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Students' Perceptions towards The Challenging Factors in Online Distance Learning

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Abstract

Since the COVID-19 outbreak, the learning environment in higher learning institutions has now transformed from the traditional face-to face to online distance learning (ODL). This transformation will undoubtedly pose some challenges for the students. Therefore, it is important to identify these challenges so that measures can be made to support students' learning in the new norm. Using the TIPEC (Technology, Individual, Pedagogy, and Enabling Conditions) framework, this research aims at identifying the most challenging factor in ODL as perceived by the students and to examine the influence of gender as well as fields of study on the factors. Employing a quantitative research method, an 18 item-questionnaire was developed based on TIPEC framework and distributed to students in a public university via online. 60 students responded to the survey and the data gathered were analysed using both descriptive and inferential statistics. . The means were used to describe the students' perceptions on the challenges they faced in ODL. Meanwhile, t-Test and One-Way ANOVA were run to see the differences in the perceptions based on gender and fields of study respectively. The major findings revealed that students perceived the individual factor as the most challenging factor and the pedagogy factor was the least in ODL. It was also discovered that gender influenced the individual and technological factors, but fields of study had no influence on any of the factors. It is important to note that the findings can help students, lecturers and administrators of higher learning institutions understand the challenges in ODL so that they can take actions to ensure successful teaching and learning in this new norm. Future researches should explore other aspects such as the students' support system and coping strategies in ODL.

Keywords: Challenges, COVID-19, ODL, Perceptions, TIPEC

Introduction

In Malaysia, the teaching and learning landscape has seen a major change in its delivery mode where all higher learning institutions have to use online platforms following the COVID-19 outbreak. The unexpected change in the landscape created many challenges

especially to the students. Since the beginning of the outbreak, many studies have been carried out in both international and local settings. For example, Aboagye (2020) reported that the most challenging factor faced by students in the COVID 19 era was accessibility such as the costly Internet data, internet connectivity and compatible smartphones and laptops. The accessibility factor has also become the main challenge for students investigated by (Zboun and Farrah, 2021). Another challenge was student readiness. This would affect motivation for learning as students were unwilling to embrace the new way of learning (Aboagye, 2020). Meanwhile, in Malaysian settings, Ismail et al (2020) found that the students were not ready to learn online due to internet and infrastructural problems, non-conducive learning environment at home, lack of online materials, immediate teacher feedback and response, poor student-student interaction, and lack of IT skills. Kamal et al (2020) also discovered similar challenges with regard to poor internet connectivity and student participation online. Besides these, they also found that the students' unpleasant emotion towards online distance learning and online examination apprehension were also affecting the students' acceptance of the new learning environment. In addition, Majid et al. (2020) revealed that the challenges students faced were accessibility, social and academician capability factors. It seems accessibility factor is a common challenging factor found in both international and local studies.

All the above-mentioned studies investigated the challenges faced by the students; however, their approach did not take into account the TIPEC framework (Ali et al., 2018) which will be discussed further in the literature review section. Since ODL is a form of e-learning, this study will adapt the TIPEC theoretical framework (Ali et al., 2018) as the framework was developed based on studies on adult learners. This study focuses on investigating the challenges encountered by the university students during ODL, therefore, the framework is deemed appropriate to be used.

According to Cherry (2020), perception can be triggered by the environmental stimulus. Since the students have firsthand ODL experience, the challenges of each factor are considered as the environmental stimuli that can influence their perceptions. The enabling conditions are excluded in this study as they are administrative factors which are not in the realm of students' knowledge and experience. The present study also investigates the influence of gender and fields of study, namely, Science and Technology, Business and Administration and Social Sciences and Humanities. Therefore, the research questions of the study are:

1. What is the most challenging aspect in technology, individual and pedagogy factors and which factor is the most challenging as perceived by the students?
2. Is there any significant mean difference in the students' perceptions towards the factors based on gender?
3. Are there any significant mean differences in the students' perceptions towards the factors based on fields of study?

Literature Review

This section discusses the theoretical framework, the factors investigated in the study, and previous studies based on the framework.

Theoretical Framework

Ali et al (2018) reviewed published studies from 1990-2016 that contributed to the challenges in online learning implementation. The review of studies from 259 articles found

68 challenging factors that were further categorized into four main factors namely technology, individual, pedagogy, and enabling conditions, or TIPEC as shown in Figure 1.

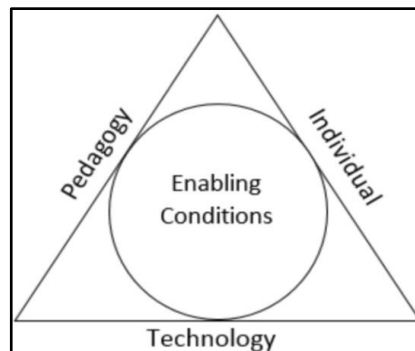


Fig. 1 TIPEC framework

They describe each factor as follows:

Technology: barriers related to concepts and components in technology in the context of e-learning system.

Individual: the barriers in the context of individual factors are confined to student related barriers for instance students' prior knowledge, awareness and attitude towards ICT, students' support, and culture. Students' computer literacy is also included under individual barriers.

Pedagogy: As the term implies, pedagogy here include barriers related to teaching methodology, faculty, supporting staff and course content.

Enabling Conditions: these are barriers that have an impact on the technology, individual and pedagogy such as administrative support, limited funds, security, rules and regulation, language barrier, load shedding of electricity and ethical issues.

Previous Studies Using TIPEC Framework

A few researchers have used the TIPEC framework in their studies. Bogoslov and Lundu (2020) examined the challenges in adopting online learning systems reported in scientific papers and official studies. They then highlighted these challenges based on the TIPEC framework and concluded that most of the challenges found in the literature involved geographical locations and pedagogical aspects. The geographic locations will indirectly affect technological factor such as accessibility to computers and laptops, poor internet connectivity and digital skills because remote learning could not successfully take place in less developed socio-economic environments or rural areas. In terms of pedagogy factor, teachers were not fully prepared to move from traditional learning to the online learning environment. Other challenges included lack of online teaching materials, the absence of possibility to carry out practical activities and the engagement and monitoring of the students in online teaching activities. Under individual factor, the teachers' and parents' attitudes and digital incompetence were discovered as the challenges. Meanwhile, under enabling conditions, major restructuring without physical interaction, new rules, and regulations in conducting examination, reorganisation of the curriculum, new admission procedures and others were the challenges that had some negative implications on continuation of educational processes.

Krishnamoorthy and Soh (2021) also reviewed 42 research papers based on the TIPEC framework. The review aimed at investigating the extent of internet accessibility that would affect the technology-based pedagogy in Science classrooms of Malaysian primary schools.

They found that technological aspects such as internet speed, interruptions during loading, infrastructure maintenance, and technical support for teachers were seen as the major concerns in implementing technology in Science classrooms. They concluded that a systematic analysis was needed on the technological factor in order to understand the dilemma faced by these Science teachers.

Unlike Bogoslov and Lundu (2020) and Krishnamoorthy and Soh (2021) who conducted their studies using a meta-analysis approach, some researchers used TIPEC framework with different approaches. For example, Diningrat, et al (2020) explored the early childhood lecturers' perceptions of barriers in online teaching practices using the TIPEC framework and examined their pedagogical competencies. The findings revealed that pedagogical and enabling conditions factors were found to be the significant challenges for these lecturers. In terms of pedagogical factor, the lecturers stated that they had difficulties in conducting remote teaching because of bandwidth and connectivity issues. Furthermore, they also felt that decreased student engagement and lack of feedback were also the setbacks in ODL. Under enabling conditions factor, security was the major concern found. Lecturers were not confident that their data privacy would be assured as their data have marketing potential and can be sold to third parties. Diningrat, et al (2020) also found that the lecturers perceived that they had good pedagogical competencies; however, this finding needed to be further investigated by looking at the products of their teaching practices.

Meanwhile, Chidaushe (2021) examined the challenges of online learning among students, lecturers, and academic administrators in two universities in Botswana. Using the TIPEC framework as one of his theoretical frameworks, he found that most of his respondents encountered challenges in three factors which were individual, technological, and enabling conditions. Lack of skilled IT staff, obsolete IT systems and fear of new technologies were among the specific barriers discovered. The pedagogy factor was not discussed in this study. Focusing on experts who consisted of professors, deans, and directors serving in Indian institutes, Sharma (2021) highlighted that enabling conditions are important in order to make proper planning for technological infrastructure, the individual approach towards online learning, and the pedagogical approach for online learning. She also found that technological factor as the main challenge as it had a direct impact on the decision to adopt online learning. Furthermore, individual and pedagogy factors had a significant negative relationship with the decision to use online learning techniques.

Since studies using the TIPEC framework in examining the challenges among students in ODL are still scarce, the present study will add a new insight to the existing literature by looking at the university students' perceptions of the challenges faced in ODL during the COVID 19 pandemic. This study will also determine the influence of gender and fields of study on the students' perceptions.

Methodology

This study employed a quantitative research method using a survey design. According to Sarangam (2021), the statistical analyses used in a quantitative study could reduce personal bias to a great extent. Furthermore, the results are accurate and objective. A survey using a questionnaire is also inexpensive, common and can reach a wider group of individuals. The instrument used in this study was an 18 item- questionnaire developed based on some of the challenges under Technology, Individual and Pedagogy factors in the TIPEC framework (Ali et al., 2018). The questionnaire had two sections. Section A consisted of 3 items on the respondents' demographic profile, such as, gender, age, and fields of study. Section B

consisted of 15 items subdivided into three: Technology, Individual and Pedagogy with 5 items under each subdivision. The response type for these 15 items was a 5-point Likert scale format (1-Strongly Disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly Agree) to measure the level of agreement for each item under the three factors. The questionnaire was then converted into google forms and the link was shared randomly with the students from one public university using social media platforms such as WhatsApp, Facebook and Instagram. There were 60 students responded to the survey. Descriptive and inferential statistics were used to analyse the data. Descriptive statistics in the form of means were used to describe the students' perceptions on the challenges they faced in ODL. From the description, the most challenging aspect for each factor and the most challenging factor among the three factors; technology, individual and pedagogy were identified. Then, t-Test was used to analyse the mean difference in the students' perceptions between gender and One-way ANOVA was run to determine if there were significant mean differences in the students' perceptions from three fields of study. The analyses were done by using SPSS version 27 and the level of significance was set at 0.05.

Results and Discussion

The findings gathered to answer the research questions will be presented and discussed after the demographic profile section.

Demographic Profile

Table 1 shows frequency distribution of the respondents' demographic profile, that includes gender, age, and fields of study. The demographic profile analyses indicated that the majority of the respondents were female, in the age range of 25-27 years, and from Social Sciences & Humanities field of study.

Table 1. Demographic profile of respondents

Variables	Percentages (N=60)
Gender	
Male	33.3% (20)
Female	66.7% (40)
Age	
24 and below	16.7% (10)
25-27	58.3% (35)
28 and above	25.0% (15)
Fields of Study	
Science & Technology	33.3% (20)
Business & Administration	30.0% (18)
Soc. Sciences & Humanities	36.7% (22)

The Most Challenging Aspect in Each Factor and the Overall Factor Technology Factor

Table 2 illustrates the means for each item that measured the technology factor. Item 4 which was on slow internet connectivity had the highest mean at 3.18. This was followed by Item 1 which was on the poor quality of the laptop/computer with the mean of 3.06. Next, Item 5 which was on computer viruses and Item 3 that was on the difficulties in using different

software and platforms had the mean of 3.03 and 3.01 respectively. The lowest mean was on compatible technology which was Item 2 at 2.96. It seems that the most challenging aspect under technology factor found in the present study was slow internet connectivity. This finding was in line with most studies done internationally (eg. Aboagye, 2020; Zboun & Farrah, 2021) and locally (eg. Ismail et al., 2020; Kamal et al., 2020; Majid et al., 2020). The persistent internet connectivity challenge might be due to geographical locations of the students as mentioned by Bogoslove and Lundu (2020). When students stay in rural areas, their internet access might be limited.

Table 2. The means of items for technological factor

Item No	Technology Factor	Mean	SD
4	My internet connection is slow.	3.18	1.26
1	My laptop/ computer is always lagging during ODL.	3.06	1.28
5	Computer viruses will slow down the system on my laptop/ computer.	3.03	1.40
3	I am having difficulties in using different software and platforms with different interface features.	3.01	1.41
2	My camera and microphone on laptop/ computer are incompatible.	2.99	1.46

Individual Factor

Table 3 shows the means of items for individual factor. Item 1 which was on students' motivation recorded the highest mean at 3.55 and followed by Item 4 on cost of technology with the mean of 3.51. Item 3 which was on IT skills had the third highest mean at 3.23 and Item 2 on social support came next with the mean of 3.11. The lowest mean was on student readiness, which was Item 5, with 2.85 mean score. Under Individual factor, student motivation is considered as the most challenging aspect for students. This finding is in agreement with a study conducted by Zboun and Farrah (2021) who found several challenges in implementing online language learning such as decreased student motivation and increased student boredom. Since learning via ODL requires students to be just in front of the screen without any physical movements and activities, it would have affected the students' physical and emotional states.

Table 3. The means of items for individual factor

Item No	Individual Factor	Mean	SD
1	The monotonous nature of ODL really demotivates me.	3.55	1.35
4	I need to spend more money to buy data to get the internet connection.	3.52	1.17
3	I lack the necessary IT skills to handle ODL.	3.23	1.14
2	It is difficult for me to learn via ODL when I do not get support from my peers and family members.	3.11	1.15
5	I am not ready to participate in ODL.	2.85	1.21

Pedagogy Factor

Table 4 presents the means of items for pedagogy factor. Item 3 which was on students' engagement online achieved the highest mean which was at 3.28. Item 2 which was on absence of real time feedback had the second highest mean at 2.95 and followed by item

5 which was on long lecture mode with the mean of 2.71. Next was Item 4, IT skills of the lecturers, with the mean of 2.53 and the lowest mean for Item 1, material accessibility, which had the mean of 2.13. The finding indicates that students' engagement online is the most challenging factor perceived by the students. Zboun and Farrah (2021) and Kamal et al. (2020) also discovered a similar finding.

Table 4. The means of items for pedagogy factor

Item No	Pedagogy Factor	Mean	SD
3	I feel difficult to engage in online classes actively.	3.28	1.58
2	I do not receive spontaneous feedback from my lecturers.	2.95	1.55
5	I have difficulties to focus due to long hours of lectures.	2.71	1.19
4	I think my lecturers have little knowledge in technology to conduct E-Learning.	2.53	1.32
1	It is difficult for me to access lecturers' materials.	2.13	1.25

Overall Factors

Based on Table 5 below, the highest mean recorded was individual factor (3.25), followed by technology factor (3.05) and the least was pedagogy factor (2.72). This showed that individual factor was considered as the most challenging in the ODL environment when the means of all factors were compared. The finding differs from that of previous studies (Almaiah et al., 2020; Mustisya & Makokha, 2016) which found that technological factor was the main challenge in ODL. Perhaps, technology is not the main challenge in this study because Malaysia, although, a developing country, has high-speed broadband infrastructure, mobile broadband capabilities, and various robust digital services (MDEC, 2020). It is hoped that these technologies will help improve the internet access in rural areas.

Table 5. The means of all three factors

Factors	Mean	SD
Individual	3.25	0.99
Pedagogy	2.72	1.04
Technology	3.05	1.23

The Students' Perceptions towards the Factors Based on Gender

Table 6 shows that female students had higher perceptions than their counterpart on all the factors as the challenges in ODL. To examine the significant mean differences in the perceptions towards the challenging factors based on gender, a t-Test was run.

Table 6. The means of the factors based on gender

	Gender	Mean	Std. Deviation
Technology	Male	1.7700	.78210
	Female	3.6950	.85573
Individual	Male	2.6800	1.01026
	Female	3.5400	.85719
Pedagogy	Male	2.4100	.94807
	Female	2.8800	1.06294

Table 7 reveals that there were significant mean differences in both technology and individual factors based on gender. Female students ($M=3.69$, $SD=.855$) reportedly perceived the technology factor as a more challenging factor than male students ($M=1.77$, $SD=.782$), $t(58)=-8.4451$, $p<0.01$. Female students ($M=3.54$, $SD=.572$) also perceived the individual factor as more challenging than male students ($M=2.69$, $SD=1.01$), $t(58)=-3.450$, $p<0.01$. However, female ($M=2.88$, $SD=1.08$) and male students ($M=2.41$, $SD=.948$) equally perceived pedagogy factor as the challenging factor, $t(58)=-1.672$, $p>0.05$. The findings contrast with that of Cuadrado-Garcia et al. (2010). They found that female students did not have any difficulties in using online technology as they frequently used the online learning tools. The findings also refute Johnson's (2011) argument which stated that females had higher positive thoughts on online learning than males.

Table 7. The Independent Samples t-Tests for Gender

		Levene's Test for Equality of Variances		t	df	Sig. (2-tailed)
		F	Sig.			
Technology	Equal variances assumed	.291	.592	-8.445	58	.000
	Equal variances not assumed			-8.706	41.338	.000
Individual	Equal variances assumed	1.396	.242	-3.450	58	.001
	Equal variances not assumed			-3.264	33.054	.003
Pedagogy	Equal variances assumed	.005	.946	-1.672	58	.100
	Equal variances not assumed			-1.737	42.256	.090

Students' Perceptions towards Factors Based on Fields of Study

Table 8 shows that there were no significant mean differences in all factors; Individual, $F(2,57)=.203$, $p>0.05$, Pedagogy, $F(2,57)=2.389$, $p>0.05$ and Technology, $F(2,57)=.867$, $p>0.05$, based on fields of study. Thus, it can be concluded that fields of study did not have any influence on the challenging factors in ODL environment. These findings did not support the

findings of Adam et al. (2018) who discovered the differences based on fields of study. They found that medical students felt that ODL was more challenging than social sciences students did. Al-Balas et al (2020) also reported that the most challenging factor for medical students learning online was the delivery of educational material synchronously and the quality of the Internet.

Table 8. One-way ANOVA for fields of study

		Sum	of			
		Squares	df	Mean Square	F	Sig.
Individual	Between Groups	.410	2	.205	.203	.817
	Within Groups	57.499	57	1.009		
	Total	57.909	59			
Pedagogy	Between Groups	4.957	2	2.478	2.389	.101
	Within Groups	59.130	57	1.037		
	Total	64.087	59			
Technology	Between Groups	2.645	2	1.322	.867	.426
	Within Groups	86.945	57	1.525		
	Total	89.589	59			

Conclusion

The study investigated the students' perceptions towards the challenging factors in online distance learning and examined the influence of gender and fields of study on the perceptions towards the factors. The findings revealed that individual factor was perceived as the most challenging factor by university students. The factor covered student readiness, student motivation, technology cost, lack of ICT skills and social support as proposed in the TEPEC framework (Ali et al., 2018). The present study also provides empirical evidence that gender influences the individual and technology factors, but fields of study do not. The findings can give some insights to students so that they can overcome the challenges should ODL continue to be the way of learning in the future, for instance, adapting to ODL environment and adjusting their learning styles. Academic staff and university administrators can also work closely with each other in helping the students deal with these challenges. They can arrange motivational talks, coping strategies workshops and perhaps provide financial aid so that the students' physical, psychological, and emotional health can be maintained and improved.

Suggestions

All studies have their limitations, so does this study. First, the small sample came from only one public university, therefore, the findings of the study could not be generalised to the whole university population. Second, this study only employed a quantitative research method using a cross sectional survey. Lastly, this study did not take into account all aspects under the Technology, Individual and Pedagogy factors in the TIPEC framework. It is recommended that future research be conducted using larger sample taken from various universities in Malaysia. A longitudinal study using a mixed methods research design can also be carried out in order to give a more in-depth explanation of the phenomenon. In addition, future researchers could also consider investigating other aspects in the TIPEC framework not

included in this study. Other new directions of the research are to examine the support system for the students while they are in ODL and to investigate the coping strategies they used while facing challenges during ODL.

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