Impact of e-servicescapes on student engagement: mediating impact of experience quality

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Abstract

Purpose – The purpose of this paper is to investigate the impact of design of e-servicescapes on student engagement in distance education (DE), and examine whether this impact is mediated by student experience quality.
Design/methodology/approach – Quantitative research approach based on cross-sectional survey design was adapted where data were collected using a structured questionnaire. Sample consisted of 252 undergraduates registered in the DE platform in Sri Lanka and was drawn using a simple random sampling technique. Collected data were analysed using the structural equation modelling.
Findings – Data analysis revealed that there is a direct significant impact of e-servicescapes on student engagement while this impact is partially mediated by student experience quality in the Sri Lankan context. Meantime, the social presence feature of e-servicescapes has the highest impact on student engagement.
Practical implications – Findings of the study provide an empirically validated model to boost up the student engagement and significantly contribute to the designing of the e-servicescapes of the DE institutes in order to offer a superior service to a wide array of stakeholders.
Originality/value – Even though e-servicescapes have been recognised as a driver of customer behaviour, the concept is fairly unexplored in the educational context. Due to its practical applicability in the DE context, this study contributes to the existing knowledge by presenting a novel conceptual model developed based on multiple theories to identify its impact on student behaviour.

Keywords Student engagement, Experience quality, E-servicescapes

Paper type Research paper

1. Introduction

Distance education (DE) is a system of education. It is a special arrangement that educates students who are geographical dispersed from teachers with the aid of educational technologies. Due to this dispersion, teaching behaviours are executed apart from learning behaviours (Keegan, 1980; Tavukcu *et al.*, 2011), and thereby provide students with all the relevant study materials and instructions in printed or electronic medium by making them more liable towards their learning decisions and outcomes (Sun and Rueda, 2012). However, despite these flexibilities, this arrangement has resulted in the alienation feature. Students feel that they are isolated when learning in their own environment without access to the premises of the education institute or interacting with teachers and peers (Grey and Diloreto, 2016; Sun and Rueda, 2012). This may result in negative impact on the effective learning of students. With limited opportunities to interact, collaborate and receive feedback and social

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support, remote students are required to utilise considerable extra time and effort in order to achieve better academic outcomes (Sun and Rueda, 2012). Consequently, many students demonstrate less engagement in academic activities (Sun and Rueda, 2012; Tuckman, 2007). Although, the alienation is a feature embedded in the DE system, identifying means to make students more closer and attached to the education institute and teachers, and thereby encouraging them towards academic engagement through a superior learning experience are paramount important in making the DE system more effective.

Service industry is one of the commercial industries that have been tremendously influenced by the developments in the Information and Communication Technologies (ICT) (Gunewardana, 2017). Education is one of such services which is subject to continuous development over the years. Students act as customers while participating in the co-production of education service by providing input to the service production process. Precisely, it involves mental stimulus processing by touching students' minds and shaping their attitudes and carving their behaviours. Student can physically or mentally take part in the service production process where primarily information is processed through the proper communication (Writz *et al.*, 2018). Due to the intangible and inseparable nature of service processes, it is essential to create the environment where the service is produced, i.e. servicescape, more appealing to the customers (Writz *et al.*, 2018). Servicescape is a built environment which impacts the customer perception and thereby shapes their respective behaviours (Hopkins *et al.*, 2009). In the DE context, it is not mandatory for the student to commute to the institution premises; rather, the institution can disseminate the relevant academic and non-academic related information through one or more communication mediums. Particularly, long-standing and well-established educational institutes are intensively using ICT to augment this process. They are proven as more beneficial as it has been identified that nowadays college students are frequent users of the internet (Wong *et al.*, 2016). Students own digital devices through which they connect to the internet anytime and anywhere. They are willing to communicate digitally with the education institute with respect to academic and non-academic matters via the institute's website (Duvall and Schwartz, 2000; Grey and Diloreto, 2016; Preiser-Houy and Russel, 2011; Vogt, 2016). Website of a service provider is also a built environment, specifically a virtual environment, and through its features and design, customers interact with the service provider (Hopkins *et al.*, 2009). It is the service setting where the service encounter occurs in the virtual environment and known as e-servicescapes. These virtual atmospheric elements need to be designed in a way that can effectively communicate with different stakeholders, particularly with the students, and thereby creating a strong link with them to bridge the temporal and geographical gap that exists between the teacher and the student (Hakim and Deswindi, 2015). Therefore, the website and thereby the e-servicescapes of the DE institute have a key role to play in overcoming the alienation feature embedded in the DE system (Duvall and Schwartz, 2000; Wong *et al.*, 2016).

E-servicescapes have been receiving due attention among scholars in numerous service settings such as hospitality, retailing, gambling, banking, entertainment and healthcare. It has been identified as one of the drivers of customer behaviour and their behavioural intentions (Wong *et al.*, 2016; Duvall and Schwartz, 2000; Hakim and Deswindi, 2015). The impact of the concept in the education context is yet to be explored (Theron and Pelser, 2017). Particularly, in the DE context, studies have narrowed their focus towards the learning management system (LMS), evaluation of LMS quality, student perception on LMS, role of the instructor in LMS and impact of LMS on student intentions and behaviours (Burch *et al.*, 2017; Preiser-Houy and Russel, 2011). They have not diverted their attention on the entire virtual environment and how its design, visual appeal, interactivity, availability of relevant information, personalisation and ease of use influence intentions and behaviours of students. Importantly, physical environment has been identified as an influencer of student learning experience, behaviours and performance in the traditional education institutes.

The importance of physical environment is limited in the DE context as students do not essentially commute to the institutional premises. However, the website can be identified as the interface that links the institute and the student such that they continuously deal with the website throughout the student life cycle starting from the decision to get enrolled to the study programme (Burch *et al.*, 2017; Hakim and Deswindi, 2015; Preiser-Houy and Russel, 2011). Thus, it would be better if the student can have a superior experience with respect to the academic and non-academic matters at each and every phase of the student life cycle (such as application, registration, teaching and learning, evaluation, graduation, support services as well as post-qualification). Therefore, the virtual environment needs to be designed in order to deliver a quality student experience. Accordingly, the evaluation of e-servicescapes, particularly in the DE context, and identifying its impact are fairly an unexplored area in the existing knowledge base (Harris and Goode, 2010).

In the Sri Lankan context, OUSL (2016) is the pioneer in the DE which offers a wide array of study programmes by eliminating the barriers for higher education. However, the pilot survey conducted with the undergraduates of The Open University of Sri Lanka (OUSL) revealed that their learning experience is below the expectations. The system has apparently failed to delight its customers. Further, their responses revealed that their perception on the design of the virtual environment they interact with, i.e. the institutional website, as a whole is not very satisfying.

On the other hand, student success is one of the primary objectives of any educational institute. However, previous registration and graduation statistics of the OUSL indicate that student persistence and their performance in academic activities are inconsistent with previous scholarly findings. Therefore, these prevailing conditions in the DE context, particularly in Sri Lanka, signal that attention should be diverted to the virtual environment as well as student persistence and performance. Interestingly, previous studies have extensively investigated that student performance and persistence are highly influenced by the level of student engagement (Sun and Rueda, 2012). This is confirmed by the theories such as Theory of Student Involvement, Theory of Student Attrition and Theory of Student Departure. Further, majority of studies have focussed on student-related factors that influence student engagement rather than institutional-related factors (Bates and Khasawneh, 2007; Kanuka, 2005; Sun and Rueda, 2012). By addressing the above highlighted knowledge gap prevailing in the existing knowledge base, this paper attempts to identify whether the virtual environment of the institute has an influence towards the student engagement in order to further enhance student academic performance while retaining them with the institute. Accordingly, this paper attempts to answer following two research questions relating to the e-servicescapes, student experience quality and student engagement which have not been previously answered in the DE context:

RQ1. Do e-servicescapes have an impact on student engagement in DE in Sri Lanka?

RQ2. Does student experience quality mediate the impact of e-servicescapes on student engagement in DE in Sri Lanka?

The remainder of this paper is structured as follows. First, literature on e-servicescapes, student engagement and student experience quality is summarised and integrated. Then, the conceptual model of relationships between variables examined is proposed followed by the research methods used to test the model. Finally, empirical results of the study are presented along with the discussion on results and conclusion.

2. Literature review

2.1 E-servicescapes

Physical environment where the service is delivered to its customers is termed as servicescapes. It includes overall layout, design decorations and aesthetics of the service

facility (Bitner, 1992). The term e-servicescapes has been developed by taking the characteristics of physical service environments and applying them to the online service environment (Koernig, 2003). Scholars have defined the online environment using a variety of terms such as e-scape, online physical environment, cybermarketscapes, online atmospherics, to name a few (Wong *et al.*, 2016). Harris and Goode (2010) have presented a comprehensive definition for e-servicescapes as the atmospheric environment aspects in the virtual space when the service encounter occurs between service providers and a customer. It is the purposeful design of web environment to generate positive effects in present and prospective customers to encourage a favourable response (Dailey, 2004). Whenever a service encounter occurs, e-servicescapes have a key role to play in influencing and shaping customer perception and thereby their behaviours (Harris and Goode, 2010).

Dimensions of e-servicescapes initially have been developed based on servicescapes dimensions presented by Britner including ambient conditions, spatial layout and functionality, and signs, symbols and artefacts (Harris and Goode, 2010). Nowadays, dimensions of e-servicescapes have expanded and they are comprised of rich media, colours, music, interactivity, customisation, navigation, search paths, friendly interfaces, speed, care, privacy, security and timeliness of information (Harris and Goode, 2010; Griffith, 2005; Mari and Poggesi, 2013; Srinivasan *et al.*, 2002; Wong *et al.*, 2016). As a whole, they are evaluating the aesthetic appeal, layout, security, entertainment and functionality of the virtual environment (Jeon and Jeong, 2009; Harris and Goode, 2010). However, previous studies have not exclusively investigated the significant dimensions of e-servicescapes with respect to educational environment setting. Even though, owing to the unique characteristics of the DE system, it can expect that students prefer the virtual environments which are visually attractive, personalised, secured, interactive and offer opportunities for social interaction as well as most importantly provide timely and relevant information that can be easily found and accessed.

2.2 Student engagement

Students enrolled into study programmes with the ultimate aim of enhancing quality of their lives. Education institutes, on the other hand, facilitate this by developing required knowledge, skills, attitudes and mindset within the student. However, these objectives can only be accomplished if both the parties play their respective roles properly. Considering the student, they need to invest effort as well as time into academic activities, i.e. get themselves engaged in academic activities (Astin, 1984; Sun and Rueda, 2012).

Student engagement has been defined as the quality of student effort and time utilised for academic activities (Hu and Kuh, 2003; Richardson and Newby, 2006). It is the need, desire willingness and compulsion of the student to participate and be successful in the learning process promoting higher-level thinking (Miller *et al.*, 2011). However, majority of studies have identified student engagement as a behavioural phenomenon which deals with students' time, effort and participation in academic-related activities (Kahu, 2013). Kuh (2009) and Krause and Coates (2008) have defined it as the amount of time and effort students devoted into their studies and other educationally purposeful activities. Accordingly, student engagement has behavioural as well as cognitive and psychological aspects (Vogt, 2016). Previous studies have identified four different forms of student engagement such as skill engagement, participation engagement, emotional engagement and performance engagement (Handelsman *et al.*, 2005). Skill-promoting learning as taking notes in class and studying regularly are identified as skill engagement. Participation engagement happens in relation to others where the student tends to interact with teachers, takes part in group discussions with peers as well as asks questions in classrooms. Thinking of and usage of learning into real-life situations are referred to as

emotional engagement. Emphasis on obtaining good grades and doing well at examinations are examples for performance engagement. Despite the form of student engagement, previous studies have reported that it has a direct positive impact on educational outcomes such as student success, performance and achievement (Miller *et al.*, 2011; Sun and Rueda, 2012). Importantly, educational institutes also have a significant role to play in enhancing student engagement as it has identified that the quality of services offered, level of interaction and communication with students as well as resources and learning environment facilitate student engagement in academic activities (Dassanayake *et al.*, 2017; Vogt, 2016).

2.3 Student experience quality

Throughout the service journey, customer interacts with the service provider over several touch points directly or indirectly. Each of these interactions result in customer experience indicating that services are always accompanied by experience (Verhoef *et al.*, 2009). Since this is the era of experience economy, customers demand more than a competent service that can fulfil their needs; rather, they are seeking experience which are engaging, robust, compelling and memorable (Gilmore and Pine, 2002). Therefore, it is pivotal to design services in a way that offers superior experience to customers. Meyer and Schwager (2007) defined customer experience as internal and subjective response of the customer to any direct and or indirect contact with the company across multiple touch points. Importantly, customer experience is not confined to the service consumption stage; rather, it considers the total experience which encompasses search, purchase, consumption and after sales stages of the service journey (Verhoef *et al.*, 2009). In the DE context, students are the customers who compensate the effort of the service provider, i.e. the DE institute. In the educational context, predominately student experience was restricted to teaching and learning experience; however, it now encompasses student encounter with the administrative and support services provided by the education institute. Accordingly, it covers academic and non-academic experiences such as teaching, learning and assessment as well as university ancillary service aspects (Arambewela and Maringe, 2012; Douglas *et al.*, 2008).

Previous studies have used customer experience to describe the customers' impression of the service they received. This is what customer feels rather than an action, indicating the emotional feelings throughout the service encounter such as happiness, anger, love, boredom, sadness and shame (Voss *et al.*, 2008). These are strictly personal, internal, psychological, subjective and complex. Scholars have referred to this as customer perception of the parts of the service journey hence defined as customer experience quality. Customer experience quality therefore represents the perceived judgement about the excellence or superiority of the customer experience (Jutter *et al.*, 2013; Tan *et al.*, 2016). In the education context, student experience quality indicates the student perception on the variety of inputs they receive throughout their journey. They enrol into study programmes with numerous expectations. If those expectations on curricula, teaching, assessment, as well as support systems are met, students tend to rate their experience as a quality experience. It indicates the effectiveness of the learning experience of the student including academic and non-academic aspects, based on the affective analysis of service and its elements (Horvat *et al.*, 2012; Neumann and Neumann, 1993). Since the focus is diverting towards the experience economy, in order to become successful in the market place, service organisations need to focus on delivering a superior experience to its customers. Particularly, in the education context, it has been identified that student experience is a vital antecedent to many initiatives in higher education (Arambewela and Maringe, 2012; Baird and Gordon, 2009) and student experience quality has an impact on behavioural outcomes of the student (Dassanayake *et al.*, 2017).

2.4 Impact of e-servicescapes on student engagement

Impact of e-servicescapes on customer behaviour is one of the highly investigated areas in the service management literature. It has been identified that customer behaviours such as reuse, re-purchase, revisit, word of mouth communication and customer referrals are influenced by their perception on the virtual environment in retail, travel and tourism, entertainment and healthcare industries (Abou-Shouk and Khalifa, 2017; Cyr *et al.*, 2007; Duvall and Schwartz, 2000; Harris and Goode, 2010; Wong *et al.*, 2016). In the education context, student performance, satisfaction and usage were investigated with respect to the LMS rather than explicitly considering the entire virtual environment or website of the education institute (Miller *et al.*, 2011; Sun and Rueda, 2012; Vogt, 2016). However, based on the scattered implied findings, an impact on student engagement could be established. Aesthetic appeal of the virtual environment including its layout and media enhances student interest and thereby results in behavioural outcomes by creating an emotional engagement in learning (Abou-Shouk and Khalifa, 2017; Chen and Wells, 1999; Sun and Rueda, 2012; Yang *et al.*, 2003). When students find required information, they tend to visit the environment once again and this effect is strengthened when they can find information easily (Abou-Shouk and Khalifa, 2017; Bates and Khasawneh, 2007). Therefore, the technical easiness and assistance such as the availability of help desk is an important aspect (Sun and Rueda, 2012). Further, remote students prefer the interaction in order to overcome their isolation. High level of interactivity in the virtual environment enhances the student engagement (Miller *et al.*, 2011). Certain online activities and tools such as discussion boards, online debates and brainstorming facilitate interaction and enhance the performance engagement of students (Sun and Rueda, 2012). Therefore, it is empirically evident that e-servicescapes evoke student behavioural responses just as bricks and mortar servicescapes do (Hopkins *et al.*, 2009). This can be further supported by the Unified Theory of Acceptance and Usage of Technology (Venkatesh *et al.*, 2003) which highlights that website design has a direct impact on the behaviours of the users. The design encompasses visual appeal, layout, interaction, as well as information available. Accordingly, based on the theoretical and empirical findings, this study proposes the following hypothesis:

H1. E-servicescapes have a positive impact on student engagement in DE in Sri Lanka.

2.5 Mediating role of student experience quality

In the physical service environment, service setting is one of the elements that affect customer experience (Fisk *et al.*, 2000). Similarly, in the virtual environment, design of the website has the ability of creating a favourable impression in visitors' mind and thereby making them satisfied with the experience they receive (Abou-Shouk and Khalifa, 2017; Hopkins *et al.*, 2009). Aesthetic elements such as music, colours, fonts and media create an excitement within them and reshape their perception (Chen and Wells, 1999; Yang *et al.*, 2003). Effective organisation of the website and the ease of navigation it creates make it easier for visitors to find exactly what they are seeking. It creates a pleasurable and rewarding online experience which induces them to revisit (Hopkins *et al.*, 2009; Tan *et al.*, 2016; Vogt, 2016). Messy environment creates negative emotions and subsequently it develops a dislike towards the website as well as the education institute (Hopkins *et al.*, 2009; Sun and Rueda, 2012). For instance, even the font size is a matter to focus on. Other than finding the required information by themselves, the visitors prefer to have online help desk, prompt answer to their queries and quick feedback. Delays in responses, not working links and illegible letters create a bad impression (Abou-Shouk and Khalifa, 2017; Sauro, 2016). Therefore, it is empirically evident that when the e-servicescapes are more appealing, the student tends to create favourable emotions and define their experience as of high quality.

On the other hand, previous studies in the service settings have confirmed that customer experience quality is directly related with their behaviours. When customers emotionally perceive their experience with the service encounter as of high quality, it directly and positively influences their behaviours. This results in life time bond with the service provider and they become loyal customer with repeat purchases, positive word of mouth communications and recommendations to other customers (Kim and Choi, 2013; Verhoef *et al.*, 2009). Similarly, in the education context, Entwistle and Tait (1990) have specifically reported a direct impact of student perception on what they receive from the education institute and their respective actions. When they bear positive emotions relating to their overall learning experience including academic and non-academic aspects with the institute, they are encouraged to invest more time and effort on academic activities (Dassanayake *et al.*, 2017; Sidelinger and Booth-Butterfiled, 2010). When students are exposed to meaningful learning experience, they become satisfied. They tend to realise that if they integrate more into academic activities, in return they will become more satisfied and successful such that they will invest more time and effort on academic activities. Therefore, it can empirically identify positive and direct impact of student experience quality and their engagement.

Accordingly, the empirical findings indicate that when students are offered with better e-servicescapes, they tend to rate their learning experience as of high quality and tend to engage more in academic activities. This can be elaborated using the Mehrabian and Russell Model (Billings, 1990). It emphasises that environmental stimuli reshape the feelings and emotions of an individual which ultimately influence his or her behaviour, such that perception on stimuli mediates the relationship between stimuli and response (Robbins and Judge, 2013). In this study, therefore e-servicescapes are environmental stimuli and student engagement is the response to the stimuli which is mediated by the student perception on learning experience, i.e. student experience quality. Accordingly, based on the empirical and theoretical ground, this study proposes following hypotheses to test the mediating effect of the student experience quality:

H2. E-servicescapes have a positive impact on student experience quality in DE in Sri Lanka.

H3. Student experience quality has a positive impact on student engagement in DE in Sri Lanka.

H4. Student experience quality mediates the impact of e-servicescapes on student engagement in DE in Sri Lanka.

Based on the above-identified relationships, this paper proposes the following conceptual framework which is subject to empirical validation through a rigorous data collection and analysis (Figure 1).

3. Methodology

An extensive literature review was carried out to develop hypotheses and they were tested using the quantitative approach based on cross-sectional survey design. Self-administered questionnaire was used to collect primary data. In order to overcome common method variance (CMV), procedural remedies were taken at the questionnaire designing stage such as attaching a cover letter and separating measure psychologically using clear instructions

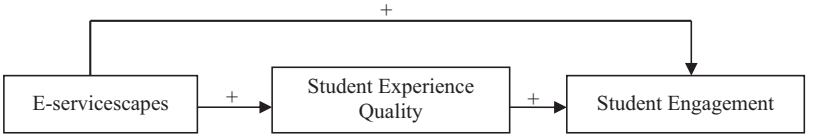

Figure 1.
Conceptual framework

(Podsakoff *et al.*, 2003). A pilot survey was conducted and based on its results, required modifications were done to the questionnaire. Table I presents the operationalisation of study variables, whereas Table AI presents the indicators used to measure all the variables in the questionnaire.

The study was taken place in Sri Lanka. Population was restricted to all the registered students of the OUSL as at 31 March 2018. Due to the availability of a defined sample frame, sample was drawn using the simple random sampling technique. Self-administered questionnaire was distributed among the sample members using Google forms. After two weeks of initial mailing, a reminder note was sent to increase the response rate (Dillman, 1991). Altogether 800 questionnaires were distributed, after removing incomplete questionnaires, 252 were used in preliminary data analysis maintaining the effective response rate of 31.5 per cent (Saunders *et al.*, 2011).

The sample of the study consisted of 252 registered students of the OUSL. Table II summarises demographic characteristics of the sample. The sample consisted of 68 per cent of females. Majority are in the age range of 20–35 years such that they can be grouped as millennial who have grown up with modern technologies. This is reflected through their knowledge on ICT as 74 per cent of respondents have claimed that they possess a good ICT knowledge. Further, 71 per cent are single considering their marital status. Majority (69 per cent) are full-time employed students such that it is fair to assume that they prefer a hassle-free learning process and thereby quality learning experience amidst their hectic lifestyle. Considering the level of contact with the OUSL website, 91 per cent have a moderate to very high level of contact, whereas many respondents (58 per cent) visit the OUSL website two to seven times per week. These statistics indicate that students have the ability and the willingness to use the OUSL website. Therefore, a proper design of the website can possibly reap benefits to the students and to the institute.

When analysing the data, initially parametric assumptions of linearity, normality, homoscedasticity of error term and multicollinearity were tested. Next, exploratory factor analysis was performed and unidimensionality of measurement scales of variables were ensured (Hair *et al.*, 2009; Saunders *et al.*, 2011; Sekaran and Bougie, 2014). Measurement model was derived as the next step and tested using confirmatory factor analysis. Model fit was improved using modification indices and by removing indicators of variables with standardised factor loadings below 4.5. Model fit of the measurement model was ensured using goodness-of-fit (GOF) indices. Reliability of variables was tested using the Cronbach's α value and the composite reliability where all the values were above 6.0. Average variance extracted (AVE) was calculated to test the convergent validity of each variable. Since all the

Variable	Definition	Dimensions	Source
E-servicescapes	Atmospheric environment aspects in the virtual space when the service encounter occurs between service providers with a customer	Visual appeal Personalisation Interactivity Ease of use Relevance of information Social presence	Harris and Goode (2010), Jeong *et al.* (2003)
Student experience quality	Perceived judgement about the excellence or superiority of the student experience		Dassanayake *et al.* (2017),
Student engagement	Amount of time and effort students devoted into their studies and other educationally purposeful activities	Skills engagement Emotional engagement Participation engagement Performance engagement	Dixon (2010)

Table I.
Operationalisation of study variables

Characteristic	Frequency	Percentage	Characteristic	Frequency	Percentage
Gender			*Marital Status*		
Male	81	32	Single	178	71
Female	171	68	Married	74	29
Age (years)			*Employment status*		
Less than 20	0	0	Full-time employed	173	69
20–35	224	89	Part time employed	7	3
36–50	28	11	Self-employed	15	6
51–65	0	0	Unemployed	57	22
More than 65 years	0	0			
Study programme			*Level of contact with the OUSL website*		
Certificate level	58	23	Very low	5	2
Bachelor's degree	175	69	Low	17	7
Master's degree	19	8	Moderate	174	69
			High	48	19
			Very high	8	3
Frequency of visiting to OUSL website in a week			*Knowledge on ICT*		
0 time	12	5	Very weak	0	0
1 time	77	31	Weak	0	0
2–7 times	148	58	Moderate	25	10
More than 7 times	15	6	Good	186	74
			Excellent	41	16

Table II. Demographic characteristics of the sample

AVE values were greater than 0.5, convergent validity of the variables was established. Further, discriminant validity could also be established since all the AVE values were greater than squared correlations among variables (Hair *et al.*, 2009). In addition, Harman's single-factor analysis was conducted and due to the presence of more than one factor, the absence of CMV was noted (Podsakoff *et al.*, 2003). Upon the validation of measures, finally the structural model was developed to test the hypotheses proposed.

4. Data analysis

4.1 Descriptive analysis

This study mainly focusses on three constructs such as e-servicescapes, student experience quality and student engagement where e-servicescapes and student engagement consist of six and four variables, respectively. Table III presents summary measures of those constructs

Variable	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
E-servicescapes	1.97	4.67	3.30	0.57	−0.27	−0.39
Visual appeal	1.67	4.67	3.28	0.64	−0.16	−0.49
Ease of use	1.71	5.00	3.48	0.68	−0.27	−0.31
Relevance of information	1.86	5.00	3.47	0.64	−0.19	0.05
Personalisation	1.67	5.00	3.30	0.61	−0.19	−0.15
Interactivity	1.67	5.00	3.18	0.69	−0.09	0.64
Social presence	1.67	4.33	3.06	0.68	−0.13	−0.98
Student experience quality	2.10	4.98	3.89	0.66	−0.05	−0.38
Student engagement	2.48	4.96	3.90	0.42	−0.17	0.86
Skill engagement	2.00	5.00	3.75	0.52	−0.34	0.74
Emotional engagement	2.40	5.00	3.96	0.55	−0.23	−0.02
Participation engagement	2.60	5.00	3.74	0.54	0.29	−0.32
Performance engagement	2.50	5.00	4.13	0.56	−0.25	−0.39

Table III. Descriptive statistics of variables

and variables. Accordingly, the mean and the standard deviation vary between 3.06 and 4.13 and 0.42 and 0.69, respectively. Student engagement construct occupies the highest mean value as well as the lowest variation from the mean. Skewness and Kurtosis values are between −2 and +2 denoting the variables are approximately in a normal distribution. All the study variables were measured using a five-point Likert scale indicating 1 = strongly disagree and 5 = strongly agree. Accordingly, the mean value represents that all the respondents convey a higher level of agreement with the variables. This is further strengthened considering lower values occupied by the standard deviation.

4.2 Structural model

Based on the validated measurement model, the structural model was derived to test the study hypotheses. Figure A1 presents the structural model developed. Table IV presents the GOF measures used to evaluate the model fit. Values of GFI, AGFI, IFI, TLI and CFI are closer to 0.8, whereas RMSEA and CIMIN/df are below 0.08 and 3, respectively. Similarly, PRATIO has reached 0.9. Accordingly, all the absolute, incremental and parsimony indices have reached the cut-off values such that it can be concluded that the structural model used to test the hypotheses is appropriate.

4.3 Hypotheses testing

The hypotheses developed through a rigorous literature review were tested using the validated structural model. Table V presents the results of hypotheses testing.

All the hypotheses are significant at 95 per cent confidence level. E-servicescapes have a direct positive impact ($\beta = 0.27$) on student engagement as well as an indirect impact ($\beta = 0.17$) through student experience quality. Since the indirect impact is comparatively lower than the direct impact, student experience quality acts as a partial mediator. However, the total impact on student engagement is $\beta = 0.44$ where the direct impact has a higher contribution towards the total impact. When considering the variables of the e-servicescapes construct, all of them have a significant impact on student engagement with varying degrees. Social presence variable of the e-servicescape construct has the highest impact on student engagement ($\beta = 0.28$), while ease of use and relevance of information have the second and the third highest impact, respectively. Even though the impact is significant, personalisation variable has the lowest impact on student engagement. Altogether, the model explains 54 per cent of total variance ($R^2 = 0.54$) in student engagement which is acceptable in social science studies (Moksony, 1999).

Table IV. Goodness-of-fit indices of structural model

Absolute				Incremental			Parsimony
CIMIN/df	GFI	AGFI	RMSEA	IFI	TLI	CFI	PRATIO
2.75	0.81	0.79	0.07	0.79	0.80	0.79	0.90

Table V. Results of hypotheses testing

Hypotheses	β	p	Result on hypotheses
H1	0.27	0.00**	Supported
H2	0.28	0.00**	Supported
H3	0.61	0.00**	Supported
H4	0.17	0.00**	Supported

Note: **$p < 0.05$

According to the findings of the hypotheses testing, when virtual environment and its components are designed properly, i.e. better the e-servicescapes, it will eventually enhance the student engagement in academic activities. Due to the partial mediation of student experience quality, a properly designed virtual environment creates an appealing learning experience to students such that they invest more effort and time on academic activities. Even though students are not highly satisfied with their learning experience or rate it as of high quality due to higher impact of e-servicescapes on student engagement, priority should be given to the design of the e-servicescapes. Importantly, a significant variation in the student engagement is explained by the overall model. This indicates that the design of the virtual environment plays an important role in shaping the behaviour of students. Therefore, decision regarding the design of virtual environment should be taken with due care as it ultimately influences the overall effectiveness of the DE system significantly.

5. Discussion and conclusion

5.1 Discussion

Since the inception, DE has been identified as one of the most effective modes of education. It is subject to continuous development as a result of revolution in ICT coupled with social and demographic environmental changes. However, previous studies have identified comparatively lower academic engagement of students in the DE context which can be attributed to the system-specific alienation feature as well. Since students are not essentially required to visit the institutional premises, creating a virtual environment in order to overcome the alienation is of paramount importance. Therefore, this study looked into e-servicescapes and attempted to identify its impact on student engagement.

E-servicescapes have received due attention among scholars in most of the service settings yet its impact on the education, particularly in the DE, has not been explored extensively. The findings of the study indicated that various dimensions of e-servicescapes have a significant direct positive impact on student behaviours. This aligns with the previous findings in different service settings. Data from service settings such as travel and tourism, retail, healthcare, as well as gambling have shown that customer revisit, re-purchase, referrals and loyalty are influenced by the design of virtual service environment (Cyr *et al.*, 2007; Duvall and Schwartz, 2000; Hakim and Deswindi, 2015; Wong *et al.*, 2016). Even though previous studies have not been carried out in the DE context considering the entire institutional website, studies on LMS have reported that easiness of usage, interactivity, entertaining aspects and availability of required information will positively influence the student behaviours. These different aspects can be identified as the constituents of the entire virtual environment. Therefore, the first finding of this study is well aligned with the previous findings (Abou-Shouk and Khalifa, 2017; Bates and Khasawneh, 2007; Chen and Wells, 1999; Miller *et al.*, 2011; Sun and Rueda, 2012; Yang *et al.*, 2003). When considering the individual dimensions of e-servicescapes, social presence has the highest impact on student engagement. This can be related with the alienation feature as students prefer to interact with the peers, teachers and other support staff since they have limited opportunity for face-to-face interaction. Therefore, isolated students are seeking for interaction opportunity in the virtual environment as well. However, it is surprising that despite the importance laid on the visual appeal and the level of personalisation dimensions by the previous findings, this study revealed that those dimensions have the lowest impact on student engagement. Typically, it has been perceived that university education is structured, rigid and standardised such that students may not expect higher level of personalisation. Further, majority of respondents are adults and employed students, and they prefer to focus on obtaining only the academic-specific information rather than auxiliary features. However, this is a finding which needs further investigation as it is contrary to the available knowledge.

Considering the mediating impact, the second finding of the study reveals that when students are offered with better e-servicescapes, it affects their perception on learning experience which they rate as of high quality and thereby manipulate their behaviours in terms of investing more time and effort on academic activities. This impact has not been previously investigated in the DE context. However, in other service settings, it has been identified that the design of the virtual environment incites customer emotions and thereby they act upon them. Therefore, customer behaviour is reshaped by the customer perception on their experience with the service setting to a greater extent. Accordingly, the second finding also aligns with the existing knowledge which highlights the importance of proper design of the e-servicescapes (Abou-Shouk and Khalifa, 2017; Entwistle and Tait, 1990; Hopkins *et al.*, 2009).

On the other hand, the demographic features of the respondents indicate that they have the ability and the willingness to deal with the e-servicescapes. Increasing use of the internet and development of associated infrastructure signal that students can be reached digitally more effectively in the DE context. Therefore, designing the e-servicescapes by incorporating features as easiness of use and availability of timely, accurate and required information which are presented in visually appealing manner will essentially attract the students towards academic activities. Further, due to alienation feature, the virtual environment that is designed in a way that students can interact with peers, teachers and other stakeholders makes the student feel that they are no longer isolated. Therefore, they can carry out their academic activities without any hassle despite their other personal and professional commitments. Accordingly, the findings of the study align with the existing knowledge base which highlights the significance of designing the e-servicescapes effectively since it can necessarily influence the student behaviour as physical servicescapes.

5.2 Conclusion

Unlike goods, environment where the services are delivered plays a significant role due to customer contact in service co-production. Exponential growth in ICT facilities has created new avenues for service delivery via the internet. Hence, the virtual service environment and its design have been identified as an antecedent of customer behavioural intentions and thereby behaviours in numerous service settings. Growth in ICT facilities, students' willingness to communicate digitally and system-specific alienation feature set forth an importance upon e-servicescapes in the DE system. Despite its applicability, e-servicescapes in the DE context is an area which has not been explored extensively by the scholars; hence, this study bridges the empirical gap that existed in the knowledge base. Accordingly, the study attempted to identify the impact of e-servicescapes on student engagement and mediating effect of student experience quality on this impact. The study is primarily targeted at enhancing student performance and persistence by making them engaged in academic activities. For this purpose, study has identified e-servicescapes as a contextual- or institutional-specific factor and investigated its impact on student engagement by proposing an alternative explanation for changes in student engagement. This is an extension to the existing knowledge, particularly in the DE context, as previous studies attempted to identify the impact of student-related factors on their behaviours. As a whole, the findings of the study indicated that there is a positive significant impact of e-servicescapes on student engagement where student experience quality partially mediates this impact. Social presence dimension of e-servicescapes has the highest impact on student engagement. Accordingly, apart from theoretical and empirical novelty, the findings provide invaluable input to design the virtual environment in order to offer a superior learning experience to students and thereby make them more engaged in academic activities.

6. Implications, limitations and further studies

6.1 Implications

This study provides a novel contribution to the existing knowledge in the fields of service management and education, specifically in the DE context. The empirically validated conceptual model is unique to the DE system which has not been previously tested. Further, the measurement scale of e-servicescapes was developed by modifying the existing literature. Since it has proven that measures are valid and reliable, they can be used in future studies in the DE context.

Most importantly, other than the theoretical contribution, the study findings are enriched with practical implications. This study argued that website is a built virtual environment where the service encounter takes place throughout the student journey with the institute. The empirically validated conceptual framework explains a significant portion (54 per cent) of the changes in student engagement. Therefore, findings emphasise the importance of careful design of the e-servicescapes, i.e. institutional website. As the respondents have laid a greater emphasis on social presence dimension, in designing the virtual environment, attention should be paid on interactivity between academics, peers and academic support staff with students. Opportunities should be provided as chat bots, online forums, online help desk as solutions to alienation feature such that remote students should not feel that they are detached from the institute. Further, the website should be updated with the timeliest information to make the student up to date. The required information could be obtained as and when needed. Students can therefore perform most of the activities throughout the service journey without commuting to the institute premises. This offers hassle-free learning opportunities to students who are vested with personal and professional commitments other than academic obligations. Specifically, easiness of using the virtual environment must be addressed by designing a user friendly and attractive interface. Further, it is essential to make sure the smooth functioning of the website such as proper hyperlinks to necessary information, secured payment gateways and minimising the down time. Even though, the respondents have not placed an importance over personalisation and visual appeal dimensions of e-servicescapes, their impact has been identified as significant. Therefore, quality images and resolution, colours, fonts, sounds and, as a whole, the entire layout of the virtual environment can make it more attractive and act as positive stimuli which encourage their revisit. Incorporation of these elements offers a quality experience to students and thereby encourages them to visit the environment over and over again as people value quality of their experience nowadays which can manipulate their behaviours. Accordingly, the findings of this study adequately justify why it is essential to design a virtual environment of the DE institute. It has empirically proven that the proper design of e-servicescapes manipulates the student behaviour such that their performance and persistence could be ensured. Most importantly, by making the student engaged, their academic performance could be enhanced while retaining them with the institution without dropping out. This facilitates the accomplishment of objectives of the student as well as the institution and thereby ensures the effectiveness of the DE system. Particularly, in the Sri Lankan context, many people lose their higher education opportunities due to person-specific socio-demographic factors and limited access to national higher education institutes. Making the DE system more effective offers opportunities to wider society to pursue their academic desires and thereby making the nation literate. Therefore, the study as a whole has a national contribution in uplifting the well-being of the nation.

6.2 Limitations and future studies

Despite the theoretical, practical and social implications, there are few limitations in the study that could provide suggestions for future studies. There are multiple state and private educational institutes that offer DE-based study programme, yet this study was limited to

the students of the OUSL Therefore, sample can be drawn including such institutes to widen the scope of and enhance the divert of future studies. E-servicescapes variable consisted of six dimensions which describe the characteristics of the virtual environment. This study only focussed on their combined impact on student behaviour. However, these characteristics could be further investigated individually in terms of their existing performance and weaknesses to identify how they should be addressed when designing a virtual environment. Student-related factors can also play a significant role in determining the student behaviour albeit the study was limited to institution-related factors. Students vary in terms of their ICT literacy and particularly in their demographic profile including employment status, family commitments, financial restrictions, prior education background and importantly their desire for future accomplishments. These variables could impact on student experience as well as behaviour such that they could be introduced to future studies to obtain a holistic picture. Finally, the study only captured the student perception on e-servicescapes. However, future studies could incorporate institutional perception on the service they offer to identify the gap between perceptions which indeed provide a valuable input to the virtual environment designing.

References

Abou-Shouk, M.A. and Khalifa, G.S. (2017), "The influence of website quality dimensions on e-purchasing behaviour and e-loyalty: a comparative study of Egyptian travel agents and hotels", *Journal of Travel & Tourism Marketing*, Vol. 34 No. 5, pp. 608-623.

Arambewela, R. and Maringe, F. (2012), "Mind the gap: staff and postgraduate perceptions of student experience in higher education", *Higher Education Review*, Vol. 44 No. 2, pp. 63-83.

Astin, A. (1984), "Student involvement: a developmental theory for higher education", *Journal of College Student Personnel*, Vol. 25, pp. 297-308.

Baird, J. and Gordon, G. (2009), "Beyond the rhetoric: a framework for evaluating improvements to the student experience", *Tertiary Education and Management*, Vol. 15 No. 3, pp. 193-207.

Bates, R. and Khasawneh, S. (2007), "Self-efficacy and college students' perceptions and use of online learning systems", *Computers in Human Behaviour*, Vol. 23 No. 1, pp. 175-191.

Billings, W.L. (1990), "Effects of store atmosphere on shopping behaviour", available at: http://digitalcommons.iwu.edu/busadmin_honproj/16 (accessed 20 July 2018).

Bitner, M.J. (1992), "Servicescapes: the impact of physical surroundings on customers and employees", *The Journal of Marketing*, Vol. 56 No. 2, pp. 57-71.

Burch, G.F., Burch, J.J. and Womble, J. (2017), "Student engagement: an empirical analysis of the effects of implementing mandatory web-based learning systems", *Organisational Management Journal*, Vol. 14 No. 2, pp. 116-125.

Chen, Q. and Wells, W.D. (1999), "Attitude toward the site", *Journal of Advertising Research*, Vol. 42 No. 2, pp. 27-37.

Cyr, D., Hassanein, K., Head, M. and Ivanov, A. (2007), "The role of social presence in establishing loyalty in e-service environments", *Interacting with Computers*, Vol. 19 No. 1, pp. 43-56.

Dailey, L. (2004), "Navigational web atmospherics: explaining the influence of restrictive navigation cues", *Journal of Business Research*, Vol. 57 No. 7, pp. 795-803.

Dassanayake, H.C., Nishantha, B. and Senevirathne, W.A.R. (2017), "Persuading student involvement via peripheral services offered", *Asian Association of Open Universities Journal*, Vol. 12 No. 2, pp. 154-170.

Dillman, D.A. (1991), "The design and administration of mail surveys", *Annual Reviews Sociology*, Vol. 17 No. 1, pp. 225-249.

Dixon, M.D. (2010), "Creating effective student engagement in online courses: what do students find engaging?", *Journal of Scholarship of Teaching and Learning*, Vol. 10 No. 2, pp. 1-13.

Douglas, J., McClelland, R. and Davies, J. (2008), "The development of a conceptual model of student satisfaction with their experience in higher education", *Quality Assurance in Education*, Vol. 16 No. 1, pp. 19-35.

Duvall, C.K. and Schwartz, R.G. (2000), "Distance education: relationship between academic performance and technology-adept adult students", *Education and Information Technologies*, Vol. 5 No. 3, pp. 177-187.

Entwistle, N. and Tait, H. (1990), "Approaches to learning, evaluations of teaching, and preferences for contrasting academic environments", *Higher Education*, Vol. 19 No. 2, pp. 169-194.

Fisk, R.P., Grove, S.J. and John, J. (2000), "All the websites are a stage, so marketers put on a show", *Marketing News*, Vol. 34 No. 23, pp. 23-26.

Gilmore, J.H. and Pine, B.J. (2002), "Customer experience places: the new offering frontier", *Strategy and Leadership*, Vol. 30 No. 4, pp. 4-11.

Gray, J.A. and Diloreto, M. (2016), "The effects of student engagement, student satisfaction, and perceived learning in online learning environments", *International Journal of Educational Leadership Preparation*, Vol. 11 No. 1, pp. 96-115.

Griffith, D.A. (2005), "An examination of the influences of store layout in online retailing", *Journal of Business Research*, Vol. 58 No. 10, pp. 1391-1396.

Gunewardana, G. (2017), *Service Management: Concepts, Principles, and Applications for Sri Lanka*, Dayawansa Jayakody and Company, Colombo.

Hair, J., Black, W.C., Babin, B.J. and Anderson, R.E. (2009), *Multivariate Data Analysis*, Prentice Hall, Chollerstrasse.

Hakim, L. and Deswindi, L. (2015), "Assessing the effects of e-servicescapes on customer intention: a study on the hospital websites in south Jakarta", *Procedia – Social and Behavioural Sciences*, Vol. 169, pp. 227-239.

Handelsman, M.M., Briggs, W.L., Sullivan, N. and Towler, A. (2005), "A measure of college student course engagement", *The Journal of Educational Research*, Vol. 98 No. 3, pp. 184-191.

Harris, L.C. and Goode, M.M. (2010), "Online servicescapes, trust, and purchase intentions", *Journal of Services Marketing*, Vol. 24 No. 3, pp. 230-243.

Hopkins, C.D., Grove, S.J., Raymond, M.A. and LaForge, M.C. (2009), "Designing the e-servicescape: implications for online retailers", *Journal of Internet Commerce*, Vol. 8 Nos 1-2, pp. 23-43.

Horvat, A., Krsmanovic, M. and Djuric, M. (2012), "Differences in students' satisfaction with distance learning studies", *International Journal of Social, Behavioural, Educational, Economic, Business and Industrial Engineering*, Vol. 6 No. 6, pp. 1412-1415.

Hu, S. and Kuh, G. (2003), "Maximizing what students get out of college: testing a learning productivity model", *Journal of College Student Development*, Vol. 44 No. 2, pp. 185-203.

Jeon, M. and Jeong, M. (2009), "A conceptual framework to measure e-servicescape on a B&B website", available at: http://scholarworks.umass.edu/refereed/Sessions/Saturday/14/ (accessed 24 July 2018).

Jeong, M., Oh, H. and Gregoire, M. (2003), "Conceptualizing web site quality and its consequence in the lodging industry", *International Journal of Hospitality Management*, Vol. 22 No. 2, pp. 161-175.

Jutter, U., Schaffner, D., Windler, K. and Maklan, S. (2013), "Customer service experience: developing and applying a sequential incident laddering technique", *European Journal of Marketing*, Vol. 47 No. 5, pp. 738-768.

Kahu, E.R. (2013), "Framing student engagement in higher education", *Studies in Higher Education*, Vol. 38 No. 5, pp. 758-773.

Kanuka, H. (2005), "An exploration into facilitating higher levels of learning in a text-based internet learning environment using diverse instructional strategies", available at: https://onlinelibrary.wiley.com/doi/full/10.1111/j.1083-6101.2005.tb00256.x (accessed 19 July 2018).

Keegan, D.J. (1980), "On defining distance education", *Distance Education*, Vol. 1 No. 1, pp. 13-31.

Kim, H. and Choi, B. (2013), "The influence of customer experience quality on customer behavioural intentions", *Services Marketing Quarterly*, Vol. 34 No. 4, pp. 322-338.

Koernig, S.K. (2003), "Escapes: the electronic physical environment and service tangibility", *Psychology & Marketing*, Vol. 20 No. 2, pp. 151-167.

Krause, K.L. and Coates, H. (2008), "Students' engagement in first-year university", *Assessment & Evaluation in Higher Education*, Vol. 33 No. 5, pp. 493-505.

Kuh, G.D. (2009), "What student affairs professionals need to know about student engagement", *Journal of College Student Development*, Vol. 50 No. 6, pp. 683-706.

Mari, M. and Poggesi, S. (2013), "Servicescape cues and customer behaviour: a systematic literature review and research agenda", *The Service Industries Journal*, Vol. 33 No. 2, pp. 171-199.

Meyer, C. and Schwager, A. (2007), "Understanding customer experience", *Harvard Business Review*, Vol. 85 No. 2, pp. 116-126.

Miller, R.L., Rycek, R.F. and Fritson, K. (2011), "The effects of high impact learning experiences on student engagement", *Procedia – Social and Behavioural Sciences*, Vol. 15 No. 1, pp. 53-59.

Moksony, F. (1999), "Small is beautiful: the use and interpretation of R2 in social research", *Review of Sociology*, Special issue, pp. 130-138, available at: www.researchgate.net/publication/242329609

Neumann, Y. and Neumann, E.F. (1993), "Quality of learning experience and students' college outcome", *International Journal of Educational Management*, Vol. 7 No. 1, pp. 4-10.

OUSL (2016), "Bachelor of Management Studies Degree-2016", The Open University of Sri Lanka, Nawala.

Podsakoff, P.M., MacKenzie, S.B., Lee, J. and Podsakoff, N.P. (2003), "Common method biases in behavioural research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.

Preiser-Houy, L. and Russel, M. (2011), "Towards a conceptual framework of an educational web portal", *Communications of the IIMA*, Vol. 11 No. 1, pp. 76-88.

Richardson, J.C. and Newby, T. (2006), "The role of students' cognitive engagement in online learning", *American Journal of Distance Education*, Vol. 20 No. 1, pp. 23-37.

Robbins, S.P. and Judge, T.A. (2013), *Organizational Behaviour*, Prentice Hall, Upper Saddle River, NJ.

Saunders, M., Lewis, P. and Thornhill, A. (2011), *Research Methods for Business Students*, Dorling Kindersley India, Noida.

Sauro, J. (2016), "Measuring the quality of the website user experience", available at: https://digitalcommons.du.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=2166&context=etd (accessed 20 July 2018).

Sekaran, U. and Bougie, R. (2014), *Research Methods for Business: A Skill Building Approach*, Wiley India, Noida.

Sidelinger, R.J. and Booth-Butterfiled, M. (2010), "Co-constructing student involvement: an examination of teacher confirmation and student to student connectedness in the college classroom", *Communication Education*, Vol. 59 No. 2, pp. 165-184.

Srinivasan, S.S., Anderson, R. and Ponnavolu, K. (2002), "Customer loyalty in e-commerce: an exploration of its antecedents and consequences", *Journal of Retailing*, Vol. 78 No. 1, pp. 41-50.

Sun, J.C. and Rueda, R. (2012), "Situational interest, computer self-efficacy and self-regulation: their impact on student engagement in distance education", *British Journal of Education Technology*, Vol. 43 No. 2, pp. 191-204.

Tan, A.H.T., Muskat, B. and Zehrer, A. (2016), "A systematic review of quality of student experience in higher education", *International Journal of Quality and Service Sciences*, Vol. 8 No. 2, pp. 209-228.

Tavukcu, T., Arap, A. and Ozcan, D. (2011), "General overview of distance education concept", *Procedia – Social and Behavioural Sciences*, Vol. 15, pp. 3999-4004.

Theron, E. and Pelser, A. (2017), "Using servicescapes to manage student commitment towards a higher education institute", *South African Journal of Higher Education*, Vol. 31 No. 5, pp. 225-245.

Tuckman, B.W. (2007), "The effect of motivational scaffolding on procrastinators' distance learning outcomes", *Computers and Education*, Vol. 49 No. 2, pp. 414-422.

Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003), "User acceptance of information technology: toward a unified view", *MIS Quarterly*, Vol. 27 No. 3, pp. 425-478.

Verhoef, P., Lemon, K.N., Parasuramn, A., Roggeveen, A., Tsiros, M. and Schledinger, L.A. (2009), "Customer experience creation: determinants, dynamics and management strategies", *Journal of Retailing*, Vol. 85 No. 1, pp. 31-41.

Vogt, K.L. (2016), "Measuring student engagement using learning management systems", available at: https://tspace.library.utoronto.ca/bitstream/1807/73213/3/Vogt_Krista_L_201606_PhD_thesis.pdf (accessed 23 July 2018).

Voss, C., Roth, A.V. and Chase, R.B. (2008), "Experience, service operations strategy and services as destinations: foundries and exploratory investigation", *Production and Operations Management*, Vol. 17 No. 3, pp. 247-266.

Wong, Y.Y., Chun, J.Z. and Ho, K. (2016), "Trends in open and distance learning research: 2005 vs 2015", *Asian Association of Open Universities Journal*, Vol. 11 No. 2, pp. 216-227.

Writz, j., Lovelock, C. and Chatterjee, J. (2018), *Services Marketing*, Shree Maitrey Printech, Noida.

Yang, Z., Peterson, R.T. and Cai, S. (2003), "Services quality dimensions of internet retailing: an exploratory analysis", *Journal of Services Marketing*, Vol. 17 No. 7, pp. 685-700.

Appendix 1

Dimension	Indicators	Code
Construct – e-servicescapes		
Visual appeal	This web portal is visually attractive	VA1
	The web portal is aesthetically appealing	VA2
	The web portal is innovative and creative	VA3
	The web portal is very entertaining	VA4
	The enthusiasm of this web portal is catching, it picks me up	VA5
	The presentation of this web portal is interesting	VA6
Ease of use	The web portal is designed in a way that is easy for me to follow	EU1
	The information on the web portal is well organised	EU2
	The web portal provides simple and clear directions for use	EU3
	I found it easy to move around in this web portal	EU4
	The web portal and all of its linked pages work well	EU5
	The functions on this web portal are easy to operate	EU6
	In general, this is an easy web portal to use	EU7
Relevance of information	Each page clearly indicates what one can expect to find or do	RI1
	Web portal provides accurate information to OUSL students like me	RI2
	The information provided on the web portal is reliable	RI3
	The information provided on the web portal is up to date	RI4
	The information provided on the web portal is easily understandable	RI5
	The information on the web portal is complete for my study decisions	RI6
	I can find all the detailed information I need to carry out my academic activities	RI7
Personalisation	This web portal is tailored towards me	P1
	If I want to, I can customise the web portal to what I like (e.g. changing colours, font, layout, etc.)	P2
	The services of this web portal are often personalised to me	P3
	This web portal treats me as an individual	P4
	When communicating with the web portal I am addressed using my name	P5
	The web portal makes recommendations that match my needs	P6
Interactivity	The web portal has a good keyword search facility	I1
	All my queries are addressed quickly by the web portal	I2
	This is a very engaging web portal	I3
	This web portal is frequently updated	I4
	Online help desk is available in this website	I5
	This web portal has many interactive features	I6
Social factors	There is a sense of human touch whenever I interact with the web portal	SF1
	There is a possibility of networking with my batch mates through the web portal	SF2
	There is a sense of friendliness whenever I interact with the web portal	SF3
	There is a feeling of belongingness whenever I interact with the web portal	SF4
	There is a sense of human warmth in the web portal	SF5
	There is a sense of human sensitivity in the web portal	SF6
Construct – student experience quality		
	I am having a great time with my academic activities	SEQ1
	My academic activities are interesting	SEQ2
	I am having a very enjoyable time as an undergraduate	SEQ3
	I am having a very pleasant experience as an undergraduate	SEQ4
	My experience as an undergraduate makes me happy	SEQ5
	My experience as an undergraduate is enjoyable	SEQ6
	My learning experience is beyond words	SEQ7
	I truly enjoy my learning experience	SEQ8
	I believe that I receive a superior learning experience at OUSL	SEQ9
	My learning experience at OUSL is excellent	SEQ1

Table AI.
Operationalisation of study constructs

(*continued*)

Dimension	Indicators	Code
Construct – student engagement		
Skill engagement	I make sure to study on a regular basis	SkE1
	I stay up on the readings	SkE2
	I look over class notes between day schools to make sure I understand the material	SkE3
	I am always being organised	SkE4
	I prepare a note by my self-referring course manual, lecture material, additional material uploaded to LMS and recommended reading books	SkE5
Emotional engagement	I always put forth effort	EmE1
	I find ways to make the course material relevant to my life	EmE2
	I apply what I learn from this course to my life	EmE3
	I find ways to make the course interesting to me	EmE4
	I really desire to learn what is there in study material	EmE5
Participation engagement	I enjoy face-to-face/online chats, discussions or e-mail convocations with the instructor and other students	PE1
	I actively participate in small group discussion forums with peers	PE1
	I help fellow students whenever possible in study-related matters	PE2
	I engage in online/face-to-face conversations (chat, discussions, e-mail)	PE3
	I get to know other students in my batch whenever possible	PE4
Performance engagement	I focus on getting a good grade	PeE1
	I am doing well on the tests/quizzes	PeE2
	I communicate with faculty members regarding my academic performance	PeE3
	I assess my own learning and progress continuously	PeE4

Table AI.

Appendix 2

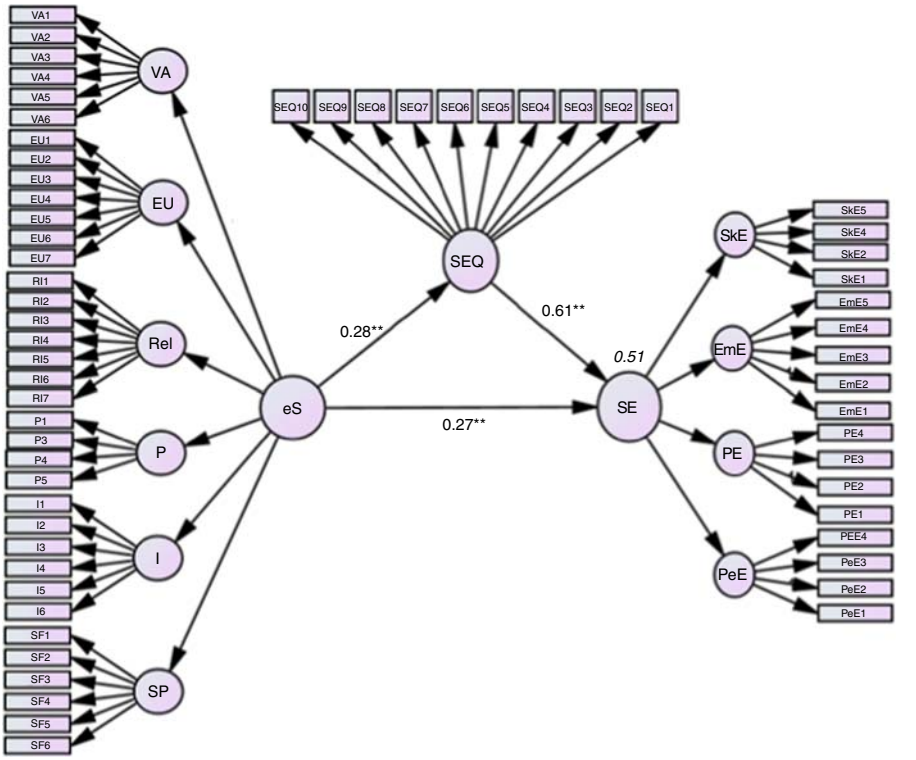

Figure A1.
Structural model

Note: $^{**}p<0.05$

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