Exploring Factors that Influence the Continuation of Hybrid Learning in Higher Education

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Abstract. As the world continues to grapple with the COVID-19 pandemic, higher education institutions have been forced to adapt and innovate in order to continue providing quality education to their students. One of the most significant changes has been the adoption of hybrid learning models, which combine traditional in-person classroom instruction with online learning technologies. While hybrid learning has been widely embraced during the pandemic, there is now a growing need to explore the factors that will influence its continuation beyond the pandemic. This research has employed seven independent variables which include quality of the content, social interaction, perceived autonomy, perceived competence, perceived relatedness, perceived usefulness and intrinsic motivation towards the continuance intention of hybrid learning among students in higher education. This study has collected data from 130 respondents by answering a set of questionnaires. The analysis result revealed that only three independent variables which are quality of the content, perceived usefulness and perceived competence have significant effect towards continuance intention of hybrid learning among students in the higher education. The result of this study may contribute impactful suggestions and insights to the policymaker and educators in the higher education of Malaysia for striving for a better education system.

Keywords: Hybrid learning, Continuance intention, Higher education, Perceived competence, Perceived usefulness

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1 Introduction

COVID-19 has spread almost worldwide [1], which has caused fear, anxiety and concern, disrupting every area of human life, including education around the world [2]. The virus has forced all systems, especially education systems, to move from physical to online through a rapid transition to distance education to reduce the impact of the virus on all stakeholders. To better control and avoid the spread of the virus, online teaching has become a necessary strategy to resume normal teaching during the COVID-19 pandemic [3], and many universities taught online during COVID-19 for safety reasons [4].

Each did their best to cope with the different closures with existing learning methods such as mobile learning, e-learning and flipped classrooms [5]. Before the great

popularity of COVID-19, e-learning was considered an informal activity, but just after the closure it was considered a virtual necessity for the continuing education system. This online teaching and learning were followed by many educational applications after COVID-19, such as Zoom, Google Meet, Google Classroom, etc. [6]. These applica- tions are very useful to continue the online teaching and learning process, even after the pandemic. The rapid shift to virtual environments also poses some challenges for learners and instructors, as found in a study conducted in the US where many teachers began to transform their traditional (face-to-face) teaching to an online environment [7], while facing some challenges [8]. Online teaching addresses issues related to geo- graphical distance and makes the teaching process unproductive for many other reasons [9]. However, due to the sudden emergence of COVID-19, most of the teachers are facing several problems and challenges such as lack of experience in online tutoring, pre-preparation or support of educational technology as it requires lesson plans, differ- ent teaching materials such as audio, video materials and technical support [10].

Hybrid learning is defined as distance learning with the help of electronic devices, e.g., tablets, smartphones, laptops, which require an internet connection [11]. However, research has shown that countries need to be prepared for education in situations such as pandemics, where the global spread of COVID-19 led to the suspension of over 850 million students worldwide, disrupting the original lesson plans of schools in all coun- tries and regions [3]. In pandemic situations, governments, institutions and parents do not allow students to attend school [11], which alternates with a shift from traditional to online education [12]. Online libraries, television broadcasts, guides, resources, lec- tures and video channels are available online in at least 96 countries [13]. Over the years, higher education associations have gradually evolved to offer online courses as a key aspect of their curriculum, which gives a wide range of audiences, listeners and participants the opportunity to improve, increase and enhance learning in educational formats [14]. Most of the important elements of an online course are participant en- gagement and evaluation of the course, at a low cost and budget. One advantage of online courses is that it gives the participant community strong opportunities to connect, towards engagement, participation, integration and collaboration in course activities [15], bringing innovation to learning. Hence, this study is aimed to investigate the fac- tors influencing continuance of hybrid learning in Malaysia's higher education.

2 Literature Review

2.1 Continuance Intention

Continuance intention refers to the behavioral perspective that pupils adopt on a regular basis. The following conclusions are based on empirical research conducted by [16]. First, both extrinsic and intrinsic motivation has a substantial direct influence on hybrid learning consumers' intention to continue using the course. Second, hybrid learn- ing quality of content has a direct impact on perceived usefulness and an indirect impact on the intention of continuous use through perceived usefulness [17]. Social interaction has no effect on perceived usefulness. Independent design has a direct impact on perceived usefulness and an indirect impact on continued usage intention via perceived

usefulness. Third, the perceived competence has a direct impact on perceived usefulness and intrinsic motivation, and it has an indirect impact on long-term use intention through these factors [18]. Perceived autonomy and perceived relatedness, on the other hand, have no substantial impact on intrinsic motivation [19].

2.2 Intrinsic Motivation

Intrinsic motivation refers to the fact that participating in an activity is entirely motivated by one's own interest or belief in the activity [20]. Users who are interested in learning hybrid learnings appreciate the process and are motivated to continue using hybrid learnings. Previous research has shown that intrinsic motivation (such as enjoy- ment, concentration, and perceived interest) is a key predictor of users' desire to use certain technology on a consistent basis [19, 21]. When someone is motivated solely by interest, acceptance of a challenge, enjoyment of the activity, etc., they are said to be motivated intrinsically. According to research, intrinsic motivation promotes greater perseverance, achievement, and enjoyment [22].

H1: There is a significant relationship between intrinsic motivation and continuance intention of hybrid learning in higher education.

2.3 Perceived Autonomy

Perceived autonomy referred to the inner psychological requirements of hybrid learning users who are keen to study on their own. According to self-determination theory, perceived autonomy in activities increases intrinsic motivation. This suggested that intrin- sic motivation is likely to be positively associated with learner autonomy in hybrid learning; that is, users can learn independently based on their interests and hobbies, which reflects the form of intrinsic motivation [19]. Furthermore, autonomy is one of the hybrid learning platform's design elements, referring to the extent to which the hybrid learning platform enables users' autonomous learning, such as independently creating learning plans, self-testing and evaluation, and studying anytime and anywhere. A high level of autonomy supports users in making the most of their fragmented time to study autonomously, improving learning efficiency, and increasing their sense of the utility of hybrid learnings [23].

H2: There is a significant relationship between perceived autonomy and continuance intention of hybrid learning in higher education.

2.4 Perceived Relatedness

When using hybrid learning, users' desire to feel connected with others or a sense of belonging is referred to as perceptual relationships [22]. The relational demands of hy- brid learning users represent their desire to feel connected to classmates, teachers, co- workers, managers, friends, and other significant people, as well as to receive their sup- port. Meeting this desire is thought to influence motivation [22]. As a result, perceived relationships, like perceived autonomy and perceived competence, can have an impact on intrinsic motivation. Furthermore, when taking hybrid learning, students expect to

maintain relationships with their lecturers, classmates, friends, and other significant people.

H3: There is a significant relationship between perceived relatedness and continuance intention of hybrid learning in higher education.

2.5 Perceived Usefulness

It has been discovered that perceived usefulness is the primary motivator of information system users' happiness and motivation to use continuously [18]. As a result, the perceived utility will influence learners' satisfaction and inclination to utilize it indefinitely. The perceived usefulness of hybrid learning is determined by how much learners' learning performance improves after using hybrid learning. The total evaluation or feel- ing of users after utilizing a hybrid learning is referred to as satisfaction evaluation. If consumers reduce their performance after taking a hybrid learning course, they will have "bad sentiments," which will impair their inclination to continue using it.

Past studies concluded that perceived usefulness and hybrid learning are the key elements that encourage students to continue using online training. According to [18]'s research, perceived usefulness and hybrid learning are the key elements that encourage students to continue using online instruction.

H4: There is a significant relationship between perceived usefulness and continuance intention of hybrid learning in higher education.

2.6 Perceived Competence

According to the study, competence refers to a person's desire to achieve significant results and feel powerful or in control [22], suggested that people are more adept at interacting with their surroundings and carrying out tasks, much like self-efficacy. Since perceived competence is a measure of students' motivation to master hybrid learn- ing strategies and their assurance of being proficient in using muddy river learning strategies and coping with numerous learning tasks, the study's findings revealed that perceived competence was significantly and positively related to willingness to learn. This demonstrates that students have high expectations for their ability to master hybrid learning and develop their skills.

H5: There is a significant relationship between perceived competence and continuance intention of hybrid learning in higher education.

2.7 Quality of the Content

Quality of content can be defined as the course quality provided by the hybrid learning platform, which has two dimensions: course teaching quality and auxiliary learning. The teaching quality includes video recording quality, the rationality of content organ- ization, the detailed degree of content introduction, the difficult points of the course, and so on. Learning aids include appropriate video duration, online assessment, re- peated learning, course assignments and activities, and so on. When users use hybrid learning services, if they believe that the course content is rich, of high quality, and can be updated on a timely basis, they will believe that the course content is useful to them,

improving their awareness of usefulness and the level of expectation confirmation [16,21].

Past research demonstrated that there is a significant correlation between quality of content and continuance intention toward hybrid learning, and that students can more simply and quickly acquire a wide range of learning resources when they participate in hybrid learning. Interactive resources can aid students in gaining more knowledge in mixed learning environments. Video, audio, text, and image-based course materials can support students' participation in hybrid learning and encourage active learning [24].

H6: There is a significant relationship between quality of the content and continuance intention of hybrid learning in higher education.

2.8 Social Interaction

Social interaction is defined as the user interaction behavior in hybrid learning, which includes: 1) commenting on course content, praising it, and other interactions with the content; 2) discussing and communicating with teachers or classmates via tools such as the online platform, QQ, WeChat, and email; and 3) realizing the social and interactive dissemination of course content through forwarding and sharing. Because hybrid learn- ing learners and teachers are separated in time and space and are learning inde- pendently, they expect to connect with teachers or other learners and receive help in order to improve their opinion of the value of hybrid learning.

Past studies concluded that students are more likely to select and use learning tools with a positive user experience, increasing the possibility for active learning. Easy-to-use assessment tools can also make it easier for teachers to use them and can aid in student self-evaluation. The entire learning intervention process can be supported by learning tools with individualized learning capabilities, which can also assist teachers and students in keeping track of their progress [25]. For teachers and students, online education systems offer a simple user experience and support both online and in-person training. Because there is no more interaction online than there is in traditional class- room settings, the study on the social interaction and continuance intention toward hybrid learning is invalid. Additionally, if the class is held online, there is no opportunity for the teacher to contact and interact with the students, answer their questions, or clarify their uncertainties in a timely manner.

H7: There is a significant relationship between social interaction and continuance intention of hybrid learning in higher education.

3 Research Methodology

Hair, Black, Babin & Anderson [26] recommended that the minimum sample size required to perform statistical analyses is to have at least five times as many observations as the number of variables to be analyzed and the more adequate sample size would be a 10:1 ratio. In this study, the number of structural paths was 7 which was directed at the endogenous variable of continuance intention construct. Hence, the suggested minimum sample size for this study should be at least 7 x 10 = 70 samples. A total of 130 completed questionnaires have been collected and keyed into SPSS software. Then, the model is further analyzed

by using Partial Least Square Structural Equation Modeling (PLS-SEM 4.0.8.4). A convenience sampling method was applied in this study. The seven independent variables included in this study are quality of content, social interaction, perceived autonomy, perceived competence, perceived relatedness, perceived usefulness and intrinsic motivation. The dependent variable of this study is continuance intention of hybrid learning. The measurement items of all variables are adopted from [19].

4 Results and Discussions

Our result revealed that 60 (46.2%) men and 70 (53.8%) women respondents were involved in this study. 99 (76.2%) of the respondents are between the ages of 21 and 23, followed by 26 (20%) of the respondents between the ages of 18 and 20, and 5 (3.8%) of the respondents are between the ages of 24 and 26. The bulk of 108 respondents (83.1%) have undergraduate (Bachelor's degrees), followed by 12 respondents (9.2%) with foundation or diplomas and 6 respondents (4.6%) with postgraduate degrees. Four respondents (3.1 percent) have a secondary or higher level of education (SPM/STPM).

Table 1 summarized the convergent validity assessment result. The suggested cut-off values for loadings, composite reliability (CR), Cronbach's alpha (CA) and Rho_A should be above 0.7 and average variance extracted (AVE) should be above 0.5. All variables have fulfilled sufficient convergent validity and reliability as shown in Table 1. Next, discriminant validity was assessed by observing the HTMT ration as suggested by [27]. All HTMT values were below the conservative cut-off of 0.85 [28]. Hence, we can conclude the establishment of discriminant validity has been fulfilled. The over- view of the model of this study is shown in Figure 1.

The R^2 value of the model is 0.678 which indicates 67.8% of total variation in the dependent variable can be explained by the variation in the seven independent variables. The hypothesis testing result is summarized in Table 2. The three hypotheses out of the total SEVEN hypotheses showed significant relationship towards the continuance intention of hybrid learning in higher education of Malaysia.

Table 1: Convergent validity assessment

Model construct	Items	Loadings	AVE	CR	CA	Rho_A
Continuance Intention (CI)	CI1	0.753	0.718	0.910	0.868	0.884
	CI2	0.885				
	CI3	0.859				
	CI4	0.885				
Intrinsic Motivation (IM)	IM1	0.920	0.856	0.922	0.832	0.835
	IM2	0.931				
Perceived Autonomy (PA)	PA1	0.791	0.607	0.861	0.785	0.794
	PA2	0.737				
	PA3	0.763				
	PA4	0.823				
	PC1	0.863	0.699	0.903	0.856	0.858
	PC2	0.864				

Model construct	Items	Loadings	AVE	CR	CA	Rho_A
Perceived Competence (PC)	PC3	0.811				
	PC4	0.805				
Perceived Relatedness (PR)	PR1	0.871	0.703	0.877	0.802	0.873
	PR2	0.858				
	PR3	0.784				
Perceived Usefulness (PU)	PU1	0.831	0.666	0.889	0.834	0.839
	PU2	0.821				
	PU3	0.787				
	PU4	0.824				
Quality of the Content (QTC)	QTC1	0.869	0.681	0.895	0.843	0.848
	QTC2	0.851				
	QTC3	0.816				
	QTC4	0.759				
Social Interaction (SI)	SI1	0.836	0.650	0.848	0.731	0.743
	SI2	0.747				
	SI3	0.833				

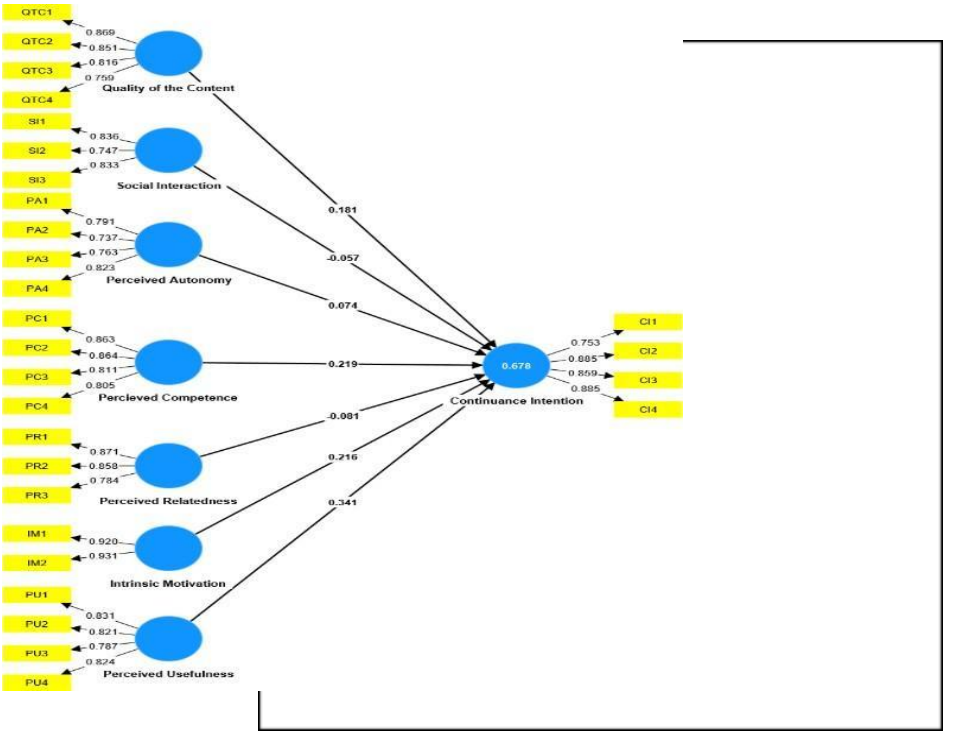

Figure 1: Research framework

Table 2: Hypothesis testing results

Relationship	Std Beta	Std Error	t-value	LL	UL	Decision
Intrinsic Motivation -> Continuance Intention	0.216	0.157	1.375	-0.098	0.481	Not supported
Perceived Autonomy -> Continuance Intention	0.074	0.092	0.807	-0.095	0.268	Not supported
Perceived Relatedness -> Continuance Intention	-0.081	0.070	1.161	-0.199	0.073	Not supported
Perceived Usefulness -> Continuance Intention	0.341	0.129	2.642**	0.096	0.599	Supported
Perceived Competence -> Continuance Intention	0.219	0.088	2.489**	0.042	0.385	Supported
Quality of the Content -> Continuance Intention	0.181	0.072	2.495**	0.039	0.325	Supported
Social Interaction -> Continuance Intention	-0.057	0.090	0.628	-0.235	0.122	Not supported

Our result revealed that perceived usefulness, perceived competence and quality of the content have significant relationship towards continuance of hybrid learning in Ma- laysia's higher education. This is due to the notion of perceived usefulness, which is the use of the senses to gather impressions that are effective, significant, practical, and impactful to hybrid learning. According to a study conducted by [29], learners' perceptions of their utility boosted interactions that promoted active learning and engagement. Learners who understand how adopting a hybrid learning approach can improve or en- hance themselves, experience the usefulness of the content and methods learned, and improve their creative thinking, collaborative work, and problem-solving skills.

It also concluded that perceived competence and intention to study more were positively and significantly correlated. Additionally, perceived competency is a measure of students' motivation to master the mixed learning strategy and their assurance that they are adept at using the Hun River learning strategy and juggling numerous learning tasks. This shows that students anticipate becoming skilled in hybrid learning and en- hancing their skills.

Our result also showed that the continual purpose of hybrid learning can be influenced by the content's quality. The intention to continue using hybrid learning is significantly influenced by the caliber of the content. For a higher level of autonomy in hybrid learning, students can quickly and conveniently download a variety of learning resources. During the creation of hybrid learning, many students claim that elements like the learning environment and participatory behaviors also have an impact on how well it is received. The depth and breadth of hybrid learning are determined by the level of interaction amongst learners, which is facilitated via face-to-face interactive discus- sion sessions. Additionally, the learning environment can effectively encourage stu- dents' enthusiasm and interest in their studies.

5 Conclusion

The adoption of hybrid learning is significantly influenced by learning platforms and course offers. The effectiveness of hybrid learning for learners is mostly determined by the convenience of the hybrid learning platform and the value of the hybrid learning courses. In hybrid learning, learners can easily and rapidly download multiple learning resources to achieve a higher level of autonomy. Many students who have participated in hybrid learning report that elements like the learning environment and interactive behavior have an impact on how well it is received. The depth and breadth of hybrid learning are determined by the level of interaction amongst learners, which is facilitated via face-to-face interactive discussion sessions. Additionally, the learning environment can effectively encourage students' enthusiasm and interest in their studies. Lastly, the findings of this study may benefit the policymaker and government agencies in the pol- icy making process.

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