A Conceptual Study of Undergraduates' Acceptance towards Hyflex Learning Approach

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Abstract. The hybrid-flexible (Hyflex) education approach has evolved in line with the transformation of the higher education landscape. This approach combines the elements of face-to-face and online learning. It is flexible for students to choose their participation in class whether attending physically, remotely or through a combination of both. Although Hyflex education provides flexibility and facilitates their presence in class, some issues may arise such as the feasibility of Hyflex implementation, and the lack of engagement and interaction between students, peers, and instructors. Furthermore, this could affect students' academic performance due to demotivation, and mental disorders. Another issue is limited access to resources and technology, reliability of internet access, and the appropriate devices for online learning that can cause disparities in learning experiences among students. Therefore, this conceptual paper aims to explore the factors affecting undergraduates' acceptance of Hyflex learning using the Technology Acceptance Model (TAM). There are two constructs that will be applied for this study which are perceived usefulness and perceived ease of use. In conclusion, this study is expected to provide further insight into the Hyflex implementation in Malaysia and the necessary improvement needed to ensure student engagement and performance can be achieved with better pedagogical skills from the instructors.

Keyword Hyflex Learning, TAM Theory, Engagement, Technology

1 Introduction

The current scenario in the academic world has changed the teaching and learning process to a greater level that involves technological advancement. This has changed the interactions between educators and students from face-to-face to online-based learning [1] that considered more effective and interesting. In order for education to continue, effective learning management systems should be prioritised to ensure online learning practices can be continued by utilising newer methods like synchronous lessons delivered through videoconferencing software

(VCS) [2-3]. Online learning education has become a popular method of interaction between students and professors in obtaining course material virtually. In Malaysia, there are significant opportunity to achieve the first outcome in the National e-learning Policy (Dasar e-Pembelajaran Negara or DePAN. Hence, higher education institutions (HEIs) have taken the initiative to introduce blended and hybrid learning among universities to ensure that students can have better teaching and learning platforms since the pandemic struck the nation in 2020.

Furthermore, by introducing these platforms, academic performance, and resilience among students throughout the pandemic, the heavy workload at the colleges due to various types of learning delivery methods and technology systems can be maintained [4-6]. However, due to some limitations in attending physical or online classes among students, HEIs have introduced the Hyflex learning method which students can have a flexible mode of learning with a combination of physical and online learning according to the student's pace of learning and availability. Even though it is a good initiative to ensure the teaching and learning process is ongoing, the students would face limitations in adapting to Hyflex learning such as work effort, technology infrastructure, and cost.

According to Murphy et al. (2020), Hyflex learning gave extra burden among students they need to put in a lot of effort as compared to the traditional method. Furthermore, as stated by Colfer et al. (2021), the technology used in Hyflex classes was competent and dependable, technical problems were uncommon and students who have outdated computers or inadequate home internet access feel at a disadvantage when learning online [8-9]. This is also can lead to stress and burden to the students because several universities have reduced the academic calendar or removed semester breaks [10- 11].

The impact of Hyflex learning on student academic performance can vary depending on individual students' adaptability, motivation, and access to necessary resources [1]. It stimulates the need for students to have proper support and effective communication to improve their academic performance. Thus, this study aims to have an overview and understanding of the factors influencing Hyflex learning using the Technology Acceptance Model approach among undergraduates specifically on perceived usefulness and perceived ease of use. The outcome of this study is that further understanding and awareness of the acceptance of Hyflex learning can be shared with the public in promoting flexibility of learning in Malaysia. Furthermore, the teaching and learning process can be further improved specifically in the technological support and motivation from the government as well as the education institutions.

2   Literature Review

2.1 Technology Acceptance Model

Technology Acceptance Model (TAM) is one of the most dominant frameworks used to explore the acceptance of technology. It was developed by Davis in year 1985 as a contribution to the information systems field to discover the reasons behind the acceptance of users on computer-based information systems. TAM is an

adaptation of Theory of Reasoned Action (TRA) that was originated by Fishbein and Ajzen in year 1975 [12] as TRA predict individual intentions to engage particular behaviours. According to Bagozzi et al. (1992), there are three important factors towards acceptance of computer technologies which are attitudes, beliefs and intentions. Two specific beliefs tested by the basic TAM included perceived usefulness (PU) and perceived ease of use (PEOU) [14]. Individuals' beliefs influence attitudes and as a result, they can change their intention to use or not a certain technology [15]. Venkatesh and Davis (1996) established the final version of TAM that eliminates the attitude construct when they found that both PU and PEOU directly influence intention.

Various researchers have used TAM to accomplish their studies as it signifies a feasible testing tool in assessing the information systems acceptance. However, there is a lack of studies applying TAM to the use of Hyflex learning because it is still new. In order to evaluate various learning technologies in the learning and teaching area, Granic and Marangunic (2019) found that based on 71 relevant studies ranged between year 2003 and year 2018, TAM and its various versions representing a genuine model. This model has proven that two core beliefs, PU and PEOU are factors that influence individuals' intentions to accept learning with technology [17]. Similarly, both antecedents are the factors that influence higher education students' satisfaction in using Learning Management System (LMS) in their blended learning courses [18] and also the factors that influence intention to use Mobile Library Applications [19].

Hence, this study will adapt the TAM version of Venkatesh and Davis (1996) to identify the factors that affect the acceptance of Hyflex learning among undergraduates. Both PU and PEOU play crucial roles in influencing the acceptance of Hyflex learning in Malaysia. In general, new technology will be accepted by users once they figure out its ease of use and usefulness are positive as anticipated by TAM [20]. Students will be interested to engage with the technology and explore its functionalities if they find Hyflex learning easy to be used. A user-friendly and intuitive online platform can contribute to this perception. On the other hand, if students perceive Hyflex learning as useful and beneficial to their learning experience, they might be more interested to actively engage and participate in the different learning modalities offered.

Perceived Ease of Use
Perceived ease of use (PEOU) refers to the extent to which individuals believe that using a particular technology is free from effort [14]. It relates to how individuals assess the difficulty of the technology. The benefits gained might occasionally be offsetted by the efforts needed to learn and use technology [21]. Thus, user-friendly technologies are considered as more valuable ([14] [22]). In the context of Hyflex learning, it pertains to how easy students perceive it to navigate and interact with the online learning platforms and resources. For example, if students perceive Hyflex learning as easy to use, they are more presumably to accept and embrace this mode of learning. This perception can be influenced by factors such as user-friendly interfaces of online learning platforms, clear instructions and intuitive navigation.

Furthermore, the PEOU of online learning during the pandemic can assist students to overcome the drawbacks of online learning, enhance students' confidence [20] and promotes positive attitude towards Hyflex learning during post pandemic. However, there is limited research on PEOU towards Hyflex learning. Researchers have found that individuals' willingness to endlessly use online learning is indirectly influenced by self-awareness through PEOU, perceived control behaviours and attitudes toward online learning [20]. Previous studies have also found that PEOU has been proven to be the main determinant of acceptance and use of online learning platforms [23- 25] Perceived Usefulness (PU)

One of the most prevalent and widely acknowledged elements for embracing a model-based technology is perceived usefulness (PU) which is employed in many acceptance and adjustment models for new technology [26]. PU assesses how much an individual agrees that implementing a specific method would improve their capability to carry out their work or make their activities easier and more productive. In this study, PU plays a crucial role in deciding how well-liked Hyflex learning is. It describes the degree to which people think that utilizing the Hyflex technique will improve their educational goals and learning experience. If people think Hyflex will improve their knowledge, retention and application of the course information, they are more likely to consider it useful.

In many cases, Hyflex's online component gives users the access to a multitude of digital resources, including multimedia content, interactive activities, and language learning software. By using these tools in addition to in-person instruction, learners can learn more while spending less time doing so. It is quite beneficial to have the option to select between in-person and online attendance based on specific needs and preferences. This adaptability may fit various schedules, commitments, and learning preferences, making the educational process more convenient [27]. A successful Hyflex strategy must accommodate various learning preferences and modes. Moreover, various teaching techniques should be used, including lectures, debates, group projects, and multimedia materials which may influence to perceive Hyflex as a valuable learning option.

However, research studies on PU factor on the acceptance of Hyflex learning in TAM are still lacking. A study conducted by El Ganbour, Dihi and Bouali (2022) found that PU is among the main factors favoring the acceptance of Hyflex learning by the students during COVID-19. Research on other technology adoptions in education such as Mobile learning (M-learning) has also shown that using mobile devices will lead to positive individual outcomes and improved learning consequences [29]. In another study conducted by Yu (2020), when students find WeChat is useful to them in language learning, they tend to spend more time in learning which also leads to their persistent intentions of adopting the application. Yu (2020) also found that PU in language learning can lead to significant time and energy savings for learners. The application empowers learners to take more control over their learning experience as they are able to pick specific topics that are relevant to their goals. This can help learners to have more efficient and targeting learning. Another study also reaffirmed the significance of PU for educators' plans to utilize online learning [31]. Numerous studies have indeed been conducted on the TAM and they consistently affirm the strong connection between PU and acceptance of technology, including educational technology and models.
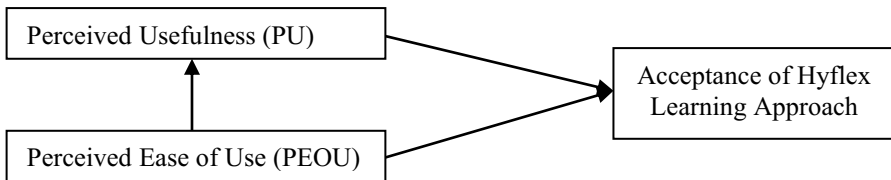
Hyflex Learning

Technology has significantly changed higher education in many ways, and it will continue to influence how people learn and are taught in the future. In the beginning, face-to-face instruction in actual classrooms served as the main and frequently modality of instruction. Blended learning, or commonly known as hybrid learning, arose as a teaching strategy throughout time and started to gain acceptance in the late 90s and early 2000s [32]. It was a reaction to the expanding use and integration of technology in the classroom which allows for an organized mix of in-person and online activities that often makes up blended learning. The Hyflex technique, a more modern innovation, rose to prominence in the middle of the 2000s and grew in acceptance across universities throughout the ensuing years. Hyflex learning was initially developed by Dr. Brian Beatty [33] and the term 'Hyflex' is simply a combination of 'hybrid' and 'flexible' representing the elements of hybrid learning within a flexible course framework. Its development aimed to cater to the increasing demand, for flexible learning options and the growing integration of technology in education. While both blended learning and Hyflex learning consist of in-person and online learning, there are still differences in the structures and implementation. The primary distinction lies in the level of flexibility offered by Hyflex learning. Blended learning follows a schedule with predetermined in person and components whereas Hyflex learning takes it a step further by granting students the freedom to decide their way of participation on a daily basis. In Hyflex classes, synchronous and asynchronous activities are frequently included. Synchronous hyflex learning is when students choose to take part in live, real-time sessions with their peers. It allows students to attend classes virtually at the same time as in-person classes. Under asynchronous Hyflex learning, students are allowed to interact with course materials and activities at their own pace without having to attend the class in real time. Students are not obligated to attend particular class times, in contrast to synchronous learning. Rather, they are free to set their own timetables to access course materials such as pre-recorded lectures, discussions and forums [34]

In Hyflex learning, students have the autonomy to decide how they wish to engage with a course allowing them to join classes in person or participate online or even switch between these modalities as required. On the other hand, blended learning adheres to a more defined schedule and structure that is primarily controlled by instructors rather than students. Instructors usually determine whether materials should be learned online or through face-to-face activities [35]. Hyflex courses typically incorporate a combination of real time activities, such as lectures or discussions and self-paced activities, like recorded lectures or discussion boards. This approach ensures a rounded and flexible learning experience that caters to learning preferences and schedules [36]. Nevertheless, Hyflex learning is primarily centered on the principle of delivering an equitable educational experience to every student, irrespective of their location, personal circumstances, or learning preferences [37]. This encompasses considerations for accessibility, guaranteeing that all students have fair access to resources and opportunities.

After all, the Hyflex approach offers students a significant benefit in terms of flexibility. They have the option to either attend physical class or participate online, depending on their preferences [36]. This accommodates various learning

preferences, schedules, and individual circumstances. Besides, students are more in charge of their education as they can choose to attend classes that align with their learning preferences and pace, providing a more personalized education. While the Hyflex instructional approach offers many benefits, it also comes with some challenges and potential drawbacks such as technical challenges regarding poor internet connectivity, hardware issues, or unfamiliarity with the chosen technology platform [36]. This can create disparities in learning outcomes and hinder the effectiveness of online learning.

Conceptual Framework

Fig 1. Proposed Research Model

This study proposes a conceptual framework by using TAM to examine whether there is a relationship between perceived usefulness (PU) and perceived ease of use (PEOU) to accept Hyflex learning approach. Therefore, the following hypotheses are proposed as:

H1: There is a significant relationship between PEOU and PU.

H2: There is a significant relationship between PU and acceptance of Hyflex learning approach.

H3: There is a significant relationship between PEOU and acceptance of Hyflex learning approach.

3   Research Methodology

This study carried out a literature review of TAM including PU and PEOU with Hyflex learning by using deductive approach. The deductive approach works from a hypothesis developed based on TAM that will be tested through data collection. As this study is still ongoing, some questions will be designed to capture the constructed model proposed in this study. The questions were modified based on a scale that had been validated by previous study. Therefore, data will be collected through a self-administered questionnaire with all attributes developed according to the TAM context of student acceptance of the Hyflex learning approach.

As for the sampling method, this study will use the convenience sampling technique because data can be obtained directly from respondents who are easily reached at any time [38]. Therefore, the target respondents are undergraduates from higher education institutions including public and private in Perak. According to Memon et al. (2020), a small sample size of 150 and a maximum of 300 is more meaningful than a large blind sample size of more than 300. Thus, this study

suggests a sample size of 50 undergraduates from a combination of 5 public and private universities in Perak.

Before distributing the questionnaire to respondents either physically or online, a pilot test will be conducted to ensure the validity of the instrument and that there is no ambiguity in the questions so that data collection is reliable and valid. In addition, for the purpose of analysing the data, partial least squares structural equation modeling (PLS-SEM) will be used to extract the results later.

4   Conclusion and Implications

Hyflex learning has a significant impact on students by providing them with flexibility in terms of when and where they can attend classes. By allowing students to choose between attending classes in-person or remotely, Hyflex learning enables them to customize their learning experience to fit their individual needs and circumstances. In addition, Hyflex learning also allows students who live far away from campus or have mobility issues to still participate in classes and engage with their peers and instructors.

Besides, Hyflex learning empowers students to take ownership of their learning by offering them choices and autonomy in how they engage with course materials and interact with instructors and peers. This active involvement in the learning process can enhance students' motivation, engagement, and overall understanding of the subject matter. Moreover, Hyflex learning encourages the integration of technology into the learning environment, which can enhance students' digital literacy skills and prepare them for the increasingly digital nature of the modern workforce. By incorporating various online tools and platforms, Hyflex learning creates opportunities for collaborative and interactive learning experiences that may not be possible in traditional classroom settings.

Therefore, identifying the perceived ease of use and perceived usefulness can inform educational policymakers and institutions about the necessary facilities to support the hylex learning. Educators can help enhance their adaptability and overall academic performance in the hyflex learning environment among undergraduates.

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