UNDERSTANDING MALAYSIAN STUDENTS' ONLINE SERVICE EXPERIENCES FOR ACHIEVING SUSTAINABILITY IN PRIVATE HIGHER EDUCATION INSTITUTIONS

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Abstract: The COVID-19 pandemic has had a significant impact on most of the sectors in the world. This includes the higher education sector, which has been hit the hardest by the sharp decline in student enrolment. The economic challenges that private higher education institutions (HEIs) face, in particular, necessitate the provision of a better service management to ensure their viability and sustainability. In this regard, private HEIs must reintroduce educational services focusing on the online setting and enhance students' experience, which may enable them to reclaim competitive advantages and attract more students. However, service experience has frequently been assessed on an affective basis and viewed as having a unidimensional value. As a result, it has become a challenge to determine which service experiences to best represent students. This study aims to explore students' online service experiences in Malaysian private HEIs. A two-phase data collection and analysis strategy was designed as follows: (1) exploratory factor analysis (EFA) to identify the underlying factors of online service experiences; and (2) confirmatory factor analysis (CFA) to refine and confirm the factors obtained. For the EFA, 200 data points were collected via email and social media. Subsequently, 375 data points were gathered for CFA via social media platforms. The study also employed nomological, predictive and HTMT analyses to examine and validate the outcomes. The study suggests six dimensions representing students' online service experiences: Ease of use, enjoyment, usefulness, positive surprise, reliability and perceived risk. The findings imply that students exhibit high affective and cognitive intensities with the HEIs. Individuals who are aware of their affective and cognitive intensities are more likely to respond positively to HEIs. Based on the basic idea of high affective and cognitive intensities, the study's outcomes assume that students who consider service experience as their core behavioural pattern will be more likely to have a favourable attitude towards their institutions. Theoretical and managerial implications are discussed.

Keywords: Online service experiences, higher education institutions, EFA, CFA.

Introduction

Malaysia was ranked first in Southeast Asia and 25th in the world in the QS Higher Education System Strength Ranking 2018 (Mattis, 2020). The Malaysian higher education system encompasses a wide range of arts and sciences disciplines, for example, medicine, engineering, social science, management and humanities, amongst others. At the same time, Malaysia's higher education structure comprises (1) universities established by an act of Parliament and affiliated with the government, known as public HEIs and (2) privately run universities affiliated with non-government organisations, known as private HEIs.

There are 437 private HEIs in the country, including 68 universities (including foreign branch campuses) and university colleges (MOHE, 2021).

Many private HEIs were already struggling before Covid, but the pandemic has exacerbated the situation (Thiong'o *et al.,* 2021; Eide, 2018). The growing concerns of sustainability in the education sector appear to have given credence to gaining competitive advantage as one of the viable responses (Slaughter & Taylor, 2015), particularly amongst many Malaysian private HEIs. To ensure long-term viability, private HEIs must reintroduce educational services in the online setting and enhance students'

experience (Rahmayanti *et al.,* 2020). Given the relatively large number of private HEIs in Malaysia which are competing for students, it is intriguing to understand students' online service experiences, attitudes and behaviours regarding the quality of service provided by these HEIs (Paul & Pradhan, 2019).

Both marketing practitioners and academics recognise the importance of service experiences perceived by customers. These are evident in studies by Kabadayi *et al.* (2019), Ribeiro and Prayag (2019) and Tan *et al.* (2016) which acknowledged the significant contribution of service experiences in improving loyalty, maintaining competitive advantage and providing creative tourism experiences. The term "service experience" refers to the way customers perceive the service offered during the consumption and post-consumption cycles (Cao *et al.,* 2018). In the current study, students' service experiences can be considered as their overall experiences based on their interactions with the universities' offered services and support teams both during and after education.

Service experience has also been regarded as a unique service interaction that entails both cognitive and emotional responses (Umasuthan *et al.,* 2017). Cognitive responses refer to indicators of value assessment and tangible evaluation, such as functional value proposition (Sandström *et al.,* 2008), physical artefacts, intangible artefacts and technology (Edvardsson *et al.,* 2005), service system design (Xin *et al.,* 2010), consumer choice (Mirica, 2019), value creation (Bratu, 2019), perception of sustainability (Dabija *et al.,* 2017) and consumer cognition (Drugau-Constantin, 2019). Emotional responses refer to the assessment of how a customer feels when he or she encounters the service (Nook *et al.,* 2018) where those responses are often more intense (Roy & Bhatia, 2019). These include the feelings of engagement, enthusiasm, calm, relaxation (Olsson *et al.,* 2012), escaping, entertainment and efficiency (Alan *et al.,* 2016) as well as happiness, love, contentment, hedonic and appraisal (Rivera *et al.,* 2019).

Although cognitive and affective assessments of customer responses exist, past studies had favoured either cognitive or affective responses as an integral part of service experience (Tan *et al.,* 2018; Tumbat, 2011). As a result, identifying students' online service experiences comprehensively has become a challenge. Such a simplification of service experiences to either cognitive or affective responses has been

criticised because of opposing views. For instance, Christopoulos *et al.* (2019) contend that a more effective service would occur only when an emotional response is attached to the stimulus. Moreover, the contradictory notion of a unidimensional construct, which views service experiences in terms of overall value to the customers, has also received criticism. Most of the unidimensional constructs have been simplified to represent certain types of customers' service experiences through a variety of conceptualisations and methods (de Vasconcelos *et al.,* 2015; Alves, 2011).

The marketing literature has proposed for service experience to be reconsidered as a multidimensional construct, encompassing more comprehensive aspects of customers' reactions apart from abstractive and even non-abstractive experience (Lin *et al.,* 2020; Yadollahi *et al.,* 2018; Io, 2017). Thus, in addition to overall responses, such as pleasure, excitement, positive surprise, happiness and other aspects of emotional responses, the aspects of cognitive responses, such as perceived care, connectedness, ease of use, perceived entertaining, immersion, information, feeling of newness and perceived risk, can also be incorporated as part of service experience dimensions (Rahman *et al.,* 2020; Wu *et al.,* 2019; Alnawas & Hemsley-Brown, 2018; Jean Jeon *et al.,* 2014; Hausma & Siekpe, 2009).

Indeed, a balanced composition of service experiences have gained traction because the cognitive components which focus on low-level personal responses may complement the affective components that often focus on high-level service interactions. Given that cognitive assessment can occur and is essential in understanding customers' reactions, it often involves physical object interaction, such as face-to-face interaction with an organisation or brand (Bilro *et al.,* 2019). When students interact physically with an object or service, the cognitive evaluation is often at the awareness level, subjective and varied due to students' involvement and their actual reactions during service encounters (Tumbat, 2011). The propagation of physical product experience from a unidimensional origin to the multidimensional conceptualisation of service experiences in a university setting was suggested by Shin *et al.* (2018) and Pijls *et al.* (2017). Choi *et al.* (2016) argue that the affective (emotion) and cognitive (trust) aspects of services enable customers to connect with an efficient service delivery experience. In this study's context, service experiences that reflect both cognitive and

affective content may enable students to communicate more favourably with service providers (Felten *et al.,* 2006).

This study focuses on undergraduate-level business programmes (foundation, diploma and degree) because business and management-related courses are amongst the most popular programmes across Malaysian HEIs, which produces over 4.5 million graduates every year (Veletsianos, 2020). The business education markets contribute approximately RM5.9 billion yearly to Malaysia's economy, including on-campus and off-campus teaching, i.e. distance education. Nonetheless, the majority of private HEIs face challenges for survival. The COVID-19 pandemic exacerbated the already dwindling student population and decimating market shares from global- and national-level competitions. Examining the type and level of students' online service experiences will provide insights that may assist the HEIs in regaining competitive advantages to attract more students.

This study aims to achieve the following objectives: (1) To explore the underlying students' service experience dimensions in the online setting in Malaysian private HEIs and (2) to determine the extent of students' service experiences on other attitudinal measures, such as attitude and intention. The outcome of these examinations can be used to make recommendations for efficiently allocating educational resources and enhancing the delivery methods with the support from the Ministry of Higher Education (Chin, 2019). The third motivation is to determine whether students' online service experiences can be regarded as a unidimensional or multidimensional construct, which, in turn, will assist educators in determining the impact of students' online service experiences on their behaviours.

Literature Review

Means-end Chain and Social Exchange Theory

Means-end chain (MEC) theory provides a cognitive lens for understanding the formation of students' knowledge as a form of experience, as well as their attitudes towards the HEIs (Phan *et al.,* 2019). Given that MEC can be applied to explore the antecedent factors relating to students' experiences (Lee & Kim, 2021; Beranek, 2015), MEC is argued to be suitable for establishing a link between students' knowledge and their experiences with the institution.

Previous studies have elaborated within the context of MEC about how individuals' experiences influence purchase-making, intention and revisitation (Sarkar *et al.,* 2019; Augusto & Torres, 2018). Specifically, the identification of students' experiences, for example usability and ease of use, which represent means, may affect students' end desirable results, such as their attitudes towards HEIs. Therefore, applying this theory can help the study understands the underlying students' experiences and subsequently examines the interrelationships of students' experiences on their attitudes towards HEIs through MEC's rationale.

Social exchange theory (SET) also supports the effects of students' experiences with HEIs. In the context of the current study, social exchange occurs when students and the institutions interact based on the service provided, such as through a learning platform, quality of faculty, technological infrastructure and library service. SET conceptualises the relationship between students and the institutions as a process of benefits exchange. For instance, when students appreciate the institutions' online learning services, they are more likely to respond with a positive learning attitude. In this case, students will reciprocate positively in exchange for the service and support they received from the institutions. This premise is consistent with the study of Lee *et al.* (2013) which suggests that students' attitudes towards HEIs can be associated with their knowledge of organisational characteristics and support.

Service Experience

The term "service experience" refers to a customer's overall response to direct or indirect encounters with a product or service (Kautish & Sharma, 2019). This definition has been used to describe the customer's appraisal of his or her individual's experience, which includes every interaction with the product, service or brand. Later, the term "service experience" is regarded as evidence of a customer's reaction towards an organisation where service is engaged, as well as evidence of the customer's communication of the service (Zhang *et al.,* 2020). The definition of service experience focuses on all levels of interactions in which service is engaged. For example, after a service interaction, the effects of service experiences on service staff (Wood *et al.,* 2020) or before consuming a service, the effect of physical environments on service experiences (Kautish *et al.,* 2019) or during service encounters (Toufaily *et al.,* 2018).

Online Experience in Services

The context of online service experience has been gaining attention lately in consumer behaviour studies (Azemi *et al.,* 2019). This notion reflects the literature's growing interests in the service industry. The growing trend towards online services has emphasised the importance of customer experience and placed a premium on value-in-use rather than on the value-in-exchange associated with a product or service (Zhang *et al.,* 2018).

Accordingly, the literature has established that in addition to non-utilitarian experiences such as affective value customers also pursue utilitarian experiences such as cognitive value (Ahn & Back, 2018; Kim *et al.,* 2018). Kimiagari and Malafe (2021) and Kim and Lennon (2013) argue that both affective and cognitive responses may function as internal responses that affect human behaviour as evident in human behaviour research (Ahn & Back, 2018; Kim *et al.,* 2018). The internal responses characterise the context of where and when a service is engaged and it leads customers to display their behaviours about the service experience. Kowalczuk *et al.* (2021) argue that online service quality, such as augmented reality, strongly affects cognition and emotion and suggest that both cognition-emotion could represent the overall online service experiences. Similarly, Jeon and Jeong (2017) discuss the critical role of cognitive and affective aspects of online service quality as an integral part of understanding service loyalty, reducing dissatisfaction and increasing future intention. Satisfied customers are, therefore, expected to have a more favourable attitude towards the service in terms of cognition and emotion (Hume & Mort, 2010).

Online Experience in Higher Education

Online service experience is a marketing construct derived from product-based studies and was eventually conceptualised in the context of service setting. As with understanding service experiences with a product, the current study considers such appraisal to be equally important to online service. In contrast to service experiences for products where proper conceptualisation and scales have been developed, there is still a dearth of research on various aspects of students' online service experiences. Most intriguingly, efforts to measure service experiences have considered cognition, emotion and conation as separate constructs. Chang *et al.* (2012), Chen and Kao (2010) and Dabija, Postelnicu, Dinu and

Mihăilă's (2017) studies, to name a few, imply that students appraise universities' online services by evaluating service quality indicators, such as appearance and interactivity. Moreover, studies within the context of education have narrowed down on the importance of critical thinking (Green, 2020; Roth, 2019; Englund, 2019). Although their studies focused on service quality and critical thinking rather than service experiences, they share a similar belief in the importance of cognitive and affective aspects of service and how they affect behavioural decisions.

Table 1 depicts the recent conceptualisation of service experiences. It shows the number of measurement items and a pool of conceptualisations of service experiences from previous studies. A total of 235 measurement items and 24 possible conceptualisations are listed. It is observed that the concept of "positive surprise" has the highest number of items (34 items), indicating that this concept has received the most attention from researchers. In contrast, the concepts of "participation", "perceived risk", "reliability", "responsiveness", "security" and "tangibility" have received the least attention in the context of service experiences, where they each have three measurement items. Interestingly, Table 1 also implies that (1) every study has its distinct service experience dimensions, (2) there is no consensus on acceptable dimensions of service experience and (3) there have been limited attempts to measure online service experiences in higher education.

Research Methodology

Measures for Online Service Experiences

Following the suggestions by Lau *et al.* (2020) and Shin (2017), the study employed exploratory factor analysis (EFA) to investigate the underlying dimensions of students' service experiences in the online setting. The study proceeded to generate a pool of possible items from past studies (Wu *et al.,* 2019; Alnawas *et al.,* 2018; Sharma & Nayak, 2018; Zhang *et al.,* 2018; Amoah *et al.,* 2016; Etemad-Sajadi, 2016; Kashif *et al.,* 2016; Kesari & Atulkar, 2016; Tlili & Amara, 2016; Chung *et al.,* 2015; Jin *et al.,* 2015; Khan *et al.,* 2015; Kumara & Anatolia, 2015; Kumar & Nayak, 2015; Jeon *et al.,* 2014; Hosany & Prayag, 2013; Lee & Kyle, 2013; Prayag *et al.,* 2013; Maklan & Klaus, 2011; Hausma & Siekpe, 2009). This effort helped in the identification of possible measures that could represent the multi-dimensionality of online service experiences in Malaysian private HEIs.

Table 1: Conceptualisation of service experience constructs

Source	Involvement	Immersion	Participation	Positive Surprise	Product Experience	Convenience	Perceived risk	Reliability	Responsiveness	Security	Tangibility	Joy	Love	Entertainment	Informativeness	Peace-of-mind	Moments-of-truth	Recognition	Hedonics	Ease of Use	Trust	Emotional Appeal	Usefulness	Fun
Alnawas & Hemsley-Brown (2018)		4		4	3																			
Amoah *et al.* (2016)	4															4		4	4					
Chung *et al.* (2015)																							4	
Kumar & Nayak (2015)				5								5	5											
Etemad-Sajadi (2016)																					4	4		
Hausma & Siekpe (2009)														3	3								4	
Hosany & Prayag (2013)				5								5	5											
Jeon *et al.* (2014)						4	3	3	3	3	3													
Jin *et al.* (2015)		4	3	4																				4
Kashif *et al.* (2016)				4												6	5							
Kesari & Atulkar (2016)																				2				
Khan *et al.* (2015)				4												6	5							
Lee & Kyle (2013)				2								5	3											
Prayag *et al.* (2013)				5								5	5											
Maklan & Klaus (2011)				4												6	5							

Sharma & Nayak (2018)				5								5	5											
Tlili & Amara (2016)				4								5	5											
Wu *et al.* (2019)														5	4									
Zhang *et al.* (2018)																			4	4			4	
Total	4	8	3	34	15	4	3	3	3	3	3	30	28	8	7	22	15	4	6	4	8	4	12	4

From previous studies, a total of 235 measurements were identified and sent for content validation. Each item was assessed for its relevance and comprehensibility. The list was then sent to two experts for review and to eliminate redundant measures. For example, "*I feel a sense of love toward…*" (Prayag *et al.,* 2013), which is similar to "*I feel a sense of love*" (Tlili & Amara, 2016). Some items were rephrased to improve clarity and to fit the study's objective. For example, the statement *"employees at the nationally known hair salon will have the knowledge to answer a customer"* in the variable measurement of perceived security (Jeon *et al*., 2014), was rephrased to *"staff at the university will have the knowledge to answer a student's question"*. Following the refinement, the study yielded 88 measures. Using a five-point Likert scale, the items were sent to 50 respondents for face validity. Some items, for instance, Tlili and Amara's (2016) statement for positive surprise "*I feel a sense of amazement*" was changed to "*Using the university-based service platform, I feel a sense of amazement*". Modified items were included for subsequent examination.

Sampling and Data Collection

One of the study's objectives is to explore the dimensionality of students' online service experience in private HEIs. Hence, the study focused on the 20 Malaysian universities listed in QS World University Rankings and selected the private universities to target the respondents. Purposive sampling was employed to select target respondents (Ratnasari *et al.,* 2020) because the complete student list was not available and the study can ensure that respondents meet specific criteria, such as experience with online services. Indeed, purposive sampling allowed the study to anticipate respondents who would be appropriate for the research (Mokgadi & Maripe, 2020).

The study collected responses via an online survey as an alternative to the traditional paper-based method, considering that most students are not physically present on campus during the COVID-19 pandemic (Purwanto *et al.,* 2020; Stokes *et al.,* 2019). The study acknowledged the importance of respondent's voluntary participation in reducing bias (Lai & Chong, 2021; Paul & Pradhan, 2019). Respondents were contacted via email and social media sites and invited to participate in the survey voluntarily. They were also given the option to withdraw and leave the survey incomplete if they felt it was inappropriate. A self-explanation cover page was also included to inform respondents about the objectives and the research measurements.

This study collected and analysed data in two stages. In the first stage, 500 emails were sent to respondents to elicit feedback and 257 responded, suggesting a response rate of approximately 50%. Subsequently, the study identified and eliminated those non- and incomplete responses to improve validity (Coste *et al.,* 2013). About 57 responses were discarded due to incomplete information, whilst the remaining 200 usable data were analysed for EFA. During the second stage, 500 respondents were invited to participate in the survey via social media. The initial response rate was less than 50%. However, following several rounds of follow-up, 375 usable responses were gathered and analysed for confirmatory factor analysis (CFA).

Results

Data Analysis and Results

The responses were analysed in two stages, EFA using Statistical Package for Social Sciences (SPSS) and CFA using Analysis of Moment Structure (AMOS). The first stage involved compiling the

demographic profile of the 200 respondents. Males and females were found to be almost equal (46% and 54%). About 83.2% of respondents were between the ages of 22 and 26. Most of the respondents lived in Melaka (17.5%), Selangor (15%) and Johor (10.5%). The majority of respondents are pursuing a degree (74%) and diploma (24%). On average, 79% of respondents browsed the Internet nine times a day for information and education purposes. Many of them (96%) indicated that they spent an average 20 hours per week on the Internet.

Before starting EFA, the study checked the skewness and kurtosis values of all the items for normality. No items indicated skewness and kurtosis values greater than +/- 2, suggesting all items were normal and suitable for further analysis. The 88 measures relating to service experience dimensions were factor analysed using principal component analysis (PCA) as the method for factor extraction to explore possible strong patterns for parameter estimation (Virabhakul & Huang, 2018). The oblivion rotation technique was applied with the assumption that the factors analysed could be complex and correlated. Similarly, Parkin and Frisby (2019) used EFA with oblimin rotation to analyse factors associated with students' achievement and skills. The correlation matrix revealed coefficients ranging from 0.212 to 0.628, indicating that none of the measures have high inter-correlations and that the possible false manifestation of the same underlying factor is significant (Pallant, 2020). The Kaiser-Meyer-Oklin (KMO) value was 0.934, which exceeded the threshold value of 0.60 (Namlu & Odabasi, 2007) and was supported with statistical significance of Barlett's Test of Sphericity. The total variance explained was 0.695.

The initial pattern matrix suggested 13 components with eigenvalues above 1 with 58.294%. To retain high-quality extraction, items with factor loading less than 0.40 were removed (Lai & Chong, 2019). Items that were cross-loaded into other components were also removed to reduce false estimation of the underlying factor, such as items from component 1 that were cross-loaded into components 2 and 3 (Baldner & McGinley, 2014). The retained items were re-tabulated and the final pattern matrix revealed nine components. However, components 3, 6 and 9 were omitted because they contained fewer than three items (Tabachnick & Fidell, 2007). Parallel analysis was used to examine the final outcomes, in which six components suitable for the study were identified.

Labelling Factors

Following the suggestions by Lin and Lekhawipat (2014) and Maklan (2012), the components derived from EFA were labelled to reflect the conceptual intent and theoretical understanding of online service experience. The items that converged on each pattern matrix component were listed and sent to two independent experts for interpretation and labelling. The two independent experts were selected based on their academic and industry experiences and they were not involved in the current study. The two experts were consulted to validate the components and to apply the labels used in previous studies to ensure consistency. This is demonstrated in the study of Ericikan *et al.* (2010), which engaged expert reviews to verify the categories of factors.

The two independent experts were briefed on the labels used in previous studies and permitted to introduce a new label if none were found to be suitable. Following that, the experts (Expert 1 and Expert 2) reviewed the items that converged and labelled the six components (Table 2). The outcomes from the reviews showed that three components (2, 4 and 5) shared similar labels, one component (3) has a label with a similar meaning and two components (1 and 6) had inconsistent labels.

Table 2: Suggested labels after expert reviews

Component	Expert 1	Expert 2	Expert 3
1	Ease of Use	Emotion	Ease of Use
2	Enjoyment	Joy	-
3	Usefulness	Convenience	-
4	Positive Surprise	Arousal	-
5	Reliability	Reliability	-
6	Perceived Risk and Security	Responsibility	Perceived Risk

The study then examined the suggested labels and took note of those with similar labels, such as components 2 and 5, which were referred to as "enjoyment" and "reliability", respectively (Table 2). The components that shared similar interpretations and meanings were also combined. For example, in component 3, the study assumed the interpretation of "convenience" as "usefulness" because those items closely matched the "usefulness" label in Okazaki and Mendez's study (2013). Likewise, component 4 was regarded as "positive surprise" because it shares a common meaning with the term "arousal".

The study analysed the reliability of inter-expert reviews by calculating the percentage of agreed labels and the Cohen kappa (k) index (Landis & Koch, 1977). Using these two indexes, the study evaluated the degree of agreement between the two experts (Expert 1 and Expert 2) in labelling service experience. The results, as shown in Table 3, indicated a 66.67% agreement and $k = 0.625$, implying that their agreements were substantial (McHugh, 2012).

The study acknowledged the inconsistent labelling of components 1 and 6. Subsequently, a third expert (Expert 3) was engaged to resolve the inconsistencies and assign the best label matching components 1 and 6. The components were labelled as "ease of use" and "perceived risk", respectively (see Table 2). The final outcome of the reviews suggested six labels: (1) Ease of Use, (2) Enjoyment, (3) Usefulness, (4) Positive Surprise, (5) Reliability and (6) Perceived Risk.

Confirmatory Factor Analysis

Using the 375 data collected in the second stage, the study continued with CFA to examine the refined components. Respondents were filtered based on the study's criteria of being an active undergraduate student and taking classes online.

The demographic profile showed that the age range was between 18 and 26 years. About 90% of students spent more than 20 hours per week searching for information online. At the same time, 80.8% of respondents browsed the Internet more than nine times a day for online education and other purposes. The male to female percentage was 48% to 52%, respectively. In terms of affiliation, most of the students came from Multimedia University (25.1%), Tunku Abdul Rahman University (18.7%) and Sunway University (18.7%).

The study employed AMOS version 24.0 to examine the structural equation modelling (SEM) of the refined components. It examined the model's (1) reliability and validity and (2) nomological and predictive validity, as suggested by Hair *et al.* (2010). The study adopted SEM due to the model's complexity, which included six constructs and the structural relationship amongst constructs. Further, SEM could help the study identify theoretical parsimony (Hair *et al.,* 2010). Moreover, since the study's objective is to conceptualise the multi-dimensionality of service experience, SEM is appropriate.

The initial CFA from AMOS showed $X^2 = 1094.501$ with 335 d.f., Relative (Cmin/pdf) $X^2 = 3.267$, GFI = 0.837, NFI = 0.857, CFI = 0.895 and RMSEA = 0.78, indicating that the model required improvement. To improve the model fit, Hair *et al.* (2010) recommends examining and qualifying the items that represent each construct. The study eliminated three items (EAS5, ENY1 and ENY4) with loading coefficients less than 0.50. The model was then re-tabulated. The model fit indexes had improved slightly and they were mostly below the threshold value; for instance, the NFI and CFI were both less than 0.90.

The study then examined the modification indices (MI) for possible misfit items, such as cross-loaded items (Table 4). The MI suggested that EAS3, USE1, PER4 and PER5 be deleted because of high cross-loading errors. Subsequently, CFA was performed on the remaining items, where the model showed adequate model fit: $X^2 = 467.108$ with 194 d.f., Relative (Cmin/pdf) $X^2 = 2.408$, GFI = 0.900, NFI = 0.922, CFI = 0.952 and RMSEA = 0.61. The remaining MI showed low variance amongst the items (Byrne, 2013), reflecting each item in one underlying construct only. The study progressed with determining the construct's validity and reliability.

Scale Validation

The average variance extracted (AVE) for all constructs was greater than 0.50, the composite reliability (CR) exceeded 0.80 and divergent validity (DV) was achieved when the squared root value of AVE exceeded the correlation coefficients involving that construct (Table 5). For example, the squared root of AVE for "ease of use" was 0.805, which exceeded all the correlation coefficients between ease of use-enjoyment, ease of use-usefulness, ease of use-positive surprise, ease of use-reliability and ease of use-perceived risk.

Table 3: Expert review reliability

Description	Per cent of Agreed Labels	Cohen's Kappa (*k*) Coefficient	Agreed Labels
Reliability of Labels	66.67%	0.625	4/6

Table 4: Measurement items for online service experience, factor loading and regression weight

Component/ Factor		Measures	Factor Loading (EFA)	Standardised Weight Regression (SWR)
Ease of Use	EAS1	Browsing the university-based service platform is something I like to do.	0.620	0.750
	EAS2	The university makes it easy for me to conclude my service requests.	0.616	0.754
	EAS3	*The university-based services platform is easy to use.***	*0.601*	
	EAS4	The way the university-based service platform deal with me when things go wrong will decide if I stay with them.	0.583	0.785
	EAS5	*I am able to get access to the university-based service platform quickly and easily.***	*0.563*	
Enjoyment	*ENY1*	*When students have an online service problem, the university will show a sincere interest in solving it.***	*0.613*	
	ENY2	Using the university-based service platform, I feel cheerful.	0.587	0.805
	ENY3	It is fun to browse the university-based service platform.	0.574	0.764
	ENY4	Using the university-based service platform, I feel a sense of fun.	0.573	0.832
	ENY5	Using the university-based service platform, I feel a sense of delight.	0.548	0.775
	ENY6	*In the university, I feel a sense of fun.***	*0.547*	
	ENY7	Using the university-based service platform, I feel a sense of joy.	0.507	0.768
Usefulness	*USE1*	*The online service provided by university is attractive.***	*0.876*	
	USE2	I can easily determine prior to studying whether the university will offer what I need.	0.577	0.839
	USE3	Using the university-based service platform makes it easier to do my task.	0.560	0.852
	USE4	The online service I want at the university can be located quickly.	0.506	0.846

Positive Surprise	POS1	Using the university-based service platform, I feel a sense of inspiration.	0.689	0.795
	POS2	Using the university-based service platform, I feel a sense of amazement.	0.578	0.833
	POS3	The interaction with the university-based service platform is efficient.	0.561	0.697
	POS4	Browsing university-based service platform helps me get away from stress of daily life.	0.553	0.694
Reliability	REL1	The university-based service platform has modern-looking design.	0.860	0.925
	REL2	Using university-based service platform, I feel my privacy is respected.	0.580	0.882
	REL3	It is not just about the now; this university is looking after me.	0.536	0.866
Perceived Risk	PER1	I hardly have to browse other platforms because I get all that I need from this university.	0.671	0.806
	PER2	The behaviour of staff will instill confidence in students.	0.606	0.881
	PER3	The university will never be too busy to respond to your service requests.	0.578	0.837
	PER4	*I trust the reliability of information found on the university-based service platform.***	*0.518*	
	PER5	*I trust the information given by the university-based service platform.***	*0.506*	

** Items were removed due to low SWR and cross-loaded

Table 5: Contruct's validity and reliability analysis

Construct	Items	CR	AVE	1	2	3	4	5	6
Ease of Use	3	0.846	0.648	**0.805**					
Enjoyment	5	0.893	0.625	0.586	**0.791**				
Usefulness	3	0.886	0.722	0.760	0.591	**0.850**			
Positive Surprise	4	0.842	0.574	0.691	0.522	0.689	**0.757**		
Reliability	3	0.921	0.795	0.657	0.479	0.699	0.675	**0.892**	
Perceived Risk	3	0.873	0.697	0.635	0.513	0.723	0.734	0.652	**0.835**

Notes: *Bold – squared root value of construct's AVE

The HTMT method (Table 6) was employed to improve the construct's validity property. According to Henseler *et al.* (2015), HTMT's values involving the pair should not exceed 0.85 to reflect a substantial discriminant validity property. The results showed that all HTMT values were below 0.85, confirming the construct's acceptable validity property.

The final model revealed a six-factor model and confirmed the multi-dimensionality of the service experiences model. The ease of use factor (3 items) included the feelings of pleasure and connectedness, which corroborated service experience's literature (Rahman *et al.*, 2018; Juttner *et al.*, 2013). The enjoyment factor (5 items) captured students' feelings of fun, pleasure, delight and joy when interacting with universities, confirming the emotional experience suggested by the literature (Tlili & Amara, 2016; Weijters *et al.*, 2007). The usefulness factor (3 items) reflected students' feelings of convenience and usefulness, corresponding to the proposition of service experience of Jeon *et al.* (2014) and Weijters *et al.*

Table 6: Construct's HTMT value

	Ease of Use	Enjoyment	Usefulness	Positive Surprise	Reliability
Enjoyment	0.597				
Usefulness	0.773	0.59			
Positive Surprise	0.713	0.535	0.708		
Reliability	0.676	0.488	0.709	0.702	
Perceived Risk	0.642	0.517	0.718	0.753	0.659

(2007). The positive surprise factor (4 items) captured students' surprise feelings, which is consistent with the findings of Guasch-Jane and Ibrahim (2017) and Tlili and Amara (2016). The reliability factor (3 items) suggested that students would express reliable education in an online setting, confirming the proposition by Weijters *et al.* (2007). The perceived risk factor (3 items) included the feelings of risk aversion, security and assurance, resonating with the service experience's literature (Jeon *et al.,* 2014).

Nomological and Predictive Validity

The study also assessed the nomological and predictive validity to examine the extent of students' service experiences on other attitudinal measures, such as attitude and intention. This effort would validate whether the six-construct model is capable of predicting similar structural relationships and other concepts (Hair *et al.,* 2010). To examine this, the study assumes that multidimensional constructs of service experience can have an effect on other attitudinal measures. The attitude towards the organisation's construct by Moore *et al.* (1995) suggest that individuals' responsiveness, as intensity with the organisation, could be represented by a specific level of attitude. Accordingly, individuals with a high level of intensity would also score high on behavioural intention (Day & Stanford, 1997). Table 7 shows that the six-factor (service experiences) model had a positive impact on attitude towards the institution and behavioural intention, thereby strengthening the constructs' validity property.

Comparing Alternative Models

The study then developed two additional models for comparison purposes, namely the second-order and the one-factor models. The purpose of comparing alternative models was to examine whether the model is unidimensional or multidimensional. In the second-order model, all underlying items loaded into their respective sub-factors, then the six sub-factors were packed into a service experience factor. The one-factor model assumes all items are loaded into a service experience factor.

The results in Table 8 showed that both first-order and second-order models were more superior than the one-factor model, confirming the multi-dimensionality nature of service experiences (Tan *et al.,* 2020). The study adopted the first-order model

Table 7: Correlation coefficient values - nomological and predictive validity

	Attitude towards the Organisation	Behavioural Intention
CR	0.822	0.776
AVE	0.606	0.536
Ease of Use	0.572	0.547
Enjoyment	0.326	0.301
Usefulness	0.557	0.481
Positive Surprise	0.553	0.637
Reliability	0.559	0.548
Perceived Risk	0.504	0.546

Table 8: Model Comparison between first-order, second-order and one factor models

Alternative Model	X^2	Degree of Freedom	Cmin/df	GFI	NFI	CFI	RMSEA
First Order (As six distinctive constructs)	331.423	174	1.905	0.925	0.94	0.97	0.049
Second Order (As one higher order construct)	350.633	183	1.916	0.921	0.937	0.969	0.049
One Factor (As a single construct)	1785.446	189	9.447	0.638	0.678	0.701	0.150

rather than the second-order model, following empirical evidence of Shin (2017) and Zee *et al.* (2018) that supported the multi-dimensionality of service experiences.

Discussion

The primary purposes of this study are to: (1) Explore the underlying students' service experiences dimensions in the online setting in Malaysian private HEIs, (2) determine the extent of students' service experiences on other attitudinal measures such as attitude and intention and (3) determine the multi-dimensionality scale of students' service experiences. The study accomplished the first objective by employing the EFA and CFA methodologies (Lau *et al.,* 2020). Based on the literature review, a total of 235 items were identified. These initial items were refined by two independent experts, reducing them to 88. Face validity was used to validate the readability and clarity of the measures. The study then collected 200 responses for EFA and retained 28 items that reflected the six factors. The items were subjected to PCA using the oblimin method to refine and comprehend the possible multidimensional factors representing students' service experiences. Subsequently, the study engaged two experts to label the factors based on the pattern matrix. Six factors were identified as ease of use, enjoyment, usefulness, positive surprise, reliability and perceived risk.

The CFA results of 375 samples confirm the students' online service experiences as multidimensional. In the first-order model, the study loaded items into the respective constructs. Seven misfit items with low factor loadings (SRW<0.50) and possible cross-loadings were removed. A final pool of 21 items was retained after CFA. The construct's reliability, convergent validity, discriminant validity

and HTMT analysis were all satisfactory. This confirmed the reflective model of service experiences model. The study fulfilled the second objective by gathering predictive and nomological evidence by examining the structural relationship between the six-factor model with attitudinal and behavioural measures. The results showed the six-factor model has casual effects on the attitudes towards the institution and behavioural intention constructs. The third objective was met by comparing the six-factor model with alternative second-order and one-factor models. The results supported the notion of multidimensional service experiences when the six-factor model outperformed other alternative models. The outcome of this study suggested six factors that might reflect students' online service experiences.

The first online service experience explored in the study is "ease of use". The perception of ease of use has gained popularity in anticipating behavioural intention for online business and information technology services (Suki, 2011). "Ease of use" is important because students regard this effort as an objective assessment relating to cognitive pleasure in using the HEI's system. In this study, students expect the system to be easy to operate, learn, improve their skills, identify problems, conduct searches and find solutions quickly (Davis, 1989). In short, "ease of use" is applicable when students spend less time using and learning the service. Moreover, ease of use is evident when students perceive the system as an easy-to-use platform that can be accessed remotely and without difficulty. Accordingly, perception of ease of use may be best implicit in students' self-taught knowledge and self-learning with a new system. It is the result of using a system to obtain new information, services or knowledge, whereby a favourable response leads to satisfaction and pleasure (Michael *et al.,* 2020). This understanding of the perception of ease of use

has also been applied in non-marketing industries, including online education (Nayanajithet *et al.,* 2019) and retail banking (Mukerjee, 2020), implying that ease of use may affect students' favourable responses towards the HEIs.

The second factor explored is "enjoyment". The term "enjoyment" refers to a positive affective response to an object or a service (Johnson, 2020). Students associate "enjoyment" with the feeling of pleasure, which affects the degree of affective component of attitude that contribute to the formation of a strong relationship with the HEIs. In this study, "enjoyment" demonstrated an institution's ability to improve educational value (Light, 2002), attract student engagement (Koeners & Francis, 2020) and ease the learning process (Karjalainen, 2020). When evaluating a service rendered by an institution, clues (feelings) from enjoyment can be used to conclude the service performance because assessing affective response is an integral component of service interaction (Ludwig *et al.,* 2017). When an individual evaluates a service that demonstrates a strong commitment to a better service, he or she is more likely to attribute positive emotional states. Since enjoyment is often associated with a high service-customer agreement (Berg *et al.,* 2015), service with a high conviction level to satisfy students' needs is assumed to be more joyful than a service with a low conviction level (Ludwig *et al.,* 2017).

The significance of "usefulness" has been recognised as early as the 1980s. Given the importance of system use, the study assumes that the beliefs of a particular system use would exert a stronger influence on students' performance than the system being designed. System use refers to the students' utilisation of an integrated component to acquire, store and learn knowledge. Dwelling on the importance of students' service experiences, perception of usefulness reflects students' beliefs about using a specific service platform provided by the university to achieve their desired end goals, such as resolving student complaints. Several studies (Yang *et al.,* 2011; Gorla *et al.,* 2010) found consistent agreement and suggested that perception of usefulness could serve as an indicator to improve the quality of service rendered and students' favourable responses to system use. A strong belief in system usefulness influences students' perceptions that the institution possesses service qualities consistent with the student's desired outcome and fosters positive student citizenship behaviour with the institution (Dubey *et al.,* 2020).

The fourth axiom of students' online service experiences is "positive surprise". Using, consuming, or acquiring a product or service that can trigger someone's delight is an important factor to consider both practically and theoretically (Vanhamme, 2000). "Positive surprise" refers to the feelings of delight, arousal, excitement or alertness; for instance, because of a buyer-seller relationship, a customer may feel attentive to focus on a particular service or product (Loewenstein, 2019). When customers believe that a service is arousing, they also believe that the experience is highly delightful (Fedorenko *et al.,* 2020). The literature on "positive surprise" has been critical in marketing and knowledge management, describing it as an essential practical element and enhancing positive interaction (Loewenstein, 2019). For example, "positive surprise" is associated mainly with a co-creation strategy that elicits positive experience, emotion and satisfaction (Nowacki & Kruczek, 2021) as well as an integrated promotion strategy that elicits electronic word-of-mouth (Serra-Cantallops *et al.,* 2018). The current study implies that students who experience positive arousal such as "positive surprise" may seek more attentive interaction to maintain their ideal online experiences.

Just as it is integral to examine the perception of ease of use and usefulness, it is worthy to note that the perception of reliability, which is akin to trust or positive assurance, is essential for service deployment (Park *et al.,* 2019). The perception of reliability refers to the degree to which a user believes a product or service consistently delivers what has been promised (Sujay & Vishal, 2020). In this study, perception of reliability is the believability of the service rendered by the HEIs, which requires the students to perceive the institutions as having the capability to deliver continuously well. Past studies have examined the perception of reliability (Afza, 2019; Hamzah *et al.,* 2017); however, it has not been studied in-depth as a dimension of students' online service experiences with HEIs. Outside of the service context, perception of reliability has causal effects on consumers' satisfaction and loyalty (Ji *et al.,* 2017) and influences brand citizenship behaviour (Kim *et al.,* 2018). This implies that an institution can build a favourable relationship with students based on the level of consistent service provided through the online setting, i.e., learning and service platform associated with the service experiences. Given that perception of reliability is about the degree of beliefs, it appears likely that perception of reliability of system use is distinct and may eventually transfer to students'

service experiences when they perceive institutions would promise to deliver service consistently (Liu *et al.,* 2019). Hence, a high degree of reliability should lead to strong student citizenship behaviour for the HEIs.

"Perceived risk" is the sixth axiom of service experiences and is akin to perceived ambiguity or uncertainty based on customers' fear, doubt and uncertainty (Iqbal, 2019). A student's appraisal of the risk of using, consuming and acquiring a product or service is vital because it influences various relationships in the attitudinal and behavioural outcomes of service experiences (Dowling, 1986). Recognising private HEIs as service providers, students' experience can be represented by integrating students' involvement. Previous studies have suggested that perceived risk can be associated with high-involvement products (Ariffin *et al.,* 2020; Han & Kim, 2017). This indicates that students might perceive some risks when using the online services provided by HEIs because they would perceive their involvements as important and provide an opportunity for co-creation (Rahman *et al.,* 2020). Given that interaction through learning and service platforms has high credence properties (Ching, 2018) and mainly requires high involvement decisions such as signing for a class, paying fees and submitting an assignment, students may perceive these decisions as risky because they probably have to suffer the consequences if they fail. Because student-institution interaction is non-personal in the online setting, students are more likely to reduce their risks by being involved in a more meaningful and rewarding service rather than one that does not promote a productive relationship.

Conclusion

Theoretical and Managerial Implications

The study fetches both theoretical and practical contributions. It conceptualises and validates the multidimensional factors of online students' service experiences, thus contributing to the body of knowledge based on empirical evidence. Specifically, the study contributes to the literature by examining, exploring and identifying the factors of service experiences from students' perspectives, proposing a multidimensional model reflected in six aspects: Ease of use, enjoyment, usefulness, positive surprise, reliability and perceived risk. Although this study conceptualises online service experiences in the Malaysian context, it justifies

the underlying relationships of the factors and their items and conforms to MEC and SET theories. The multidimensional service experiences are further bolstered by satisfactory proof of reliability and validity properties. The findings could bridge the gap between students' service experiences and the service practices of the private HEIs.

The study has far-reaching implications for the private HEIs. The development of a multidimensional service experience serves as a fundamental guideline for exploring and measuring new constructs. Moreover, identifying first-order service experience constructs can assist the private HEIs to conduct in-depth studies about students' preferred service experiences and enhance their brand equity. This study is possible, given that the issue of salient service experiences remain elusive in Malaysia, where few studies have explored service experiences from the students' perspective.

Universities' top management could also benefit from this study by knowing the six most essential factors that represent students' understandings. The management can use the insights gained from these six factors to develop competitive and sustainability strategies to meet the growing demands for service excellence and delivery. Besides, the multidimensional scale can be used to gauge students' responsibilities and their awareness of the university's service performance, as well as prosocial and constructive behaviour. Accordingly, universities can develop a new policy, strategy and probably an educational programme that raises students' awareness of their preferred service experiences. This study will also boost students' sense of optimism and voluntary commitment within a university setting. Lastly, the study may shed light on students' vital role in shifting the university's sustainability paradigm from conventional to multidimensional service experiences. Hence, universities must figure out how students relate their service experiences with loyalty. Universities could probably develop rules and regulations that encourage academic and administrative staff to deliver a higher level of services, such as reducing waiting time, easing communication and reducing anxiety whilst improving performance.

Limitation and Future Research Perspectives

Unlike previous studies which have primarily focused on students' quality services, this study explores and comprehends the students' online service experience patterns for the private HEIs to regain

competitive advantages and attract more students. This study extends the service experience literature by conceptualising and validating a multidimensional model comprising six factors: Ease of use, enjoyment, usefulness, positive surprise, reliability and perceived risk. The findings suggest that students have a high level of affective and cognitive intensities. High intensity implies the HEIs should provide a plethora of supports or services that provide students with a better interaction experience. By considering the basic idea of intensity, it can be argued that students who experience services affectively will eventually experience them cognitively as well. Therefore, when service experiences are aligned with students' intensities, they are more likely to respond favourably towards the HEIs.

Although this study follows established procedures for conceptualising and measuring service experiences, some limitations remain, which can serve as opportunities for future research. For instance, the study did not look at foreign university branch campuses and private colleges. Future research could apply the multidimensional measures to assess students at these HEIs. Since the study is conducted in Malaysia, a cross-country comparison can be performed to strengthen and validate the findings. In addition, the current study did not examine gender and race differences, which is consistent with previous studies that found no gender and race disparities amongst students (Khong *et al.,* 2017; Ilias & Nor, 2012). Future studies could also compare students' attitudinal responses from different points in time, probably comparing those in the first and last year of studies.

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