

An Exploratory Factor Analysis on the Open and Distance Learning among University Students during the COVID-19 Pandemic in Malaysia

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<https://doi.org/10.24191/ajue.v18i3.18956>

Received: 10 May 2022

Accepted: 15 July 2022

Date Published Online: 31 July 2022

Published: 31 July 2022

Abstract: Numerous educational institutions worldwide have halted face-to-face teaching and learning sessions in response to the COVID-19 outbreak. In Malaysia, the suspension began in March 2020, pushing educational institutions to transition to online classrooms and reshape their academic calendars for consecutive semesters. The reality of online classes necessitates a discussion about a new pedagogical work in which students and educators must understand how to manage online learning and make the most of online technologies. To do so, students must first gain an understanding of the difficulties inherent in open and distance learning (ODL). From the perspective of students, this article examines the difficulties associated with online learning during the COVID-19 pandemic. As a sample, 495 students from UiTM Terengganu who were actively engaged in online learning activities were included in this study. In this study, Exploratory Factor Analysis (EFA) was used to analyse the data in order to determine which factors contributed to ODL challenges faced by UiTM Terengganu students. Findings showed, the most significant challenges for the majority of students are technology and the internet. Additional concerns raised included interaction between students and lecturers, psychological issues, difficult assessments, and self-management. The significance of the study is that the university can take the initiative to address the primary challenges faced by students thereby increasing the effectiveness of ODL in the future.

Keywords: Exploratory Factor Analysis, ODL challenges, Online learning, Pandemic

1. Introduction

Following the outbreak of the COVID-19 virus in 2020, the use of online networking technologies has spread globally. To combat virus transmission among students and to ensure that no student is left behind in their studies, Malaysia's Ministry of Education (MOE) has mandated that all teaching and learning (T&L) sessions be conducted online (Bernama, 2020). In higher education institutions, various teaching strategies were used, including direct online lectures, audio and video

recorded lectures, shared online materials, and blended learning. Additionally, they implemented online assessment techniques such as quizzes, exams, and assignments. During the COVID-19 pandemic, higher education institutions shifted to online learning, which has an effect on students, educators, and learning outcomes. The issue manifested itself in a variety of educational institutions, and educators and students alike were unprepared for this unprecedented experience.

Today's learning environment puts to the test lecturers' and students' ability to integrate technology into the classroom. Students face significant obstacles as a result of poor internet connectivity, a lack of appropriate electronic devices, difficulty concentrating, and other issues (Ag-Ahmad, 2020). As a result, many university students were unable to continue their studies at home during the COVID-19 outbreak. Many students' motivation was affected and undermined as a result of these obstacles during the learning process (Gustiani & Sriwijaya, 2020; Sakkir et al., 2021). Thus, an Exploratory Factor Analysis (EFA) was used in this study to analyse the challenges that university students face while pursuing open and distance learning.

Despite the fact that numerous previous studies have examined the effectiveness of online learning during the COVID-19 pandemic (Agarwal & Dewan, 2022; Bahasoan et al., 2020; Karuppanan & Mohammed, 2020; Pham et al., 2021), there is a dearth of research focusing on the difficulties associated with online learning for university students, using the EFA method. Although substantial research has been conducted into how readiness, acceptability, and results influence the success or failure of online learning, few studies have used EFA to analyse the obstacles associated with online learning. As a result, the purpose of this study is to identify the common causes that contribute to ODL problems and to analyse the unobservable factors of individuals that affect the effectiveness of online learning.

2. Literature Review

Based on literature review and past studies, there are five challenges that students confront throughout their ODL courses namely the use of technology and internet (Adams et al., 2022; Bardales Mendoza et al., 2020; Kundu & Bej, 2021; Mir, 2019), student and lecturer interaction (Chung et al., 2020; Favale et al., 2020; Mohd Nasir et al., 2021; Richardson et al., 2017), difficulty level of quizzes, tests and other assessments (Abdullah et al., 2022; Markova et al., 2017), self-management (Crawford et al., 2020; Onah et al., 2022; Zhu et al., 2022) and psychological issues (Maqableh & Alia, 2021; Rahiem, 2021; Yu & Richardson, 2015).

2.1 The Challenges of ODL: Technology and Internet

The Information and Communications Technologies (ICTs) are a collection of communication and information processing instruments whose integration into education is a point of contention on a global scale, owing to their immense importance for development (Mir, 2019). Due to the constraints imposed by the pandemic emergency, all educational institutions are under pressure to immediately develop ICT systems. Due to the quarantine, many institutions have been forced to accelerate their emergency measures and transit from face-to-face instruction to emergency distance instruction, utilising pre-existing virtual resources, much like many universities throughout the world that have been forced to do so (Bardales Mendoza et al., 2020). Malaysian universities have also taken the obligatory but spontaneous step of transforming face-to-face learning environments to e-learning, compelling students to study from home in order to halt the spread of COVID-19 in the country (Adams et al., 2022). Concerns have been raised about students' readiness for e-learning as a result of the abrupt transition to an e-learning environment (Kundu & Bej, 2021).

However, higher education institutions in Southeast Asian countries, including Malaysia, have a poor level of virtual learning adaptability (Adams et al., 2022). As a consequence, the use of gadgets and ICT has become increasingly important in the current state of pandemics and enclosure. They have become critical for education, but students are now under pressure depending on the level of competence in the use of ICTs. They found that limited internet access, insufficient internet bandwidth for e-learning, a lack of electronic equipment such as PCs or laptops at home, and economically

disadvantaged students who depend on the university's computer facilities are just a few of the challenges discussed in their study evaluating students' preparation for e-learning during the COVID-19 pandemic (Adams et al., 2022; Bardales Mendoza et al., 2020). Students risk falling behind in their studies if they are unable to participate in e-learning. Additionally, their study revealed that among the biggest challenges students had when transitioning from traditional to virtual classrooms were a lack of basic conveniences and resources, such as high-speed internet access, a lack of excitement and computer literacy abilities.

According to Natsir et al. (2020), students struggle to attend online classes because not all regions in which they live have access to the internet, and if they do, the connection is inadequate. As a result, students frequently arrive late for lectures and assignment submissions. The findings indicated that the majority of students connected via cellular networks, with only a small percentage connecting via Wi-Fi. After the study from home policy was implemented, some students chose to return to their hometowns. As an outcome, some students may find it challenging to attend online courses. Students confront an additional challenge in terms of internet access availability. (Ghani et al., 2021) discovered that students' inability to afford an unlimited internet membership, inadequate internet access, and the use of out-of-date smartphone devices are just a few of the significant barriers preventing them from accepting online learning.

2.2 The Challenges of ODL: Student and Lecturer Interaction

Students and instructors must continue their education at the university via online learning during the COVID-19 pandemic. Interaction and social relationships are critical components of online learning. For students and instructors, a limited internet connectivity is a constant source of frustration, impairing both their interactions and relationships. When instructors and students work well together, online learning can be more enjoyable (Richardson et al., 2017). Indeed, students now face barriers such as a lack of social engagement and an inability to form study groups, both of which they previously enjoyed (Chung et al., 2020).

Each university maintains an official portal through which students and instructors can collaborate on educational projects. According to a study conducted by UNITAR International University, students prefer to participate in discussion forums between instructors and course partners once they have mastered the system used at their university. When students have access to their learning management system (LMS), they feel more secure. Additionally, virtual features are available without training, allowing users to complete tasks on the LMS by utilising their existing computer skills (Mohd Nasir et al., 2021).

The world imposed severe restrictions on the spread of the COVID-19 pandemic, such as social segregation and lockdown measures, in order to slow the virus's spread. People were compelled to adapt their behaviour and rely on online services for education, smart work, and entertainment, resulting in an Internet load never seen before. E-learning has some drawbacks, such as the fact that it discourages student-teacher communication. In today's learning environment, there is no direct communication or human touch, which prevents good two-way communication between instructors and students (Favale et al., 2020).

A further study, Natsir et al. (2020), involving 93 students majoring in Mathematics education at Musamus University, discovered that 33.8% of students had difficulties communicating with lecturers and fellow students, 55.4% of students found it difficult to comprehend the material provided in online lectures, and 49.7% of students had miscommunication with, and 46.6% of students had miscommunication between fellow students. Due to a lack of interaction between students and instructors throughout the learning process, students are sluggish to receive information from lecturers. As a reason, some students are obliged to turn in late assignments.

2.3 The Challenges of ODL: Difficulty Level of Quizzes, Tests, and Other Assessments

Students in online contexts are more prone to feel befuddled, isolated, and irritated, which can have a negative impact on their learning effectiveness and satisfaction (Markova et al., 2017). According to Markova et al. (2017), evaluation during ODL is crucial for persuading students to devote additional study hours and effort to assessed tasks, as well as encouraging them to take a more in-depth

approach to learning rather than a surface approach. According to El Said (2021), while the majority of lecturers favoured online examinations due to their ease of grading, the majority of students grumbled about the difficulty of tests, quizzes, and assessments. Additionally, students believe there are insufficient processes in place to address any unethical examination techniques.

Abdullah et al., (2022) conducted a study involving 3283 students at UiTM Negeri Sembilan during the March-August 2020 semester. Data were collected through online surveys and analysed descriptively and statistically using the Statistical Package for the Social Sciences (SPSS). Students expressed their concerns about classes, exams, and laboratory work. Both students and faculty were confused about the system for managing outstanding assignments, projects, and other forms of continuous evaluation. Faculty members must modify assessment categories to conform to the online format. It is challenging to maintain track of how they took the test online and to ensure they were not cheating.

Further analysis of survey data collected from 853 respondents regarding the negative aspects of online learning by Maqableh & Alia (2021) revealed that the majority of respondents (82.5%) stated that the workload associated with online learning is greater than that associated with traditional learning because they have more assignments and classwork has been transformed into homework. This study contradicts the finding of Hussein et al. (2020), who discovered that the amount of work involved in online learning is the same as it is in traditional learning. This finding can be explained by the fact that students and educators may need to approach online learning differently in order to maximise knowledge and information gained while minimising effort.

2.4 The Challenges of ODL: Self-Management

Self-monitoring by students, such as self-assessment, self-reflection, progress indicators, and group projects, is another barrier to online learning. According to Zhu et al. (2022), students' self-management strategies (such as time and resource management) varied according to their motivations. Students and learners are not uniform in their abilities and confidence levels. Additional instructional features that supported online learning included self-assessment and discussion forums, instructor feedback, flexibility, clearly stated learning objectives, material authenticity, and small learning units (Zhu et al., 2022).

Crawford et al. (2020) assessed higher education responses to digital pedagogy in 20 countries, including Malaysia, and discovered that the majority of countries face significant barriers when transitioning from face-to-face instruction to online mode, with students' preparation being the primary concern. Online training can be tedious and unattractive at times for students. When students do not organise their study time correctly, they will never have time for online learning, which needs a great deal of time and flexibility. Personal attention is also critical when it comes to online education. Students desire two-way communication, which can be difficult to create. The data indicate that these students struggle mainly with self-evaluation and time management (Onah et al., 2022).

2.5 The Challenges of ODL: Psychological Issues

Due to the increased use of remote learning in Malaysia as a result of the COVID-19 pandemic, it is critical to understand students' experiences, perspectives, and preferences, as well as other factors to consider. According to Maqableh & Alia, (2021), 80.5% of undergraduate students reported experiencing psychological distress during the lockdown. Additionally, 84.8% of respondents reported being distracted and unable to concentrate during online classes. These findings are consistent with those of a previous study (Hussein et al., 2020), which found that 53.3% of respondents experienced this issue. Furthermore, Maqableh & Alia (2021) reported that 72.1% of respondents felt less committed because the instructor was not physically present. According to a focus group conducted by Maqableh and Alia (2021), 60% of respondents are bored, anxious, and frustrated with online distance learning, while 27% feel lonely in their daily class life. Additionally, Rahiem (2021) discussed the psychological difficulties associated with emergency remote learning (term used referring to online distance learning in Indonesia). Students admit that isolating themselves in their rooms made them feel drained of energy and bored. They also struggled with concentration, were unable to address questions directly to the lecturer, lacked printed instructional resources, had little contact with peers, had difficulty obtaining

information, and lacked group discussion, among other issues. They require interaction with peers to generate energy during class sessions.

Students must be motivated and committed to improving their learning skills through practical experiences in an online learning system, either on their own or as a result of teacher instructions. Chung et al. (2020) also discovered that the majority of university students struggle to focus on online learning owing to environmental disturbances. Additionally, they lack motivation owing to a lack of face-to-face interaction with classmates and lecturers. However, Markova et al. (2017) believe that online distance learning is excellent for individuals who are goal-oriented and disciplined, as there is no direct interaction with the instructor, emphasising the importance of autonomous effort.

2.6 Empirical studies using Exploratory Factor Analysis (EFA)

EFA is a multivariate statistical technique that can be used to develop and validate psychological theories and assessments. We used EFA to analyse the data collected in this study to determine the factors that contribute to the difficulties associated with online distance learning faced by UiTM students. Yu and Richardson (2015) developed an effective instrument for assessing student readiness for online learning in his study, which included valid indicators of online learning success elements such as learning outcomes and learner satisfaction. EFA and reliability analyses were used to further assess the validity and reliability of the Student Online Learning Readiness (SOLR) assessment. The Student Online Learning Readiness (SOLR) Model as a new conceptual model was used to select twenty items from three skills: social competencies, communication competencies, and technical abilities for the initial instrument. The EFA determined that four component-structures of the instrument of student preparation for online learning explained 66.69% of the variance in the pattern of item-item interactions, and that all four criteria had a high level of reliability.

Pham et al. (2021) used the Bayesian EFA approach to investigate factors influencing students' online learning outcomes during the COVID-19 pandemic. According to Pham et al., previous research on the factors affecting students' online learning outcomes identified representative factors using the traditional exploratory factor analysis (EFA) method. The test results indicated that learner attributes, perceived usefulness, course content, course design, ease of use, and faculty capacity all have a declining effect on students' online learning outcomes. Pham et al. proposed that in order for students' online learning to be successful, the university should offer training sessions to stimulate student initiative, encourage students to communicate actively with lecturers and classmates, and enhance students' ability for self-study. Additionally, schools must instruct students on the advantages of online learning, particularly in light of the COVID-19 pandemic.

3. Research Methodology

This is a quantitative study that was conducted at Universiti Teknologi MARA (UiTM) Cawangan Terengganu. The study population was diploma and bachelor's degree students. Due to the fact that the data for this study were gathered via survey, it is classified as scientific research (Cavana et al., 2001). This study employed non-probability sampling, also referred to as purposive sampling. This study adopted a set of questionnaires from Khalid (2015), which was modified to meet the study's objectives. The validity of questionnaire used in this study has been verified by the field expert and the reliability test showed that Cronbach Alpha 0.7. Students from three UiTM Terengganu campuses were given the questionnaire. From the students, we received 495 responses. The structured questionnaire is divided into four sections: Section A: Respondent Profile; Section B: ODL Challenges throughout the MCO; Section C: ODL Effectiveness throughout the MCO Period; and Section D: Medium Selection in ODL. This questionnaire employs a 5-point Likert scale, with responses ranging from (1) strongly disagree to (5) strongly agree.

Data were analysed using the Statistical Package for Social Science (SPSS) version 22.0, which included Exploratory Factor Analysis (EFA). Exploratory factor analysis is a multivariate technique for reducing factors to several smaller sets of variables. This technique is used to explore large data sets in order to generate a set of variables known as factors that can be more easily and meaningfully interpreted (Fauzi et al., 2014). The factor analysis procedure is divided into three stages: identifying correlations between factors, extracting factors, and rotating factors (Chua, 2009). Item values with a

high correlation are placed in the same construct, whereas item values with a low correlation are placed in different constructs. The value of uniformity (communality) for extracting factors revealed that a value of 0 contributed nothing to the change in variance, whereas a value of 1 contributed 100% of the change in overall variance. Factor rotation categorises items based on similar characteristics or components and eliminates irrelevant items (Awang et al., 2018).

4. Result and Discussion

4.1 Profile Respondent

Table 1 summarises the demographic findings of the study.

Table 1. Profile of Respondents

	Percentage (%)
Gender	
Male	18.4
Female	81.6
Ethnicity	
Malay	99.2
Bumiputera Sabah	0.6
Orang Asli	0.2
Semesters of Study	
Semester 1	21.0
Semester 2	3.4
Semester 3	27.5
Semester 4	6.9
Semester 5	36.8
Semester 6	4.2
Semester 7 and above	0.2
Residential Area	
Urban area	57.4
Rural area	42.6

This study includes 495 students, with 91 (18.4 %) male students and 404 (81.6 %) female students. Malays account for 99.2 % of the respondents. The majority of respondents (36.8%) are in semester 5, followed by semester 3 (27.5%), semester 1 (21.0%), semester 4 (6.9%), semester 6 (4.2%), semester 2 (3.4%), and 0.2% in semesters 7 and above. The majority of respondents (57.4%) live in cities, while the remainder (42.6%) live in rural areas.

4.2 Exploratory Factor Analysis – ODL Challenge

The results of the Exploratory Factor Analysis (EFA) relating to the ODL Challenge are shown in Table 2.

Table 2. Exploratory Factor Analysis (EFA) for students' dissatisfaction with online learning during COVID-19 Pandemic

Students' dissatisfaction from online learning during COVID-19 Pandemic	Factor					
	1	2	3	4	5	6
I have lack of adequate devices for ODL	0.78					
	9					
Due to financial constraints, I am unable to purchase high-quality electronic devices (laptop and smartphone)	0.77					
	8					
Due to financial constraints, my internet access is limited	0.77					
	5					
I have poor internet connection in my area	0.76					
	3					
I have poor internet connection due to simultaneous users	0.70					
	9					
I faced a problem approaching my lecturer		0.849				
I have poor interaction with my lecturers		0.840				
I have poor interaction with my classmates		0.775				
I feel inferior and lack confidence when it comes to grouping tasks		0.731				
I feel anxious and unmotivated during ODL			0.815			
I feel bored participating in online classes			0.799			
I feel lonely and left out during ODL			0.717			
Sometimes I feel burnout when having too many tasks			0.646			
The quizzes and exams are very difficult				0.8		
				19		
The assignments given are very complicated				0.7		
				89		
The exam questions required critical thinking				0.7		
				61		
The assignments given require a significant amount of time to complete				0.6		
				30		
I don't have time for my hobby/interest					0.900	
I don't have any leisure time during ODL					0.879	
I don't have quality time with my family and friends during ODL					0.749	
I am not a well-organised and detailed oriented person						0.827
I am not good at managing my time						0.806
I didn't manage to do all my task within time frame						0.785
Bartlett's Test of Sphericity				0.000		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				.874		
Eigenvalue	7.91	2.490	1.853	1.7	1.334	1.283
	6			87		
Percent variance (%)	34.4	10.82	8.058	7.7	5.802	5.579
	1			70		
Cumulative variance	34.4	45.24	53.30	61.	66.87	72.45
	1			07		
Cronbach's alpha	0.862	0.889	0.884	0.824	0.852	0.769

On the basis of the Exploratory Factor Analysis (EFA) analysis, the aspect of goodness of fit must be considered in order to determine whether the analysis conducted is adequate and the results are acceptable. Based on the EFA, a value of less than 0.005 for Bartlett's Test of Sphericity (0.000) indicates that the EFA run is acceptable. Furthermore, EFA analysis revealed that the sample size of this study was sufficient for EFA to be carried out. In terms of sample adequacy, the Kaiser-Meyer Olkin test exceeds 0.6, yielding 0.874, indicating that the number of samples is adequate for factor analysis. As a result, the conducted EFA can be concluded to be acceptable because it meets the goodness of fit EFA.

According to the Exploratory Factor Analysis (EFA), six factors contribute to the ODL challenge. The first factor is the technological and internet-related challenges. Loading factor values ranging from 0.709 to 0.789 pose a challenge when using technology and the internet. ODL technology and internet use challenges include a lack of electronic devices for ODL, financial difficulties in obtaining adequate electronic devices (laptops and smartphones) for ODL, financial difficulties resulting in limited student internet access, an inadequate internet network, and an inadequate internet network when a large number of users concurrently connect. According to Adams et al., (2022), Southeast Asian countries' higher education institutions, including Malaysia, have a low level of virtual learning adaptation.

The second factor addressed by EFA is the interaction challenges faced by students and lecturers during ODL. Problems with approaching lecturers, interacting with lecturers, interacting with classmates well, and students feeling marginalised and lacking confidence in completing group assignments are all challenges of student-lecturer interaction during ODL. The loading values for all factors in this second factor range between 0.731 and 0.849. Interaction and social relationships are critical components of online learning activities. The interaction challenges faced by students and lecturers during ODL are critical; they can significantly increase the enjoyment of online learning (Richardson et al., 2017).

Along with technological and internet-related factors, as well as student-lecturer interaction, EFA identified psychological factors or challenges during ODL. According to the EFA analysis, students' psychological challenges during ODL include feeling restless and underwhelmed, being bored with online classes, feeling lonely and left behind, and experiencing 'burnout' due to an overload of assignments. The loading values for all factors in this factor range between 0.646 and 0.815. According to Rahiem (2021), certain psychological issues arise during emergency remote learning (term used referring to online distance learning in Indonesia).

The EFA analysis also discovered that the difficulty of quizzes, tests, and other assessments was a factor or challenge during the ODL's implementation. In terms of the difficulty level of quizzes, tests, and other assessments, students face four challenges: assignments given by lecturers take a long time to complete, examination questions require critical thinking, and assignments given by lecturers are extremely difficult. This factor's loading values range from 0.630 to 0.819. According to Markova et al. (2017), assessment during ODL is critical in influencing students to spend more study hours and effort on assessed tasks, as well as to encourage them to take a more in-depth approach to learning rather than a surface approach.

According to the study's EFA analysis, self-factors were also a challenge for students during ODL. This means that student self-management, whether well or poorly executed, has an impact on students during ODL. According to the findings of EFA, the challenge of ODL from the standpoint of self involves two factors: self-management in terms of time and student attitude. Self-management in terms of time refers to five (5) factors, which include making time for hobbies and interests, having free time during ODL, and spending quality time with family and friends. All loading factors for this factor fall within the range of 0.749 to 0.900. While the sixth (6) factor is self-management, which relates to students' attitudes, it also includes being extremely organised and thorough, as well as being wise in managing time and completing all tasks within the allotted time. According to the EFA, these factors explain why, if all students exhibit effective time and attitude management, they will face no difficulties during ODL. Students and learners are not all alike; their abilities and confidence levels vary. Additional instructional features that facilitated online learning included self-assessment and discussion forums, instructor feedback, flexibility, clearly stated learning objectives, authentic material, and small learning units (Zhu et al., 2022).

5. Conclusion and Suggestions for Future Research

According to Exploratory Factor Analysis (EFA), there are six challenges that students in UiTM face when it comes to the ODL challenge. The difficulties include technology and the internet, student-lecturer interaction, the difficulty level of quizzes, tests, and other assessments, self-management, time management, and psychological issues. According to our findings, the main challenges among UiTM students are from low-income families, and the majority of them have difficulty obtaining technological devices due to financial constraints. These students should be provided with necessary resources for ODL, such as an internet connection, a laptop, and other course-related equipment, to ensure that they have an equal opportunity to study effectively and are thus better equipped for online learning. Not all UiTM courses are appropriate for online learning, which adds to the difficulties associated with ODL. Since arts and skill-based courses require face-to-face instruction, they require significantly more research to improve.

On the other hand, effective learning should be founded on empathy and interpersonal characteristics rather than on the sophistication of available technology. Students who require additional assistance or are experiencing academic difficulties expect their instructor to communicate and interact with them more frequently. The more engaged they perceive their instructor, the more learning they experience. By incorporating an e-mentoring function into the university portal, students can benefit from additional resources, answers to their questions, and/or the ability to schedule online one-on-one meetings with mentoring faculty. Lecturers and students at UiTM should become familiar with these techniques in order to better adapt to online learning implementations. These are the obstacles and sacrifices that all parties must make in order to ensure our educational system's future success. Lecturers should prioritise their own professional development through online teaching and learning. Prior to this, the lecturer should conduct a formative assessment to ascertain students' comprehension of the subject. Keep an eye on students' work to determine which areas they excel and which are more challenging. At the end of the class, the lecturers should administer a summative assessment to determine how much the students have learned. Lecturers can detect and resolve areas of difficulty during online ODL by assessing students' learning in a variety of ways and throughout the course. Furthermore, during ODL, the lecturer should provide opportunities for hands-on practice. Students remember more information when they learn by doing instead of listening to an online lecture. Provide hands-on practice tests in small groups to assist students in applying their knowledge. Universities should create more user-friendly applications, such as online live chat, to assist students experiencing stress during ODL. Additionally, universities should increase the number of counsellors and peer mentors available to listen to students' concerns during ODL. A point worth emphasising is the critical nature of students' mental health. Nobody can be an exceptional learner if their mental health is harmed as a result of a pandemic and financial hardship. Authorities should be held accountable for ensuring adequate food and care for students, as well as paying close attention to their behaviour. Pay close attention to students' experiences to ensure thorough and successful learning. Regular and focused assessments that incorporate appropriate learning activities and require students to engage in demanding practice are necessary. A high-quality education cannot be achieved without the use of effective student-instructor engagement techniques. Overall student satisfaction will rise if students, instructors, and administrators work together. In turn, this will enhance the standard of distance learning.

6. Co-Author Contributions

Nor Hamiza, Sholehah, Mohd Khairi, Noorazlina, Suhaily Maizan, Nur Azwani, and Salwani all contributed to the research's design and implementation, as well as its analysis and writing. The published version of the manuscript was read and approved by all authors.

7. Acknowledgement

There was no specific grant for this research from any governmental, commercial, or not-for-profit funding agencies. This research was conducted by SIGni-Finomics (600-UiTMCTKD (PJI/RMU 5/1) SIG 1/2022 (20)).

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