EXPLORING AND DEVELOPING ITEMS MEASURING ONLINE LEARNING BEHAVIOUR USING THE UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY2 (UTAUT2)

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Abstract - Students' inabilityto deal with the complexities of technology during the teaching and learning process could have harmed students' online learning. This paper examined the effects of technostress, and teaching-related aspects on undergraduates' online learning behaviour. The sample for this study was made up of 212 students from the UniversitiTeknologi MARA Pahang Branch. Two new constructs-technostress and teaching related aspects-were introduced, in addition to the existing Unified Theory of Acceptance and Use of Technology2 (UTAUT2). This study aims to create a valid and reliable survey instrument to measure the influential factors that influence online learning behavior. KMO and Bartlett's Test were analyzed using AMOS 27.0. The result highlights that Bartlett's Test of Sphericity was highly significant (sig. 000) and KMO=0.932 indicated excellent sampling adequacy. All the eight components had values of Cronbach's alpha that were above 0.7. All 50 items' Cronbach's alpha values were above the 0.7 thresholds. The instrument consistency and reliability were established by the development scale and validation. The outcome of the study is intended to contribute significantly to UTAUT2 measurement, particularly in the context of education.

Keywords - Online learning, Teaching-related aspects, Technostress, UTAUT2.

I. INTRODUCTION

Online learning acceptance is receiving more attention in the research world recently due to the COVID-19 pandemic. Nowadays, it is the most popular learning approach, owing to the numerous advantages it provides. Gonzalez et al. [1] found that when students used online learning during the COVID-19 pandemic, their performance improved. Learners are likely to opt for education via the internet due to its flexibility. They can take any class at a time and location that suits them [2,3]. Unfortunately, extensive research reveals that online learning adoption has confronted certain issues, such as technostress and teaching-related problems [4,5,6]. While there is considerable research on the idea of technostress in the workplace, only a small amount of studies have been conducted on the antecedents and implications of technostress in university students [7,8]. Yet learners might have experienced serious issues when trying to manage very high-level technology successfully as part of their tutoring and studying procedures, due to how complex the technology is, and as a result of using Information and Communication Technology (ICT) [9,10]. Students are allegedly required to continue their learning activities at home without direct contact with instructors and peers to complete course assessments due to a lack of system readiness and user competencies, which are crucial to successful ICT adoption [4]. Moreover, some elements of teaching aggravate the difficulties involved in education via the internet. In general, teaching-related aspects include instructional methodology, class contact hours, lecturer competency, lecturer commitment, as well as lecturer support and awareness. As a result, this is linked to the efficacy of the teaching and learning process since online learning requires additional encouragement, support, technical skills, and abilities from lecturers and instructors to enable various online platforms and applications to be used [11,12]. According to Young and Duncan [13], one of the major concerns that lecturers and instructors are encountering is how to effectively teach with new techniques of teaching and learning that use online platforms and applications. As a result, this factor must be addressed to reduce the negative psychological effects, foster positive attitudes, and motivate students who confront several challenges during online learning.

The underpinning theory for this study is the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). The model is intended to provide a description of the ways users utilize and plan to utilize systems of information. As an expansion of the existing UTAUT2, this study introduced two additional constructs: teaching-related aspects and technostress. Information systems (IS) and other domains have utilized UTAUT extensively for more than ten years, so it is necessary to be extended through the addition of an innovative endogenous mechanism and a new outcome mechanism [14]. Furthermore, the UTAUT2 extended model is a useful measurement model for educational technologies in higher education [15]. The teaching-

related aspects construct needs to be added as a new variable in the UTAUT2 model since many recommendations for future research indicate that teaching-related aspects are crucial in determining the success of an online learning environment [16,17,18,10].

Since technostress might have a determining influence on the way a learner behaves while online, it has a key part to play in ascertaining how successful online learning can be. Technostress is associated with students' inability to manage new technologies during online learning, which will lead to stress and reduce their emotional well-being. Information and communication technology (ICT) has been linked to a new type of stress called "technology stress" or "technostress" [21]. A review of the literature shows that both individuals and organisations are susceptible to this form of stress, which is why it is important to understand how to deal with it effectively [22]. People who struggled to use ICT were shown to have a wide range of health issues, and their well-being was placed at risk as a result [23]. Students in higher education may experience technostress due to their failure to keep up with the rapid changes in technology that occur in online learning. Some students may become depressed, low in self-esteem, or even suicidal as a result of their online learning experiences due to the consequences of technostress [24,25,26]. Previous studies have suggested that technostress should be taken into account in future studies [27,28].

Thus, the current study mainly aims to identify appropriate elements which can be used as part of its research instrument, especially in terms of the new constructs which were combined in the current model.This is critical to ensure that the new measurement items included in the UTAUT2 model can be used in research instruments that are valid and reliable, as well as appropriate for studying factors related to teaching-related aspects and technostress. Due to the fact that these two constructs were not included in the original UTAUT and UTAUT2 models, it is critical that this study explore and develop items measuring online learning behaviour using the Unified Theory of Acceptance and Use of Technology2 (UTAUT2), which includes these new constructs. These two new constructs, as explained above, are critical to measuring the extent to which they can influence behavioural intention to use online learning, and ultimately lead to the actual usage of online learning. In order to ensure its reliability and consistency, the instrument's development needs to be scaled up and validated. Since the extension model of UTAUT2 relies on these new measurement items to be employed in future studies on online learning behaviour, it is necessary to guarantee that they are valid, consistent, and stable across samples.

The study performed Exploratory Factor Analysis (EFA) with the objective of developing an instrument with sufficient reliability to enable online learning behavior to be quantified, with UTAUT2 used for the theoretical framework. The study findings are intended to make a significant contribution to UTAUT2 measurement, particularly in the educational environment.

II. LITERATURE REVIEW

Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

The UTAUT2 is extensively employed in technological acceptance research due to its comprehensiveness [15,29,30,12,31,32,33]. Figure 1 illustrates how the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), as the underlying concept, was utilized in the current study. Venkatesh et al. first developed UTAUT2 (2012), which was an enhanced form of UTAUT [34]. The model tries to provide descriptions on how users intend to use an information system and how they use it. The theory outlines that the way users behave when they intend to utilize different technologies can be impacted by various factors. These include performance expectancy, effort expectancy, perceived value, hedonic motivation, and social influence. On the other hand, habit, behavioural intention, and facilitating conditions determine the use of technology. Nevertheless, as suggested by Venkatesh et al. [14], two new factors, teaching-related aspects, and technostress have been proposed to extend this model. As information systems (IS) have utilized UTAUT widely in many applications for more than ten years, the researchers recommended how an extension could be developed with the addition of a new endogenous mechanism and a new outcome mechanism. As a result, to contribute to the new body of knowledge, this research presented teaching-related characteristics and technostress as additional variables to use in the existing UTAUT2 model.

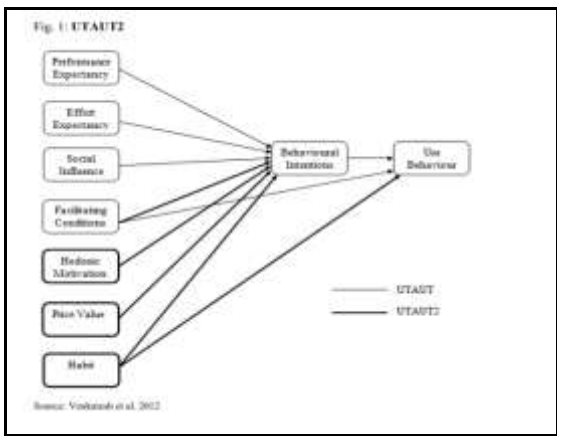

Figure 1: Original model of UTAUT 1&2 by Venkatesh et al. (2012)

Performance Expectancy

Performance expectancy means the extent of a consumer's gains when they adopt technologies to perform particular actions [31]. Students anticipate that using online learning will improve their academic performance [35,36]. According to Chen [36], the higher the degree of compatibility of an online learning system, the more students will believe that adopting it will improve their learning performance. A connection was determined by Mehta et al. [35] discovered a relationship between performance expectancy and behavioural intention. The research findings revealed that respondents intended to use online learning since it was thought to help accomplish their objectives. These research outcomes correspond to the results from past studies, as they identified how intentions to keep utilizing an online learning system are influenced by performance expectation [29,37].

Effort Expectancy

Effort expectancy means how easily certain technologies are utilized [31]. The connection between effort expectancy and online learning has been revealed in numerous past studies [29,37]. Bellaaj et al. [29] investigated 103 undergraduates from Saudi Arabia, discovering that effort expectancy and users' intentions to utilize systems for online learning in the future were interrelated. Additionally, Onaolapo and Oyewole [38] conducted an investigation with 186 postgraduates from Nigeria into associations between effort expectancy and mobile learning adoption. The researchers revealed that effort expectancy and how students adopted online classes were significantly interrelated. Results from these studies indicate that the easier mobile learning is to use, the more postgraduate students will use it.

Hedonic Motivation

The definition of hedonic motivation is the pleasure or enjoyment that arises from the use of technology [31]. It is an intrinsic motivation that makes a person use a particular technology. The current study incorporates hedonic motivation by determining if learners' intentions to study online increase when the technology's entertainment value grows, from the users' perspective. Numerous academics have determined how individual intentions to utilize mobile banking technology can significantly predict hedonic motivation [39,40,41,42], as well as online learning [15,43,44]. Previous research by Kumar et al. [37] involved an investigation into how learners in higher education accepted and used ReWIND, a lecture capture system (LCS). The results indicated that hedonic motivations are significant predictors of students' intention to use ReWIND. A similar study investigated how learners initially viewed Google Classroom when they used this platform for online learning. It was found that hedonic motivation had an influence on those learners who had positive intention to use Google Classroom [45].

Habit

The definition of habit is the frequency with which people normally perform certain learnt actions automatically [46]. Habit is the outcome of repetitive actions in the past [31]. The current study refers to habit as a learner's previous behavior or experience from which a positive feeling might be created toward adopting education via the internet. Past researches showed that habit is a critical factor in behavioral intention [47,48,43]. It was shown in studies by Kumar and Bervell [45] how habits were the most significant predictors of behavioural intention. Habit also was the principal determinant of how students actually used Google Classroom, not their behavioural intention. The results resembled those of Tarhini et al. [44], who identified how habit of UK-based university learners has a significant influence on learners' behavioural intention in terms of adopting an online learning system. The outcome indicates that when users make use of the system a habit, they tend to continue using it.

Teaching-Related Aspects

Teaching-related aspects are associated with lecturers' knowledge, competence and commitment, teaching methodology, class contact hours, and also the ability to deliver the learning content. Past research showed that technology-based teaching and learning increased the learning process and optimized the students' abilities in active learning [49,50,51,52]. Educational videos created for students online assist them to improve specifically in language learning skills, thus enhance their confidence related to argumentative issues where they are capable to give clear clarification and justify their judgements [11]. Therefore, online teaching and learning require the development of suitable and engaging content to ensure the proper utilization of technology [53].

A study by Dhawan [54] on the importance of online learning revealed that teachers should humanize the online learning process by providing personal attention to their students and developing social media platforms for effective communication. Moreover, suitable teaching methods are important as they facilitate the effective learning process. The content format should be varied and integrated, with online meeting features to enhance students' responses and engagement. The study's findings show congruence with the work of Partlow and Gibbs [55]. They identified how the content of internet-based courses must be centered on the students and involve innovation and interaction. Furthermore, teachers need to acquire skills in giving effective online instructions to enhance feedback, encourage participation and provide better understanding towards the course content [56]. Poor teacher's explanation during online delivery caused incomplete

tasks and lead to the feeling of bored and stressed among students [57].

Technostress

Technostress refers to becoming stressed due to the use of technology [58]. In this research, technostress was associated with students' inability to manage new technologies during online learning. Prior research discovered that one factor that contributes to stress is ICT. Those who found ICT as difficult and challenging indicated various health problems that affected their well-being [23]. Nevertheless, most research on technostress was conducted in the workplace [59,60]. Few studies have been conducted in the education field and among tertiary level students in particular. Research undertaken in Indonesian higher education investigated how technostress factors affected the ways 228 lecturers performed while teaching. The findings suggest that technostress increased due to the extra educational duties created by the methodologies and approaches used. This factor was related to the lecturers' backgrounds, which included their habits and knowledge related to the use of teaching technology [61].

Besides, a prior study conducted towards Indian academicians revealed negative impacts caused by technostress such as disappointment with learning, insufficient learning engagement, and performance declines [62]. Furthermore, Upadhyaya and Acharya [7] examined the effect of technostress on the academic productivity of students. Their results revealed how technostress negatively affected the way learners performed academically. These findings reveal congruence with previous studies undertaken to investigate situations in organizations [63,64]. Moreover, Singha et al. [65] conducted an investigation into the ways technostress influenced how students performed academically, proving that how they performed in this context was significantly impacted by technostress. These results showed consistency with past studies in organizational contexts [63,64]. Also, past studies suggested that technostress should be considered in future research [27,28].

Behavioral Intention

Behavioral intention means how willing someone is to perform certain behaviors [66]. The current study makes use of behavioral intentions in terms of how they relate to someone's intentions to adopt education via the internet. Previous studies have noted the positive correlation between behavioral intention and the actual usage of the system [34,46,67]. Research undertaken by Azizi et al. [68] identified how performance expectancy significantly influenced learners' intended behavior in terms of their use of blended learning, and finally resulted in the system actually being used. This finding was congruent with previous studies [69,70,71]. Additionally, in a study of Qatari and US students, Tarhini and El-Masri [47] revealed how performance expectancy was a principal factor that influenced learners' behavioural intentions in terms of adopting systems of online learning. This finding corresponds to previous studies [72].

Social Influence

A social influence is a concept whereby others influence a person's views, feelings, and behaviors such that they change due to their interactions with others. Learners' intentions and behaviors are significantly determined by the component of social influence. As the UTAUT states, the definition of this factor is the degree to which a person regards as important the way other people think he or she ought to utilize new systems [34]. Social norms, social circumstances, and image were three social influence elements that shaped individual behavior. Social norms are created depending on individual perceptions of pressures they perceive from society. These determine whether behaviors are performed or not. Social factors refer to the ways individuals internalize certain elements, based on which cultural contexts and interpersonally agreed features are shared between individuals and other people.

Moreover, the definition of images is the extent of a person's belief that their use of innovative technologies would enhance their image and status in society. Various studies have illustrated how the impact of society has a major part to play in the adoption of innovative systems, as this is impacted by the environment and other people. Moreover, it can be given validity as an essential factor that determines user intentions regarding various aspects of this research, such as online studying, social media usage and education-based adoption of computing technology [73,32]. In their study of students' behaviour toward ICT use, Attuquayefio and Addo [74] discovered that social influence positively promotes behavioural intentions to use ICT for learning. This study was supported by Haron et al. [75], who found social influence has a significant effect in influencing students to use MOOC technology, particularly at public universities. However, a study by Bharati and Srikanth [76] explained that social influence is an insignificant factor in influencing student intention to use technology in their learning. Other elements, such as a student's personality, self-confidence, and prior learning experience might also influence their capacity to learn, and their technology usage habits.

Price Value

Price value is an essential component in predicting behavioral intention since the quality, cost, and price will influence people's choice of technology. According to Kumar et al. [38], a person's ability and

buying decisions are determined by the price range of technology. Furthermore, Venkatesh et al. [32] noted that the benefits of adopting the technology are more significant than the monetary expenses, and price value might positively influence behavioural intention. This finding aligns with Yang [33] who researched mobile learning among 182 Chinese undergraduate students. That research reported how price value positively influenced technostress, resulting in intentions to utilize educational technology via the internet. Furthermore, learners display greater levels of intentions to utilize this technology when the advantages involved outweigh the expense. As Azizi et al. [68] reported, the way medical science learners from Iran intended to behave, in terms of their adoption of blended learning as part of their training in medicine, was impacted positively by price value. The ability to acquire blended learning material at a low price and internet utilization were also essential factors in implementing the blended learning method.

Facilitating Conditions

Facilitating conditions are defined as a person's belief in an organizational and technical infrastructure that exists to enable the use of a system that will determine students' behaviour in online learning [77]. Students supported by relevant infrastructure and technology, such as the internet, wifi, a specific location, and information and communication technology, can improve their knowledge in a given subject. These findings correspond to the study of Haron et al. [75] which reported how facilitating conditions substantially affected how willing learners were to adopt online studying as part of university courses. Moreover, research undertaken by Khatun et al. [78] and involving 167 Australian doctors and patients investigated which variables influenced the intentions of end-users to utilize newly introduced technologies. Their results indicated that behavioural intention to use online learning was substantially affected by facilitating conditions like competencies, assets, and knowledge.

In other research, Shen et al. [79] found that students expect improved academic performance through online learning when they have sufficient resources, knowledge, compatibility, and assistance designed to facilitate the learning process. On the other hand, it was reported by Han and Conti [80] that intentions to adopt educational technologies are not directly predicted by facilitating conditions. Students use telepresence robots to make learning more effective in terms of the attitudes, social influence, and perceived enjoyment involved.

Actual Use

According to UTAUT2, there are three antecedents of individual acceptance and actual use of technology included intention to use, facilitating conditions, and habit. Huang and Kao [81] examine the factors that influence the acceptance to use technology such as integrated smart devices called Phablets, found that higher behavioral intention, and facilitating conditions are expected to lead to a higher rate of using technology. Besides, Porter and Donthu [82] mentioned that behavioral intention to utilize online learning technology is one factor that can be determined in terms of students' actual usage of online learning technology. Students use online learning when they have management support and a favorable attitude that contributes to the development of a positive learning environment culture. In addition, a determinant such as habit has a positive impact on a student's utilisation of online learning.

According to a study among 697 university students by Almaiah et al. [83], perceived compatibility, self-efficacy, perceived information quality, availability of resources, and behavioural intention to utilise online learning positively increase the actual use of mobile learning. However, Azizi et al. [68] and Almaiah et al. [83] revealed that facilitating conditions have an insignificant effect on students' actual use of online learning. In addition, Tan [84] investigated whether university learners needed English online educational websites to perform better and enhanced their intentions to use such websites. The findings of this study showed that facilitating conditions and intention to use are positive effects on students' actual use of English online educational websites.

III. METHODOLOGY

Participants

In the current study, following the design of the questionnaire, it was issued to 218 students at the Pahang Campus of UniversitiTeknologi MARA. In all, 212 students responded by sending back the survey, resulting in a response rate of 97%. According to Hoe [85], sample size should be a minimum of 200 for adequate statistical power for data analysis. Of that number, 122 were male students, and 90 were female students; all were aged 18 to 21. At the time, Open and Distance Learning (ODL) was being implemented and every student was located in their hometown because of the Movement Control Order (MCO) enforced by the government of Malaysia. In terms of area, 41.0% of the students were in rural locations when they pursued ODL, 40.1% of students pursued ODL activities while based in suburbs and 18% of students were in urban settings. Social media or web 2.0 (for example, Facebook, Instagram, Youtube, Twitter, WhatsApp and Telegram) and Learning Management Systems (for example, Google Classroom, U-Future and Microsoft teams) were utilized most frequently as ODL teaching approaches.

Pre-test

According to Presser et al. [86], when researchers use survey questionnaires as tools for data collection, the pre-test is essential in order to discover any flaws with the questionnaire ahead of time, such as unpleasant thoughts or question wording. Furthermore, Zikmund et al. [87] argued that in pre-testing, questions developed by the researchers should include the opinions of experts and practitioners. It is necessary to incorporate experts' views in examining and deciding on any confusing aspects involved in conducting computations of factors. Meanwhile, expert views are required to examine and decide mystifying items while computing variables whilst practitioner opinions are important to the sensitivity of the elements [88]. The current research included professors who are experts in the Management Information Systems field, while practitioners were students involved in online learning. Professors who are professionals in the subject of Management Information Systems were involved in the current study, while the practitioners were undergraduates who were experiencing online learning.

Three data collection phases were involved in the current research: pre-testing, the validity of the instrument, and the pilot study. These were used in ascertaining whether the question topics responded to a respondent's word choice and culture, especially in the case of steps taken to assess attitude and behavior [88]. In pre-testing, twenty reviewers, who included experts and practitioners, conducted an examination and evaluation of the questionnaire. The objectives were that its validity was ensured and it was able to measure the topics and themes as intended. Pre-testing was done by three academics at Malaysian universities who had expertise in Management Information Systems, and seventeen students pre-tested the instrument. The experts and practitioners were chosen using a judgment sampling method, which took into account their ability in the English and Malay languages [89].

Emails and WhatsApp messages were used to contact experts and practitioners, in order to send invitations asking that they take part in the research and examine the questionnaire. They were requested to offer feedback, highlighting cases where a question lacked clarity or was hard to respond to. The survey was made accessible to the reviewers in Malay and in English so that the appropriateness of the terms chosen and translated was ensured. Reviewers could then make a comparison between the items and the survey, which had originally been in English [90].

Then the instrument was improved by modifying it in response to the inputs and comments of the reviewers. The questionnaire was then replaced with a new version. The reviewers were evaluated (1) the suitability of the wording, (2) the clarity of the items, (3) the number of items needed to measure the constructs, and (4) the questionnaire organization. In addition, the respondents kept track of how long it took them to finish the survey. They were given two weeks to respond to the questionnaire. The instrument was reviewed by the reviewers, who provided feedback and comments. In terms of collecting primary data, the instrument demonstrated acceptable reliability and validity.

Validity

Validity, in the view of Hair et al. [91], refers to the accuracy with which an idea of excitement is depicted on a scale or sequence of assessments. The face validity, content validity, and concept validity categories were used in this study. Face validity refers to the extent to which the instrument items address and evaluate relevant sections of the examination area. The degree to which information acquired via a certain instrument corresponds to the ideal substance to be estimated is referred to as content validity [92]. Construct validity is the degree to which the practical variable identification reflects a true theoretical meaning. The researcher interviewed some experts in Management Information Systems to check the face validity. Similarly, the researcher enlisted the help of several academic lecturers from Malaysian universities to verify the content validity. As a result, the underlying poll's face and substance legitimacy were improved.

Factor Analysis

According to Rield et al. [93], a pilot study is designed to improve the materials, systems, and parameters used in a genuine investigation and also to improve the instrument's validity and quality [94]. Following the completion of the pre-testing phase, the item statement was modified in response to the reviewers' suggestions. A total of 212 students from the UniversitiTeknologi MARA Pahang Branch participated in the cross-sectional study conducted by the researcher. The analysis and evaluation of the items utilized in assessing particular constructs were performed using Exploratory Factor Analysis (EFA). Factor analysis was used to establish construct validity. The concept of components that are defined as practicable is supported by this method. It determines which elements are most appropriate for each component [95].

The KMO test was employed to determine the appropriateness of sample size for analysis which KMO value close to unity is preferred. The feasibility of the factor analysis stability was estimated using Bartlett's test. Construct validity was determined using factor analysis. This method backs up the idea of components that are defined as feasible. It identifies the most appropriate elements for each component [96,95]. The KMO test was used to

determine the appropriateness of sample size for analysis, while the Bartlett's test was employed to check the likelihood of factor analysis stability. The construct validity of the instrument was then determined, as well as its potential for usage in an online learning environment.

IV. RESULTS AND DISCUSSION

Exploratory Factor Analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.932
Bartlett's Test of Sphericity	Approx. Chi-Square	11289.367
	df	1225
	Sig.	.000

Table 1

KMO was conducted to determine the adequacy of the sample size for analysis. Meanwhile, Bartlett's Test of Sphericity assumes that items are correlated. Table 1 indicates that the sampling adequacy was excellent (KMO = 0.932) as it was greater than 0.6 [97], while Bartlett's Test of Sphericity was highly significant, at $p < 0.000$ [98].These results indicate that the data are sufficient to proceed with the data reduction procedure in EFA.

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	12.826	25.652	25.652
2	8.510	17.020	42.671
3	6.937	13.875	56.546
4	2.579	5.159	61.704
5	2.318	4.636	66.340
6	2.172	4.344	70.684
7	1.672	3.344	74.028
8	1.322	2.644	76.672

Table 2

Extraction Method: Principal Component Analysis

Table 2 shows the EFA procedures have extracted eight components and would be considered for further analysis based on the computed Eigenvalue. An eigenvalue range of 1.322 to 12.826 was found. According to [99], components with eigenvalues above 1.0 are extracted into different components. Component one showed a total variance explained of 25.652%. Subsequent values were as follows: component two was 17.020%, component three was 13.875%, component four was 5.159%, component five was 4.636%, component six was 4.344%, component seven was 3.344%, and component eight was 2.644%. To measure this construct, the total variance explained is 76.672%, which is acceptable because it exceeded the minimum 60% [97].

Rotated Component Matrix[a]								
	Component							
	1	2	3	4	5	6	7	8
PE1 I find ODL useful in my studies.	.675							
PE2 The use of ODL allows my jobs to be accomplished more effectively.	.694							
PE3 Using ODL increases my productivity.	.727							
PE4 Using ODL chances of getting a good grade.	.636							
PE5 Using ODL would improve my learning performance.	.735							
EE2 It is easy for me to become skillful at using ODL.	.726							
EE3 I find ODL easy to use.	.613							
EE4 Learning to operate ODL is easy for me.	.665							
EE5 I find that learning time using ODL is very flexible.	.587							
HM1 Using ODL is fun for me.	.870							
HM2 I find the use of ODL entertaining.	.875							
HM3 I find the use of ODL enjoyable.	.862							
HM4 The actual process of using ODL is pleasant for me.	.828							
HM5 Compared to face-to-face class, ODL is really enjoyable.	.679							
H1 ODL is advantageous in all teaching and learning activities.	.714							

H2 It is now my habit to utilize ODL.	.715							
H3 I will use ODL with pleasure.	.792							
H4 I will find that learning using ODL will be a good idea.	.829							
H5 I am positive toward the use of ODL.	.710							
TRA1 Lecturers allow me enough time to study and become familiar with using ODL for teaching and learning activities.		.696						
TRA2 The lecturer gives opportunities for each student to express his or her views equally.		.819						
TRA3 When I have a different opinion from my lecturers, they provide effective guidance.		.836						
TRA4 When I cannot answer questions during ODL, the lecturer encourages me.		.854						
TRA5 The questions that were raised by the lecturer in ODL are open, which can lead to discussion.		.837						
TRA6 The lecturer encourages and praises the students during ODL.		.884						
TRA7 The lecturer's questions help me to understand the course.		.843						
TRA8 Lecturers help if I encounter problems with the work and assignments.		.842						
TS1 The use of ODL technology obligates me to study and submit more assignments than I am able to manage.			.731					
TS2 The use of ODL technology obligates me to fit self-study and assignments into a tightly controlled schedule.			.756					
TS3 Adapting to ODL technology forces me to alter my habits.			.769					
TS4 I undertake more self-study and assignments, since ODL technology is highly complex.			.791					
TS5 For me, understanding and using ODL technology takes a long time.			.847					
TS6 For me, understand and using ODL technologies is often too complicated.			.862					
TS7 I do not know enough about ODL technology to handle it satisfactorily.			.802					
TS8 It is stressful to accurately understand the functionality of ODL.			.868					
TS9 ODL is very complex and takes lots of my time and mental effort.			.868					
TS10 The use of ODL is difficult and I feel stressed after using it.			.807					
BI4 My prediction is that I will utilize ODL in the following semester.				.650				
BI5 I know that I am going to utilize ODL in the following semester.				.802				
SI1 People who are important to me think that I should use ODL.					.659			
SI3 People who influence my behaviour would recommend using ODL.					.748			
SI4 People who are important to me influence my decision to use ODL.					.798			
PV1 ODL is a good value for the money I pay as my study fee.						.746		
PV3 The cost of using ODL is reasonable.						.705		
PV4 I can save money using ODL.						.709		
FC1 I have the resources necessary to use ODL (e.g: wifi/laptop/computer).							.501	
FC2 I have the knowledge necessary to use ODL (e.g: basic computer and online learning platform knowledge).							.453	
AU1 I use ODL very often.								.511
AU2 I use ODL quite often for academic purposes.								.563
AU3 I spend a lot of time on ODL for academic use.								.513

Note: Component 1 = Perception towards ODL; Component 2 = Teaching-Related Aspect; Component 3 = Technostress; Component 4 = Behavioral Intention; Component 5 = Social Influence; Component 6 = Perceived Value; Component 7 = Facilitating Conditions; and Component 8 = Actual Use.

Table 3: The Number of Components

The rotated component matrix obtained is shown in Table 3. The table shows each component has a certain number of items with their respective factor loading. In this study, the only item having factor loading above 0.60 will be retained since it indicates the usefulness of items in measuring the particular construct [97]. As a result, the rotated component matrix shows that all 48 items have a factor loading above 0.60. However, two-items from Facilitating Conditions construct (FC1 and FC2), and three-items from Actual Use construct (AU1, AU2 and AU3) indicated the factor loading of the items less than 0.60. The Facilitating Conditions items, which are "I have the resources necessary to use ODL (e.g., wifi/laptop/computer)" and "I have the knowledge necessary to use ODL (e.g., basic computer and online learning platform knowledge)", indicate that respondents have knowledge that can facilitate their management of ODL conditions. Thus, both items from Facilitating Conditions should be taken into account, as only these items gave accurate measurements of the constructs. Furthermore, three items in the Actual Use construct, which are "I use ODL very often", "I use ODL quite often for academic purposes" and "I spend a lot of time on ODL for academic use", describe the actual use respondents made of ODL. Therefore, all the three items from Actual Use should be taken into account

as only these items gave accurate measurements of the construct.

Surprisingly, four constructs overlapped, namely Performance Expectancy (PE), Effort Expectancy (EE), Hedonic Motivation (HM), and Habit (H). These constructs were seen to overlap in component 1, with factor loadings between 0.610 and 0.875. The overlapping in this measurement illustrates that the four constructs measured the same object. Based on the construct analysis, all the 19 items (refer to Table 3) appeared to be particularly important in measuring respondents' perceptions toward the implementation of ODL. Thus, the first component was renamed "Perception toward ODL". However, to investigate this assumption, Cronbach's alpha analysis was conducted to measure its reliability. Another five components were named Teaching-Related Aspects (Component 2), Technostress (Component 3), Behavioral Intention (Component 4), Social Influence (Component 5) and Perceived Value (Component 6).

Internal Reliability

Component	Name	No. of Elements	Cronbach's Alpha
1	Perception toward ODL	19	0.974
2	Teaching-Related Aspects	8	0.957
3	Technostress	10	0.946
4	Behavioral Intention	2	0.787
5	Social Influence	3	0.857
6	Perceived Value	3	0.848
7	Facilitating Conditions	2	0.840
8	Actual Use	3	0.899

Table 4

Table 4 show the Cronbach's Alpha values for internal reliability test. The result indicates that eight components have Chronbach's Alpha values more than the threshold value of 0.7. This result indicates the strength of items holding together in measuring specific constructs. Perception towards ODL with 19-items cronbach's alpha was 0.974, Teaching-Related Aspect with 8-items cronbach's alpha was 0.957, Technostress with 10-items cronbach's alpha was 0.946, Behavioral Intention with 2-items Cronbach's Alpha was 0.787, Social Influence with 3-items Cronbach's Alpha was 0.857, Perceived Value with 2-items Cronbach's Alpha was 0.848, Facilitating Conditions with 2-items Cronbach's Alpha was 0.840 and Actual Use with 3-items Cronbach's alpha was 0.899. Therefore, we can conclude that the instruments are highly reliable.

V. CONCLUSION

The major contribution of this research involves measuring the construct of the UTAUT2, especially in the context of education. Two additional constructs namely teaching-related aspects and technostress were included into the existing UTAUT2 model, and the findings showed that the research instruments were valid and reliable. Eight components of UTAUT2 had high Cronbach's alpha values, based on the configuration formulated from the EFA findings. Bartlett's Test also produced a significant result, while KMO was more than 0.6, which indicates a good result. The factor loading was also above the minimum threshold of 0.6. The 48 items devised for this research were used to measure all the findings. Therefore, all the measurement items were appropriate in terms of validity and reliability. The scale development and present study validation indicated that the validated instrument is consistent and stable across samples. The implication of this research is it allows the UTAUT2 to be included in future studies to examine online learning behaviour.

The current research is limited in certain areas. First, the study has outlined the specific components with named assigned accordingly matched with the proposed framework in this study's earlier stage. However, Exploratory Factor Analysis indicates that four components (Performance Expectancy, Effort Expectancy, Hedonic Motivation, and Habit) measure the same thing. Thus, the researchers renamed Component 1 as Perception toward ODL.

This indicates that there were weaknesses in the instrument development of the four constructs, resulting in multicollinearity issues. Therefore, further studies conducted on the actual sample must undergo instrument modification to ensure there is no overlap in the measurement of the four constructs. Second, this study's respondents were limited to undergraduate students of UniversitiTeknologi MARA (UiTM). Therefore, this study's results could not be generalized for all the students at other universities in Malaysia. Future researchers should consider the possibility of significant differences in terms of culture and support systems that are adopted by other universities when implementing online learning.

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