

Student Preference and Content Relevance as important service quality factors that impact online learning design in tertiary education in Malaysia

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Abstract

This paper is an exploratory research into the benefits of incorporating digital learning in private universities in Malaysia and to also consider that while digital learning supports the concept of allowing access to learning material from anywhere other than a classroom, much is needed to ensure the effectiveness of service quality in digital learning. The need to take into account student's preferences in the development and relevance of digital content remains an agenda that needs attention. This paper also found that while service quality factors may influence student satisfaction, tangibility is also important for word of mouth referrals about the university and an effective approach can be said to contain advanced facilities, fast internet connection, online registration, accessing of academic tutorial online and interaction with students with minimal face to

face lectures and online examinations with the use of multimedia learning systems.

Keywords: content relevance, online learning, service quality, student preference, tertiary education

Subject classification codes: include these here if the journal requires them

1 Introduction

Advances in internet technology have allowed for multimedia content in tertiary education for universities to be digitized but much remains to be done to ensure such implementation is effective and that the service quality benefits of digital learning outweigh the hurdles in implementation. Improving student experience remains a highly desired objective and there is consensus among university leaders on the importance of using technology to improve student experience such as digitizing content, automating administrative processes and integrating systems. The use of the various devices such as laptops, smartphones, tablets and smartwatches have allowed the millennial generation to access digital material easily and such norms and behavior of students suggest that digital learning is the way forward to support learning to complement face to face interaction in traditional classrooms. While university leaders view digital transformation as a way to improve how they do their existing work, very few strive to recreate new digital models or fully digitize current models. However, there is still much to be done to ensure that the service provided is reliable, fast and smooth to be beneficial to the student learning experience.

Educators from all grade-levels have realized the benefits of technology in the classroom (Newman, 2017) and computers have evolved to include many devices including laptops, tablets, personal computers, mobile phones, smartphones and even smartwatches (Davie & Hilber, 2016) Businesses and other institutions including the military have computerized at a rapid pace (Kolehmainen, 2018) whilst home computers and high-speed internet access are now becoming commonplace in not only high but also low-income households (Anderson & Kumar, 2019). The trend is everywhere and with the digital learning landscape fast spreading across the globe, the delivery method for learning now focuses on using various digital delivery approaches. A combination of online learning approaches now complements the face to face approach.

Traditionally, education in institutions of higher learning have tended to follow traditional norms in which lectures, tests and learning are held in the classroom using the face to face approach but online learning has allowed for a blended approach (as well as a flipped classroom approach) that blends live digital and live classroom components. In support of this, a study typically found that 43% of millennials said a mobile device is their preferred method for using the internet (McCoy, 2016) and digital learning provides an effective and informal learning environment which helps learners practice real life situations (Gill & Garg, 2017), which ultimately leads to participants being able to use learned experiences for future jobs. Adding to these developments, studies have also focused on design and implementation of digital content and its impact on learning effectiveness (Huang et al, 2012) This study attempts to collect data from 3 universities in Malaysia to see whether there is a need for student preferences and

relevance of content in the design of service quality for online learning systems in universities.

2. What, how and why of online learning

While paper is static, digital content is dynamic and digital learning materials can be used on virtually any device, making it easy for students to adapt their education to their technology. The possibilities for digital learning materials are vast and exciting because they can also be bundled with digital or hardcopy textbooks or paired with open educational resources (Navitas, 2017)

Digital learning materials use personalized learning technologies such as quizzes, tests and games that closely match the learning styles of today's smart phone, tablet and laptop-savvy students. They use artificial intelligence to focus on those areas where the student is weakest by drilling students and highlighting text to emphasize areas where the students need special attention. These technologies even send real time results to inform instructors on how individual students and whole classes perform. Digital learning materials provide the ability to adapt in-class instruction to fit the needs of students.

According to the National Center for Education Statistics (2018), only 60 percent of students completed and obtained a bachelor's degree at the same institution at a 4-year degree-granting institution. Digital learning materials help educators in the fight to keep students in school and increase graduation rates. Publishers are continuing to develop technologies to equip professors and students with the best possible materials to assure successful outcomes. Digital learning materials maximize student achievement, save money and enhance engagement between students and faculty.

3. Service quality concept and its application to online learning

The concept of service quality began from 1980s and it was not until 1990s, that companies started focusing on this concept as the main cause of customer satisfaction/dissatisfaction (Chen & Aritejo, 2008). Original studies (Parasuraman et al, 1988) studied four service sectors (retail banking, credit card, securities brokerage and product & repair maintenance). Factors used to measure service quality included Assurance, Empathy, Responsiveness, Reliability, Tangibility. An instrument known as the SERVQUAL instrument allows measurement for the five factors, but this study will use Assurance, Empathy, Responsiveness, Tangibility as well as Preference and Relevance to see how these could be related to student experiences of service quality for effectiveness of online learning within a university. Reliability has been ignored in this study because past studies have shown that Reliability does not impact Satisfaction (Vaz & Mansori, 2013). Assurances convey trust and confidence to students as it is the ability of the online environment that allows students to interact easily with university admin as well as fellow students. In other words, it is a feeling that students obtain from using the online system of a university which says, “We have an online system for your smooth learning experience whereby students are not overwhelmed with excessive material, able to meet assignment deadlines as well as able to learn and search for suitable material for smooth continuation of learning”. Empathy refers to personalized/individualized caring and the paying of attention by lecturers on students. With growing diversity of students entering classrooms each day, more emphasis needs to be given by lecturers to actively construct positive classroom cultures rather than focusing on online learning activities only. The empathy message should facilitate better interaction between students from differing backgrounds and that the online

environment reduces incidence of students being teased and facilitates solving of problems if any. Responsiveness refers to the level of willingness of the university to provide acceptable and prompt service. In an online environment, this refers to uploading online content for students access and that lecturer's feedback about student's assignment submissions will be prompt and on time. In addition, when support online system issues are raised, prompt support by the IT team will be given. Tangibility refers to the university's online learning system facilities, and that physical facilities in classrooms are well equipped for online learning. The university will want to confirm that it has an advanced online system that is practical for online learning and that the university wide internet connection is reliable for the smooth learning process. The dimensions of SERVQUAL have been used in different industries (for example in health care, education, retail banking and insurance) which confirm that this measurement is reliable and valid in different service industries (Kassim & Abdullah, 2010; Lee, et al., 2011; Naik, et al., 2010).

In addition to the four SERVQUAL variables, two other independent variables will be used in the study, namely Preference and Relevance. Preference will measure what students prefer. Student preference in one study found that no single teaching learning strategy works for effective teaching learning (Kulkarni-Neha,Patil & Javali, 2015). In relation to a university for example, do students actually prefer online reading to textbook reading or do they prefer the flipped classroom approach where student led work is emphasized in the classroom or do students prefer if the university introduced social media type applications for easy installation to personal devices. Results of a study (Shane-Simpson et al, 2018), highlight the popularity of Instagram for women students in particular. Personal characteristics such as gender, age, privacy concerns and

affordances on specific sites, predicted social media preference. The study found that participating students who preferred Twitter were more likely to have a public vs private profile, reported higher levels of self-disclosure, and displayed more bridging social capital. Participants preferring Facebook reported lower levels of self-disclosure, but higher levels of bonding social capital compared to those who preferred Instagram. Relevance will measure whether online learning will prepare students for future jobs with online environments and allow students to access wide sources of information within the confines of the broader resources of knowledge that usually follow an online system. Student satisfaction itself will be the dependent variable in this study which will support word-of-mouth referrals (Sipila, Herold, Tarkianen & Sundqvist, 2017) by students when recommending friends and relatives to the university because of the easy to use online learning facilities in place.

4.0 Hypothesis and theoretical framework of this study

In this study, we focus on the relationship between perceived service quality elements from a students' perspective and the level of satisfaction of the delivered service within the online learning environment in the university. Thus, for this study the following hypotheses have been developed (Figure 1)

H1: There is a positive and direct relationship between Assurance and Student satisfaction

H2: There is a positive and direct relationship between Empathy and Student satisfaction

H3: There is a positive and direct relationship between Tangibility and Student

satisfaction

H4: There is a positive and direct relationship between Responsiveness and Student satisfaction

H5: There is a positive and direct relationship between Preference and Student satisfaction

H6: There is a positive and direct relationship between Relevance and Student satisfaction

H7: There is a positive and direct relationship between Student satisfaction and Word-of-mouth referrals

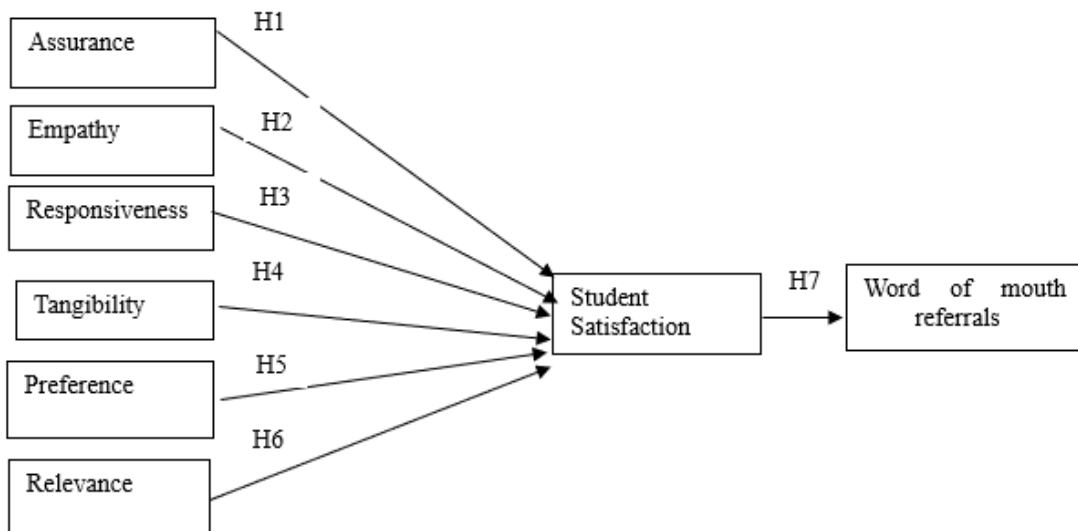


Figure 1: Theoretical model of the study

5.0 Methodology

The methodology in this paper uses a questionnaire to gather data about university student experiences of service quality factors that impact their satisfaction of the digital

learning experience from three private universities in Malaysia. The aim is to explore factors in service quality as well as student preference and their perception of relevance that may aid in the development and delivery of online digital content in tertiary education. The questionnaire will capture demographic information of students as well as student's satisfaction of perceived service quality. In addition, the questionnaire will also find out how student satisfaction of their digital learning experience impacts word of mouth recommendations to friends and relatives to enrol in the university. The statements in the questionnaire will be on a 5-point Likert scale to determine if students strongly disagree or agree with the statements.

To test the hypotheses of the six independent variables impacting student satisfaction, the following linear model will be run as follows.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$$

where : Y = Student satisfaction β_0 = Constant, β_1 = The Slope along Tangibility, β_2 = The Slope along Responsiveness, β_3 = The Slope along Relevance, β_4 = The Slope along Assurance, β_5 = The Slope along Empathy, β_6 = The Slope along Preference, X_1 = Tangibility, X_2 = Responsiveness, X_3 = Relevance, X_4 = Empathy, X_5 = Responsiveness, X_6 = Preference, ε = Error.

To test the hypothesis of Student Satisfaction impacting Word of Mouth, the following linear model will also be run as follows.

$$Y = \beta_0 + \beta_{1.1} X_1 + \varepsilon$$

where: Y = Word of Mouth β_0 = Constant, $\beta_{1.1}$ = The Slope along the Student Satisfaction, ε = Error.

6.0 Results

The result shows that about two-thirds of respondents were about 20-22 years of age (58.9%), mostly of Malaysian origin (76.2%), with 78.8% of participants undergoing a degree program in the university (Table 1).

Table 1: Demographic information

	Frequency	Per cent	Cumulative per cent
Age			
18-19 years	21	17.6	18.5
20-22 years	89	58.9	77.5
23-25 years	17	11.3	88.7
Over 25 years	17	11.3	100.0
Total	151	100.0	
Level of Study			
Degree	119	78.8	78.8
Foundation/Diploma	9	6.0	84.8
Masters	23	15.2	100.0
Total	151	100.0	
Nationality			
International	36	23.9	23.8
Malaysian	115	76.2	100.0
Total	151	100.0	

The results from Table 2 show that all variables of this study follow a normal distribution as the skewness and kurtosis are within the acceptable range. The results of reliability tests (Table 2) show that all constructs have acceptable levels of reliability as

the Cronbach Alpha of all constructs at 0.916 is well above 70%(Hair, Black, Babin, Anderson, & Tatham, 2010).

Table 2: Normality and Reliability Test

	N	Mean	Std. Deviation	Skewness	Kurtosis
Tangibility	148	3.4369	.75378	-.297	-.142
Responsiveness	148	3.5912	.54799	.043	.228
Relevance	151	3.6424	.69732	-.657	.574
Assurance	149	3.7584	.59510	-.329	.482
Empathy	148	3.5743	.69966	-.669	.417
Preference	147	3.6281	.72414	-.435	.506
Satisfaction	149	3.6532	.61620	-.643	.870
WOM	148	3.4977	.81603	-.412	-.258

Reliability Test: Cronbach Alpha= 0.916

The results show the adjusted R² is around .608 (Table 3) which translates that 60% variance of the dependent variable (Student satisfaction) can be explained by the 6 independent variables and shows that the selected SERVQUAL factors (together with preference & relevance) can predict overall satisfaction of students well.

Table 3: Regression Results

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Decision
	Beta	Std. Error	Beta			
(Constant)	.087	.252		.343	.732	
Tangibility	.106	.056	.131	1.900	.060	Rejected
Responsiveness	.199	.084	.178	2.378	.019	Supported
Relevance	.271	.067	.308	4.027	.000	Supported
Assurance	.194	.072	.187	2.696	.008	Supported
Empathy	.014	.059	.016	.235	.815	Rejected
Preference	.200	.052	.234	3.827	.000	Supported

a. Dependent Variable: Satisfaction

b. Predictors: Preference, Relevance, Empathy, Tangibility, Assurance, Responsiveness

R²: .625, Adjusted R²: .608

ANOVA^a: F = 37.782 Sig=.0001

The results in Table 3 shows that perceived relevance of the online learning system has a direct and positive relationship with the level of satisfaction ($\beta = .271$, $p\text{-value} = .00001$). This means that increasing one unit of higher perception about quality of relevance of the online learning system can increase around .308 of the satisfaction score for students.

Moreover, regression results show that perceived tangibility and empathy does not have a significant relationship with satisfaction ($\beta = .106$, $p\text{-value} = .06$ and $\beta = .014$, $p\text{-value} = .815$ respectively). Hence the decision is to reject the hypotheses for tangibility and empathy as variables that impact student satisfaction in online learning. This is in line with the fact that online learning does not need to have a tangible presence nor an empathetic presence to facilitate the service.

Preferences of students also had a significant relationship with the level of satisfaction ($\beta = .200$, $p\text{-value} = .00001$). This is in line with preferences of presentday millennials who have different preferences to older generation of the population in general. The findings also show that the responsiveness of the institution ($\beta = .199$, $p\text{-value} = .00001$) and readiness to respond and prompt responses from an institution are perceived as important for students in Malaysia. In addition, perceived assurance by the university on students shows a positive and significant impact on student's satisfaction ($\beta = .194$, $p\text{-value} = .00001$).

Relationship between Satisfaction and Word of Mouth (WOM)

Table 4: Regression Results

Model	Unstandardize	Standa	T	Sig.
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	d Coefficients		rdized Coefficients		Decision	
	Beta	Std. Error	Beta			
(Constant)	.788	.381		.2066	.041	
Tangibility	.221	.084	.206	2.632	.009	Supported
Responsiveness	.207	.127	.139	1.622	.107	Rejected
Relevance	.247	.102	.211	2.425	.017	Supported
Assurance	.185	.109	.134	1.697	.092	Rejected
Empathy	.060	.090	.052	.662	.509	Rejected
Preference	.267	.079	.236	3.886	.001	Supported

a. Dependent Variable: Word of Mouth

b. Predictors: Preference, Relevance, Empathy, Tangibility, Assurance, Responsiveness

R²: .51, Adjusted R²: .499

ANOVA^a: F = 37.782 Sig=.0001

When we run the model with same independent variables and Word of Mouth

(WOM) as the dependent variable, the results show that Tangibility has very high impact of WOM ($\beta = .221$, p-value=.009) although it does not have a significant relationship with satisfaction. This can be interpreted that Tangibility may not influence the overall satisfaction of users, but it is one of the main factors that students will share their experience with peers such as friends and family members.

7.0 Student preference and content relevance to improve higher service quality for design of online learning

The first contribution of this study has found that two additional factors, namely relevance and preference showed better results than responsiveness and assurance on student satisfaction. These two factors were important considerations in designing online modules for online learning because material uploaded must be relevant to student learning and careful attention must be made to ensure that students are not

swamped with irrelevant material. Student preferences also need to be taken into account as millennials have different perceptions on how learning should fit today's world.

The questions related to relevance showed that digital content relevance prepared for student learning allows the student to effectively learn. In addition, the online environment allowed students to interact easily with fellow students for group assignments. Students are able to collaborate online as instant responses can be received from fellow students without the need for face to face group discussion. More importantly, students responded that online learning prepares them for future jobs as they become familiar with online processes and that while familiarizing themselves with the online learning environment, they were able to access a wide variety of sources of information for their current needs. Many employers today have begun to develop digital applications, so digital learning prepares students for future employment. For example, in the shipping industry, online freight-forwarding and online shipping services are becoming the norm and early exposure for students in online learning will improve employability. There are advancing employment and entrepreneurship opportunities around the world and many employers look for technology savvy students to complement their modus operandi. Using online resources, students also achieve higher research skills as the body of knowledge since the introduction of the internet has moved from traditional books to online journals, e-books and other internet sources. Technology is a life skill that opens doors for lasting employment and entrepreneurship opportunities around the world.

The responses to questions related to preference showed that universities need to introduce modular online applications that are easy to install on mobile devices. Responses suggested that students' preferences included flipped classroom activities rather than listening to lectures and that reading online material was a more in-thing than reading a textbook. Additionally, preferences included digital learning materials (videos, podcasts, docs, web-based tools) to be consumed outside of class, coupled with in-class exercises, projects, collaborative group work and work on assigned labs, individually and in groups. An approach using flipped teaching methodologies where students adopt a student-centric approach, prepare learners for classes by watching videos away from class, allowing the classroom encounter to focus on discussion, exercises, and discourse (Kurtz, Tsimerman & Steiner-Lavi, 2014).

The second contribution of this study shows that tangibility is important for Word of Mouth referrals about the university. The questions on Tangibility asked students whether they perceived that the university had an advanced online learning system and physical facilities in classrooms that well equipped for online learning and that the internet connection for use inside the university was reliable. As interpreted earlier, Tangibility may not influence the overall satisfaction of users, but it is one of the main factors that students will share their experience with peers and make recommendations about the university to friends and family members.

Focus has shifted from the delivery of content by the instructor to learners and quite a bit of lecturer's tedious tasks can be automated. Creating online content allows teachers to experiment with pedagogical approaches and get instant feedback. Students will also have instant access to fresh information that can supplement their learning experience. Additionally, countless resources exist on the internet for enhancing

education and making learning fun and effective. Evidence highly suggests that the benefits of online learning offer significant advantages to institutions, teaching faculties as well as students. Online learning is more interactive and dynamic through technology for universities that offer a mass service to students. This relates to a higher Return on Investment (ROI) on hardware and software installed for online learning where the costs of establishing online platforms is a fraction of textbooks per student.

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