic Respondent

Demographic	Category	Frequency	Percentage
Gender	Male	89	22.42
	Female	308	77.58
Age Group	18-24	41	10.33
	25-34	200	50.38
	35-44	132	33.25
	45-54	21	5.29
	55-64	3	0.76
	>65	0	0.00
Martial Status	Single	139	35.01
	Married	222	55.92
	Divorced / Widowed	17	4.28
	Prefer not to say	19	4.79
What influenced your decision to enroll at this university?	Academic reputation	46	11.59
	Program of study	172	43.32
	Financial aid/scholarship	6	1.51
	Location/proximity to home	54	13.60
	Recommendations from others	49	12.34
	Other	70	17.63
What is your preferred learning style?	Visual (learn best through seeing)	165	41.56
	Auditory (learn best through hearing)	85	21.41
	Kinesthetic (learn best through doing)	81	20.40
	Other	66	22.42

The preferred learning style of students plays a crucial role in shaping their educational experience, engagement, and overall success in online learning environments. In our study, Visual learning (learn best through seeing), 41.56%, emerged as a key factor influencing students' preferred learning styles. According to Abdamia et al.,2023) has shown that student learning styles play a crucial role in shaping their educational experience, engagement, and overall success in online learning environments.

Table 2
OUM-OL Index (RII) the effectiveness of online learning

No.	Dimension	Indicator	Index Indicator	Index Dimension
1.	The Effectiveness of the Provider's System Delivery Online Platform.	the platform's features and functionality	0.871	0.875
		Service Quality Assessment	0.884	
2.	Service & Effectiveness of the Learning Provider	Service of the Learning Provider	0.872	0.879
		Efficiency	0.890	
3.	Academic Quality Online Platform Effectiveness	Academic Content and Resources	0.912	0.904
		Interactivity and Engagement	0.895	

According to Thomas et al (1999) One of the key approaches to index development in education is the Gini coefficient, which has been used to measure inequality in education attainment across different countries and regions. The education Gini index can be used as a welfare indicator, supplementing other metrics like average educational attainment, health and nutrition, and income per capita, as stated in the study report by Thomas et al. (1999). The index assesses the effectiveness of online learning platforms across three key dimensions.

From table 2, the first dimension, **Provider System Delivery,** evaluates the platform's features and functionality, scoring 0.871, and its service quality, which scores 0.884, resulting in an overall dimension index of 0.875. "This dimension focuses on the quality of the online learning platform system. Online learning requires a robust system that facilitates knowledge delivery and effectively evaluates student achievement. A 24/7 accessible online learning platform must ensure stability and meet students' needs seamlessly, eliminating the necessity for face-to-face interactions with academic staff.

The second dimension, **Service and Learning Provider Effectiveness,** focuses on the service quality of the provider (Index: 0.872) and its efficiency (Index: 0.890), yielding an overall dimension index of 0.879. This aims to establish a learning center as a one-stop hub where students can engage with university officials to address non-academic learning matters. Lastly, the **Academic Quality** dimension examines academic content and resources (Index: 0.912) as well as interactivity and engagement (Index: 0.895), leading to an overall dimension index of 0.904. These findings provide insights into the strengths and areas for improvement in enhancing the effectiveness of online learning platforms. The third dimension, focusing on academic quality, is the most critical aspect. The study revealed that public and private higher education institutions that offer online education at the tertiary level, academic quality is a key factor in attracting both prospective and current students to pursue their studies.

Conclusion

Open and Distance Learning (ODL) has become a revolutionary method to education, offering students all over the world accessibility, flexibility, and diversity. Through the use of cutting-edge technology and student-centered approaches, ODL makes sure that education crosses conventional lines and meets a range of learning requirements. By implementing ODL, institutions can expand their reach, increase student involvement, and fulfill their objective

of providing high-quality education while adjusting to the changing needs of the global education market. Our study examined three dimensions academic quality, system support, and service provider performance which demonstrated a positive impact. The developed index ensures continuous improvement and stability in perceptions and acceptance of online learning. In conclusion, the effectiveness of online learning serves as a critical index for evaluating and prioritizing factors based on their perceived importance. By utilizing the OUM-OL index, organizations can enhance decision-making processes, optimize system performance, and achieve their strategic objectives with greater accuracy. Malaysia is progressing well in enhancing its online tertiary education system by upholding academic quality and strengthening university visibility.

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