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ASSESSING ONLINE LEARNING EFFECTIVENESS AND JOB PERFORMANCE AMONG UNIVERSITY LECTURERS IN SELANGOR

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Abstract: This study investigates the factors influencing the job performance of lecturers in private higher education institutions in Selangor, Malaysia. It examines how these factors vary across demographic categories such as gender and faculty affiliation, employing statistical methods including regression analysis, t-tests, and ANOVA. The findings indicate that the quality of technology and usability factors significantly affect faculty job performance, underscoring the importance of technological resources and active student engagement in achieving improved academic outcomes. Gender-based analysis reveals that male faculty members generally perceive job performance, usability factors, and the quality of technology more favourably. Faculty-specific differences were also identified, with the Centre for Foundation and General Studies reporting the highest ratings for job performance and the usability factor, while the Faculty of Communication and Media Studies excelled in student engagement. These results highlight the influence of demographic characteristics and academic disciplines on faculty performance. The study concludes that improving technological infrastructure, encouraging active engagement, and implementing faculty-specific strategies can substantially enhance both individual and institutional effectiveness. The findings offer valuable insights for higher education policymakers and administrators in formulating policies tailored to the distinct needs of diverse academic settings.

Keywords: Quality of technology, Student engagement, Usability factor, Online learning, Job performance

1. Introduction

The rapid development of technology has transformed the educational landscape, making online learning a central component of modern teaching methods. Once considered an additional approach, online learning has become a primary mode of educational delivery, particularly during the global disruptions caused by the COVID-19 pandemic. In Malaysia, as in many other countries, universities have adopted online learning to support and facilitate teaching and learning activities. This shift has brought significant changes for both students and lecturers, presenting new opportunities as well as unique challenges within the academic environment (Kamaliah Kamaludin & Sheela Sundarasen, 2023).

University lecturers play a crucial role in the success of online learning initiatives. Their ability to navigate digital platforms, engage students, and deliver course content effectively is essential to ensuring high-quality education and achieving positive learning outcomes. However, the transition to online teaching has introduced several challenges, including

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technical issues, varying levels of digital proficiency, and the need to master virtual communication. These factors, along with the broader dynamics of the online learning environment, have a substantial impact on lecturers' job performance and professional satisfaction (Masias-Fermamdez et al., 2023).

This study aims to assess the effectiveness of online learning and its impact on the job performance of university lecturers in Selangor. By examining key aspects such as technological quality, student engagement, and ease of use, the research seeks to determine how online teaching influences lecturers' ability to perform their duties effectively. It also aims to identify critical factors that can enhance the online learning experience, ultimately benefiting both lecturers and students. The findings of this study are expected to contribute to the existing body of knowledge on online education and provide valuable insights for policymakers, educational institutions, and stakeholders on strategies to optimise online teaching practices. Ultimately, this research underscores the importance of fostering a supportive and conducive environment to empower lecturers and ensure the long-term success of online education.

2. Problem Statement

The rapid transition to online learning, driven by the COVID-19 pandemic, has profoundly reshaped higher education. Although online education enhances flexibility and accessibility, maintaining teaching quality and supporting lecturers' job performance remains a critical challenge. The quality of technology plays a decisive role in the success of online learning. Unstable internet connections, outdated digital infrastructure, and limited technological support can hinder lecturers from delivering engaging and interactive lessons. Frequent technical issues disrupt the teaching process, reduce efficiency, and contribute to frustration among educators.

Arifin and Sukmawidjaya (2020) examined this relationship by assessing five key indicators: engaging and empowering learning, technology-integrated teaching, leadership, curriculum alignment (syllabus and lesson planning), and campus-provided infrastructure. Their findings revealed that many faculty members lacked expertise in technology integration, highlighting the growing importance of digital competencies in 21st-century teaching and learning. Moreover, research by Saleem and Malik (2023) shows that *technostress* can reduce job satisfaction, lead to burnout, and lower the productivity of university lecturers. Their study emphasises that while technology has the potential to improve performance, poor management and support can result in stress, ultimately undermining job performance. These studies demonstrate that the quality and effective use of technology are critical to enhancing faculty performance. Conversely, inadequate infrastructure and limited support hinder effectiveness, underscoring the need for continuous technological development and professional training within educational institutions.

Student engagement is another major challenge in the online learning environment. Unlike traditional face-to-face instruction, online learning often results in reduced participation, limited interaction, and difficulties in maintaining students' attention. Low

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engagement levels can impact lecturers' motivation, influence their teaching strategies, and diminish overall job satisfaction—ultimately affecting their performance. Van der Ross et al. (2023) found that student engagement is positively associated with lecturers' emotional involvement and psychological well-being. A lack of engagement can lead to reduced motivation and increased stress among academic staff, thereby impairing performance.

The effectiveness of online learning platforms also depends heavily on their usability. Poorly designed, complicated, or unintuitive learning management systems (LMS) can increase lecturers' workloads and hinder the efficient management of courses, assessments, and student progress (Okocha & Odinko, 2021). A well-designed, user-friendly platform is essential to allow lecturers to concentrate on instructional delivery rather than overcoming technical obstacles. Efficient and accessible e-learning systems empower lecturers to focus on teaching quality and student engagement, thus enhancing their overall job performance.

Given these challenges, this study seeks to examine how the factors of technological quality, student engagement, and usability relate to the performance of university lecturers in Malaysia's online learning context.

3. Literature Review

3.1 Job Performance

Job performance refers to how effectively and efficiently individuals execute their work tasks to achieve the organisation's goals. For university faculty involved in online learning, job performance encompasses several key factors that influence their ability to deliver quality instruction. Teaching effectiveness is a critical component and includes designing and delivering engaging online lessons, employing suitable teaching methods, and providing effective assessment and feedback (Darling-Hammond & Hyler, 2020). Lecturers' proficiency in using digital tools and platforms is integral to the quality of technology, including familiarity with learning management systems (LMS), virtual collaboration tools, and multimedia content creation (Al-Fraihat et al., 2020).

Effective communication is essential for lecturers, as it plays a crucial role in student engagement and academic success. Strong communication skills are directly linked to improved job performance, enabling lecturers to fulfil their duties more effectively. This involves providing clear and concise explanations and maintaining active communication channels with students. Sun et al. (2020) assert that timely responses to student queries and consistent communication significantly enhance teaching effectiveness and student outcomes. Skaalvik and Skaalvik (2017) highlight emotional engagement as another key factor, referring to lecturers' enthusiasm and motivation in their teaching activities. High levels of emotional engagement are associated with increased job satisfaction and improved performance, as they shape lecturer-student interactions and the overall learning experience.

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3.2 Online Learning

Online learning refers to education delivered via digital platforms and technologies, offering flexibility and accessibility to a wide range of learners (Hoi et al., 2021). It includes synchronous (real-time) and asynchronous (on-demand) modes, supported by tools such as LMSs, video conferencing software, and interactive multimedia content (Erlangga, 2022). In Malaysia, the adoption of online learning has been propelled by government initiatives, growing demand for flexible education, and efforts to overcome geographical barriers (Che Ahmad Azlan et al., 2020). Platforms such as Moodle, Google Classroom, and Microsoft Teams have become central to course delivery, enabling lecturers to manage and deliver content efficiently while allowing students to access materials at their convenience (Aljawarneh, 2020).

Over time, online learning has become an integral part of higher education globally. Universities in Malaysia, particularly in Selangor, have embraced these technologies to improve teaching and learning experiences (Siti Azura Abu Hassan et al., 2021). Online education has revolutionised learning by providing anytime-anywhere access and accommodating diverse schedules. However, it also requires careful planning and execution to ensure quality and engagement (Ahshan, 2021).

This transition has presented both opportunities and challenges for university lecturers (García-Morales et al., 2021). While online platforms offer increased flexibility and personalisation, which may enhance lecturers' performance (Whalley et al., 2021), successful implementation demands a sound understanding of technological, pedagogical, and administrative considerations (Ananga, 2020).

3.3 Quality of Technology

The quality of technology is fundamental to the effectiveness of online learning. Reliable internet access, user-friendly LMSs, and interactive tools are essential components for successful delivery (Khumalo & Ramsuraj, 2024). Research shows that perceived ease of use and usefulness, along with adequate technical support, significantly influence lecturers' willingness to adopt online learning platforms (Tennakoon et al., 2023). Enba J. Thandevaraj et al. (2021) also emphasise the importance of considering students' devices, which affect access and learning experiences.

Technology should cater to different learning styles and accommodate students with varying levels of digital proficiency to ensure equitable access (Karatza, 2019). Reliable connectivity is vital for students and lecturers alike to participate in virtual classes, access resources, and submit assessments (Ayanwale et al., 2023). Ensuring equal access to dependable internet service promotes inclusivity and minimises disparities in learning outcomes (Roshanaei et al., 2023). Furthermore, compatibility across various devices (computers, tablets, smartphones) is necessary to support diverse learner needs (Celestini, 2022).

Effective technology must also enable interactive learning. Tools such as discussion forums, live chats, video conferencing, and simulations encourage active participation and

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collaboration. Sailer et al. (2021) argue that integrating multimedia and practical activities through technology can significantly enhance learning. Similarly, Waang (2023) highlights that multimedia-rich content sustains student interest and improves focus.

3.4 Student Engagement

Student engagement is a multidimensional concept central to successful online learning. It reflects students' cognitive, emotional, and behavioural involvement in their education (Salas-Pilco et al., 2022). Highly engaged students are more likely to achieve better academic outcomes, feel satisfied with their studies, and persist in their learning. Engagement encompasses participation in discussions, critical thinking, and problem-solving (Muzammil et al., 2020), as well as actively seeking information and applying knowledge to real-life contexts (Chiu, 2022).

Dago-oc and Tagadiad (2023) define intellectual engagement as the design of stimulating lessons that allow students to choose how to demonstrate their learning. Lecturers should also consider students' interests—such as enthusiasm for the subject, a sense of belonging, and motivation to learn (Ghasemi, 2020). Emotional engagement includes excitement about the course, a willingness to collaborate, and pride in achievement (Brown et al., 2020). Prince et al. (2020) add that promoting positive emotions supports learning and boosts interest.

Behavioural engagement, influenced by both cognitive and emotional factors, is often visible in consistent participation and effort. A well-structured online course—with clear objectives, interactive features, and multimedia elements—can increase engagement. Furthermore, teaching presence significantly influences student satisfaction by fostering engagement and supporting effective learning (Jiacheng et al., 2021). Understanding the dimensions and drivers of engagement allows universities to create more impactful online learning environments.

3.5 Usable Factor

Usability is a key factor in evaluating the effectiveness of online learning platforms and their impact on lecturers' job performance. Usability refers to the ease of use, usefulness, accuracy, timeliness, relevance, clarity, and comprehensiveness of the information provided. High usability enhances efficiency, satisfaction, and overall performance. Alterkait and Alduaij (2024) suggest that platforms delivering practical and applicable content enable lecturers to improve course design and teaching strategies. Their study highlights that effectiveness, user satisfaction, and efficiency are essential to platform adoption and lecturer performance.

Renowati (2021) points out that access to accurate, reliable information is essential for lecturers, ensuring content quality and academic integrity. High-quality information supports up-to-date knowledge transfer, vital for maintaining educational standards. Research indicates that information quality significantly affects user satisfaction and system use, which in turn influences lecturer performance. Renowati et al. (2021) also found that information accessibility and accuracy are crucial for effective teaching and research. Well-organised, high-quality information enhances teaching by allowing lecturers to deliver

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relevant, engaging content while reducing time spent searching for resources. This boosts both efficiency and student outcomes (Alterkait & Alduaij, 2024). Moreover, user-friendly platforms improve job satisfaction by supporting teaching responsibilities and professional development. Access to accurate, detailed resources enables lecturers to remain current in their field and refine their instructional practices.

In summary, the usability of e-learning platforms—defined by the quality of information provided—has a significant influence on lecturers' job performance in Selangor. Platforms that offer useful, accurate, timely, and clear content contribute to improved teaching effectiveness, operational efficiency, job satisfaction, and ongoing professional growth.

4. Methodology

This study examines the factors influencing the job performance of lecturers in private tertiary institutions in Selangor, Malaysia, and examines how these factors differ across various demographic groups. The primary objectives are to identify the key determinants of lecturers' job performance, determine the most influential factors, and explore variations in job performance and contributing variables based on demographic characteristics such as gender and faculty affiliation.

The target population comprised approximately 5,000 lecturers from private higher education institutions in Selangor. To determine an appropriate sample size, the study referred to the sample size table developed by Krejcie and Morgan (1970), which is widely used for calculating sample sizes with a 95% confidence level and a 5% margin of error. According to this table, the recommended sample size for a population of 5,000 is 357 respondents. However, this study successfully obtained data from 416 respondents, surpassing the recommended threshold and thereby enhancing the robustness and reliability of the results.

Due to time and cost constraints, convenience sampling was employed. Data were collected using a structured questionnaire distributed through multiple channels, including WhatsApp, email, and face-to-face interactions. This multi-channel distribution strategy contributed to a higher response rate and improved accessibility for potential respondents.

The questionnaire items were developed based on a thorough review of relevant literature and adapted from established instruments to ensure content validity (DeVellis, 2017; Boateng et al., 2018). These items were sourced from prior studies and modified to suit the context of private higher education institutions in Selangor. Minor adjustments were made to enhance clarity, contextual relevance, and respondent comprehension. To assess the reliability of the instrument, a reliability analysis was conducted, confirming the consistency and validity of the questionnaire as a measurement tool.

Descriptive analysis was used to summarise and analyse the demographic characteristics of the respondents, providing insights into the background and profile of the sample. The dependent variable in this study is lecturers' job performance, which is

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hypothesised to be influenced by three independent variables: Quality of Technology**,** Student Engagement**,** and Usable Factor**.** These relationships were conceptualised in a research framework, which guided the analysis and formed the foundation for hypothesis testing. The proposed conceptual framework is as follows:

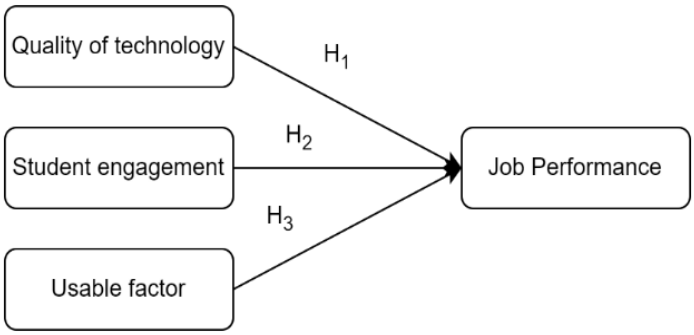

Figure 1: Conceptual Framework

Based on the research framework, the following hypotheses were tested:

- **H1**: Quality of technology significantly and positively influences job performance.
- **H2**: Student engagement has a significant and positive influence on job performance.
- **H3**: The usable factor has a significant and positive influence on job performance.

Regression analysis was employed to examine the relationships between the dependent and independent variables, with the aim of identifying the most influential factor affecting lecturers' job performance. In addition, independent samples *t*-tests were conducted to examine gender differences in lecturers' job performance, quality of technology, student engagement, and the usability factor. This analysis provided insights into how gender may influence these variables.

A one-way analysis of variance (ANOVA) was conducted to examine differences across faculties. This analysis enabled the identification of faculty-specific variations in job performance and the factors influencing them, offering a deeper understanding of the unique contexts in which lecturers operate. The integration of *t*-tests and ANOVA aligns with the study's objectives, particularly in analysing group-level differences. While the *t*-tests highlighted potential gender-based differences in perceptions, the ANOVA results revealed how job performance and its determinants vary among different faculties.

This study adopts a robust methodological approach by integrating reliability testing, descriptive statistics, regression analysis, *t*-tests, and ANOVA. This comprehensive analytical framework not only identifies the key factors influencing lecturers' job performance but also provides actionable insights into demographic variations. The findings are therefore highly relevant to stakeholders in private higher education institutions seeking to enhance lecturer performance and overall institutional effectiveness.

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5. Analysis and Finding

5.1 Demographic Profile

This section presents the results of the study, including the demographic profile of the respondents and a discussion of the key findings. The analysis provides insights into the characteristics of the lecturers, their academic backgrounds, work experiences, and the types of institutions in which they are employed.

Table 1 outlines the demographic profile of the 416 respondents. The majority of respondents were female, comprising 77.6% (323 individuals), while 22.4% (93 individuals) were male. Regarding academic qualifications, most respondents held a Master's degree (67.3% or 280 individuals), followed by those with a PhD (26.7% or 111 individuals). A smaller proportion (6.0% or 25 individuals) held a Bachelor's degree. This distribution highlights the strong academic credentials of lecturers in private higher education institutions, with the majority possessing advanced qualifications.

The institutions where respondents were employed were categorised into colleges, university colleges, and universities. The results revealed that 91.1% (379 respondents) worked at universities, 7.0% (29 respondents) at university colleges, and only 1.9% (8 respondents) at colleges.

In terms of faculty affiliation, the Faculty of Business/Management/Accounting/Economics had the highest representation, with 49.0% (204 respondents). This was followed by the Faculty of Computer Science/Mathematics/Engineering/Technology with 34.1% (142 respondents). Other faculties included the Faculty of Social Sciences/Education/Languages (8.2% or 34 respondents), the Centre for Basic and General Studies (4.3% or 18 respondents), and the Faculty of Science/Health Sciences (2.4% or 10 respondents). The Faculty of Communication and Media Studies was the least represented, accounting for only 1.9% (8 respondents). These results indicate a predominance of business and technology-related disciplines among lecturers in private universities in Selangor.

Regarding academic experience, nearly half of the respondents (49.3% or 205 individuals) had between 11 to 20 years of teaching experience. This was followed by 21.6% (90 individuals) with 5 to 10 years of experience. Respondents with over 20 years of experience accounted for 15.1% (63 individuals), while 13.9% (58 individuals) had fewer than 5 years of experience. This distribution suggests that the sample includes a substantial proportion of experienced lecturers, enhancing the credibility and reliability of the responses provided.

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Table 1. Demographic profile of respondents

	Frequency	Percentage
Gender		
Male	93	22.4%
Female	323	77.6%
Academic qualification		
Degree	25	6.0%
Master	280	67.3%
PhD	111	26.7%
Category of Private Higher Learning		
College	8	1.9%
University College	29	7.0%
University	379	91.1%
Faculty		
Centre for Foundation and General Studies	18	4.3%
Faculty of Business/ Management/ Accounting/ Economics	204	49.0%
Faculty of Communication & Media Studies	8	1.9%
Faculty of Computing/ Mathematics/ Engineering/ Technology	142	34.1%
Faculty of Sc./Health Sc.	10	2.4%
Faculty of Social Sc. / Education / Languages	34	8.2%
Academic Experience		
Less than 5 years	58	13.9%
5-10 years	90	21.6%
11-20 years	205	49.3%
More than 20 years	63	15.1%
Experience of using online learning tools		
Less than 1 year	6	1.4%
1-3 years	117	28.1%
4-6 years	148	35.6%
More than 6 years	145	34.9%

The study also examined respondents' experience in using online learning tools. The largest group (35.6% or 148 respondents) had between 4 to 6 years of experience, followed closely by those with more than 6 years (34.9% or 145 respondents). Respondents with 1 to 3 years of experience made up 28.1% (117 individuals), while only 1.4% (6 individuals) had less than 1 year of experience.

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Overall, the demographic analysis reveals that the respondents were predominantly experienced, well-educated female lecturers, primarily working in universities and in business and technology-related faculties. Their substantial experience with online learning tools further underscores their adaptability to technological advancements in education. These findings provide a solid foundation for the subsequent analysis of the factors influencing lecturers' job performance.

5.2 Reliability Test

The reliability of the measurement instruments was assessed using Cronbach's alpha, a widely accepted indicator of internal consistency (Hair et al., 2010; Tavakol & Dennick, 2011). The results, as shown in Table 2, demonstrate good internal consistency across all variables. Lecturers' job performance exhibited the highest reliability (α = 0.912), indicating strong consistency among the items measuring this construct. Student engagement (α = 0.883) and the usable factor (α = 0.935) also demonstrated high reliability, reflecting a robust measurement of these variables.

The quality of technology yielded a Cronbach's alpha of 0.662, which, while slightly lower, is still within acceptable limits for exploratory research. This suggests some minor inconsistency in the items used for this construct but does not undermine their overall reliability. For this study, all variables were deemed reliable. According to established guidelines, Cronbach's alpha values of 0.60 or above are considered acceptable in exploratory studies (Nunnally & Bernstein, 1994; Hair et al., 2010; Mohamad Adam Bujang et al., 2018). These reliability results confirm the suitability of the measurement instruments used for further analysis.

Table 2. Reliability of items

Variable	Cronbach Alpha	Reliability
Job performance	0.912	Reliable
Quality of technology	0.662	Reliable
Student engagement	0.883	Reliable
Usable factor	0.935	Reliable

5.3 Regression Analysis

A regression analysis was carried out to examine the impact of quality of technology, student engagement, and usable factors on lecturers' job performance. This statistical technique was used to assess both the strength and significance of the relationships between the independent variables and the dependent variable. By analysing the individual and combined effects of each factor, the regression analysis aimed to provide meaningful insights into how these elements influence lecturers' performance within an online learning context.

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The findings of this analysis serve to test the study's hypotheses and identify the most significant contributors to effective teaching outcomes in the digital education environment. This approach aligns with methodologies adopted in previous research, such as the systematic review by Ali and Al-Dmour (2020), which investigated the impact of technology integration on teaching effectiveness in higher education, and the meta-analysis by Liu and Hwang (2016), which explored factors influencing student engagement in online learning settings.

Accordingly, the regression model applied in this study is expressed as follows:

Job Performance = β_0 + β_1(Quality of Technology) + β_2(Student Engagement) + β_3(Usable Factor) + ε

Where:

- β_0 is the intercept,
- β_1–β_3 are the coefficients for the independent variables,
- ε represents the error term.

This model enables the identification of the relative influence of each independent variable on lecturers' job performance.

5.4 Regression Analysis Results

The results of the regression analysis, as presented in Table 3, indicate that the overall model is statistically significant (F = 209.837, *p* = 0.002), with an adjusted R^2 value of 0.602. This suggests that approximately 60.2% of the variance in lecturers' job performance is explained by the three predictor variables: Quality of Technology, Student Engagement, and Usable Factor.

Among these predictors, Quality of Technology (β = 0.593, *p* = 0.000) and Usable Factor (β = 0.413, *p* = 0.000) demonstrated a significant positive influence on job performance. These findings provide empirical support for H1 (Quality of technology significantly and positively influences job performance) and H3 (Usable factor has a significant and positive influence on job performance).

However, Student Engagement (β = 0.049, *p* = 0.444) did not exhibit a statistically significant relationship with job performance, resulting in the rejection of H2 (Student engagement has a significant and positive influence on job performance). Although the relationship was positive, it did not reach significance in this model.

These findings highlight the critical role of technological quality and usability in enhancing lecturers' job performance within online learning environments. The lack of a significant effect from student engagement suggests that, in this context, technological infrastructure and user-friendliness may have a more direct and measurable impact on teaching effectiveness than perceived student participation.

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This is consistent with previous studies that examined the role of technology, engagement, and usability in online teaching. For instance, Ali and Al-Dmour (2020) found that the quality and effective integration of technology significantly influenced teaching effectiveness in higher education. Similarly, Liu and Hwang (2016), in their meta-analysis, identified student engagement as a key factor influencing online learning outcomes, though its influence may vary depending on the teaching context and measurement approach.

Additional studies underscore the importance of usability in online education. Lee and Lee (2019) found that perceived ease of use in online platforms positively affects student satisfaction and learning outcomes. Likewise, Zawacki-Richter et al. (2009) emphasised the need for user-centred design and usability in the development and implementation of digital learning environments.

In conclusion, the regression results suggest that improving the technological infrastructure and usability of online platforms is essential for supporting lecturer performance. While student engagement remains important pedagogically, its indirect or contextual influence on performance may require further exploration.

Table 3. Regression results for online learning towards job performance

Variables	Beta	T-test	Std. Beta	Sig.
Constant	-.255	-1.366		.173
Quality of technology	.593	9.082	.404	.000
Student engagement	.049	.767	.046	.444
Usable factor	.413	8.104	.421	.000
Adjusted R squared	0.602			
F value	209.837			
Significance	0.002			

5.5 Independent t-test Analysis

Table 4 presents the results of the independent t-tests conducted to examine gender-based differences across four key variables: lecturers' job performance**,** Quality of Technology**,** Student Engagement**,** and Usability Factors. The analysis reveals statistically significant differences between male and female respondents for all four variables. The t-test results for job performance indicate a significant difference between genders (p = 0.008, assuming equal variances), with a mean difference of 0.18882. These findings suggest that gender influences how job performance is perceived or evaluated, and that male and female lecturers may perform differently across various aspects of their roles. This is consistent with existing literature. For instance, Eagly and Karau (2002)**,** through their Role Congruity Theory, argue that gender stereotypes can affect performance evaluations, particularly in leadership roles and tasks traditionally viewed as male-dominated. More recently, Dutta et al. (2021)

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reported persistent gender disparities in performance assessments, with women often evaluated based on relational attributes, while men are judged more on task-oriented performance. Similarly, Gwynne and Houston (2020) highlighted that men frequently report higher engagement and satisfaction in academic contexts, which aligns with the current study's findings.

With regard to the Quality of Technology, the t-test results also show a statistically significant gender difference (p = 0.015, assuming equal variances), with a mean difference of 0.11803**.** This suggests that male and female lecturers perceive the quality of technology differently, with male respondents likely rating it more positively. This is supported by prior studies, such as Viswanath Venkatesh et al. (2000)**,** who found that men generally exhibit more favourable attitudes toward technology. Furthermore, Kay et al. (2020) reported that men tend to have higher self-efficacy and confidence when using digital tools, which may contribute to more positive perceptions of technology quality.

The analysis of Student Engagement also shows a significant gender difference (p = 0.000, assuming equal variances), with a mean difference of 0.25754. The data suggest that one gender—likely female—reported higher levels of student engagement. This is consistent with research findings that highlight greater academic engagement among women. For example, Fredricks et al. (2004) demonstrated that female students generally exhibit higher emotional, behavioural, and cognitive engagement than their male counterparts. More recently, Luite (2024) reaffirmed that gender significantly influences engagement levels, with female students often displaying greater motivation and involvement in academic activities. These results reinforce the importance of considering gender as a moderating factor in engagement-related research.

Lastly, the t-test for the Usability Factor also revealed a significant gender difference (p = 0.011, assuming equal variances), with a mean difference of 0.18411. This suggests that male and female lecturers perceive the usability of online learning platforms differently, with male respondents potentially rating them as more user-friendly. Research by Vredenburg et al. (2021) supports this observation, noting that men often rate technological systems as more usable, possibly due to differing levels of prior experience. Harmon and King (2020) also observed that men are more likely to find technology-related tasks less challenging, which may influence their perceptions of system usability.

In summary, the independent t-test results reveal statistically significant gender differences across all key variables studied. These differences are consistent with established literature and underscore the importance of considering gender-based perspectives when evaluating job performance, technology perception, engagement, and system usability in the context of online education.

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Table 4. Result of the t-test for independent samples between gender and variables

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	Sig. (2-tailed)	Gender	Mean	95% Confidence Interval (mean difference)	
								Lower	Upper
Job Performance	Equal variances assumed	0.202	0.654	2.658	0.008	Male	4.218	0.04919	0.32845
						Female	4.0291		
Quality of technology	Equal variances assumed	0.91	0.341	2.437	0.015	Male	4.134	0.02281	0.21325
						Female	4.016		
Student engagement	Equal variances assumed	2.203	0.109	3.921	0.001	Male	4.007	0.12844	0.38664
						Female	4.265		
Usable factor	Equal variances assumed	2.217	0.137	2.541	0.011	Male	4.333	0.04166	0.32656
						Female	4.149		

5.6 Analysis of Variance (ANOVA)

Table 5 presents the results of the Analysis of Variance (ANOVA), which offers valuable insights into how perceptions of job performance, Quality of Technology, Student Engagement, and Usable Factors differ across academic faculties. This analysis was conducted to examine faculty-specific differences and to better understand how lecturers from different academic disciplines perceive these key elements.

The findings reveal that faculty affiliation significantly influences perceptions in certain areas, suggesting that academic discipline plays a role in shaping how lecturers evaluate their performance and experience with online learning tools. While some variables show strong statistical significance, others reveal marginal differences, indicating variations in perceptions that may not be consistent across all faculties but are still worth noting. These findings underscore the importance of contextualising teaching experiences by faculty type, as lecturers from different academic domains may have varying levels of exposure to technology, different expectations of student engagement, and unique usability needs. Understanding these differences can help institutions implement more tailored and effective strategies to enhance online learning environments and support job performance across faculties.

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Table 5. ANOVA results on variables across faculty

Variables	Faculty	Mean	F-value	P-value
Job Performance	Centre for Foundation and General Studies	4.563	2.778	0.017
	Faculty of Business/ Management/ Accounting/ Economics	4.0304		
	Faculty of Communication & Media Studies	4.25		
	Faculty of Computing/ Mathematics/ Engineering/ Technology	4.0498		
	Faculty of Sc./Health Sc.	4.0867		
	Faculty of Social Sc. / Education / Languages	4.1		
Quality of technology	Centre for Foundation and General Studies	4.2593	1.755	0.121
	Faculty of Business/ Management/ Accounting/ Economics	4.0241		
	Faculty of Communication & Media Studies	4.2396		
	Faculty of Computing/ Mathematics/ Engineering/ Technology	4.0246		
	Faculty of Sc./Health Sc.	4.1833		
	Faculty of Social Sc. / Education / Languages	4.0172		
Student engagement	Centre for Foundation and General Studies	4.0812	2.152	0.059
	Faculty of Business/ Management/ Accounting/ Economics	4.1143		
	Faculty of Communication & Media Studies	4.3654		
	Faculty of Computing/ Mathematics/ Engineering/ Technology	3.9534		
	Faculty of Sc./Health Sc.	4		
	Faculty of Social Sc. / Education / Languages	4.1719		
Usable factor	Centre for Foundation and General Studies	4.4722	2.971	0.012
	Faculty of Business/ Management/ Accounting/ Economics	4.0304		
	Faculty of Communication & Media Studies	4.6		
	Faculty of Computing/ Mathematics/ Engineering/ Technology	4.0768		
	Faculty of Sc./Health Sc.	4.07		
	Faculty of Social Sc. / Education / Languages	4.1176		

The Job Performance variable demonstrated a statistically significant difference across faculties, with an F-value of 2.778 and a p-value of 0.017. This indicates that lecturers' perceptions of their job performance vary according to faculty affiliation. Notably, the Centre for Foundation and General Studies reported the highest mean score (M = 4.563), while the Faculty of Business, Management, Accounting, and Economics reported the lowest (M = 4.0304). These differences suggest that the nature of the academic discipline may influence how lecturers assess their performance. This is consistent with the findings of Kurland et al. (2007), who noted that performance evaluations can differ based on faculty expectations and the type of courses delivered. Their research observed that faculty members from general education programmes often rate job performance more favourably than those in specialised or business-oriented disciplines.

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In contrast, the Quality of Technology variable did not exhibit a statistically significant difference across faculties (F = 1.755, p = 0.121). This suggests that lecturers across different faculties share relatively consistent perceptions regarding the quality of technological infrastructure and tools. The mean scores ranged modestly, from M = 4.0172 in the Faculty of Social Sciences, Education, and Languages, to M = 4.2593 in the Centre for Foundation and General Studies. These minimal differences imply that faculty affiliation plays a lesser role in shaping perceptions of technology. This finding aligns with Jasperson et al. (2005), who posited that technology perception is more strongly influenced by individual experience and prior exposure than by academic discipline.

The ANOVA results for Student Engagement revealed a marginally significant difference between faculties, with an F-value of 2.152 and a p-value of 0.059. Although slightly above the conventional threshold of 0.05, the results suggest that faculty affiliation may have a moderate effect on engagement levels. The Faculty of Communication and Media Studies recorded the highest mean (M = 4.3654), while the Faculty of Computer Science, Mathematics, Engineering, and Technology recorded the lowest (M = 3.9534). These findings suggest that students in more interactive, communication-driven fields may exhibit higher engagement than those in more technical disciplines. This observation is in line with Kuh et al. (2007), who reported that students enrolled in arts, humanities, and social science programmes generally demonstrate higher levels of engagement, attributed to the interactive and discussion-based nature of these courses.

Finally, the Usable Factor exhibited a statistically significant difference across faculties (F = 2.971, p = 0.012). The Faculty of Communication and Media Studies once again recorded the highest mean (M = 4.6), while the Faculty of Business, Management, Accounting, and Economics recorded the lowest (M = 4.0304). This suggests that lecturers in faculties that prioritise communication, design, and human interaction perceive e-learning platforms as more user-friendly. These results are consistent with Ardito et al. (2006), who found that academics in disciplines that emphasise user experience tend to rate the usability of systems more highly due to the relevance of human-centred design in their teaching and professional practices. The findings support the notion that disciplinary orientation influences usability perceptions, especially where user interface and interaction are embedded within the curriculum.

6. Conclusion

The findings from the demographic analysis, regression analysis, independent t-tests, and ANOVA offer a comprehensive understanding of the factors influencing lecturers' job performance, as well as their perceptions of Quality of Technology, Student Engagement, and Usable Factors across faculties and demographic groups. Regression analysis revealed that Quality of Technology and the Usable Factor significantly and positively influence lecturers' job performance. This suggests that enhancing technological infrastructure and ensuring user-friendly learning platforms can directly contribute to improved teaching outcomes in online learning environments. Although theoretical frameworks suggest that Student Engagement positively affects job performance, this study found the relationship to be statistically insignificant.

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A plausible explanation may lie in the perception that student engagement is beyond the direct control of lecturers, especially in virtual environments. Factors such as technological barriers, student motivation, and external distractions may impede engagement (Martin & Bolliger, 2018). Dumford and Miller (2018) also observed that although online learning provides flexibility, it often results in lower levels of interaction and engagement than traditional face-to-face instruction. Likewise, Banna et al. (2015) noted that student engagement in online settings is more dependent on course design and institutional support than solely on lecturer efforts. These insights underscore that while engagement is important in theory, practical limitations in the online context may reduce its direct effect on lecturer performance.

The independent t-test analysis revealed significant gender differences in perceptions of job performance, Quality of Technology, Student Engagement, and Usable Factors. In general, male lecturers reported higher mean scores across these variables, suggesting gender-based differences in academic perceptions and experiences.

The ANOVA results demonstrated significant differences in job performance and usability perceptions across faculties. Notably, the Centre for Foundation and General Studies reported the highest levels of job performance and usability, possibly due to the broader, foundational nature of its programmes. In contrast, no significant faculty-based differences were observed for Quality of Technology, indicating a shared perception of technological infrastructure across disciplines. Marginal differences in Student Engagement were found, with faculties such as Communication and Media Studies reporting higher engagement levels—potentially due to the interactive and collaborative nature of courses in such fields.

In conclusion, enhancing the quality of technology, fostering user-friendly learning platforms, and implementing faculty-specific strategies are key to improving lecturers' job performance in the online learning context. Understanding the influence of demographic and faculty-related variables is essential for the development of targeted interventions and institutional policies. These insights are particularly valuable for administrators and policymakers aiming to strengthen academic delivery and performance in private higher education institutions.

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