



**Online Student Engagement and Place Attachment to
Campus in the New Service Marketplace: An Exploratory
Study**

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Abstract

Purpose: The pandemic has accelerated the use of virtual learning spaces and led to rethinking post-pandemic course delivery. However, it remains unclear whether students' online engagement in e-servicescapes can influence attachment to a place, i.e. a physical servicescape. Our study conducts an exploratory study to inform place attachment and actor engagement literature in an online service context.

Design/methodology/approach: This study employed quantitative survey design and collected 98 usable responses from undergraduate and postgraduate students at a major New Zealand university during the COVID-19 pandemic in 2020. The questionnaire consisted of 23 items relating to three dimensions of online student engagement and 19 items referring to six dimensions of campus attachment.

Findings: Results of the exploratory study indicate that classmate community in online lectures, referring to student–student interactions, can positively influence five of the dimensions of campus attachment, including place identity, place dependence, affective attachment, social bonding, and place memory, even though students are physically not on campus. However, it cannot influence place expectation. Moreover, instructor community (student–instructor interaction) and learning engagement (student–content interaction) in online lectures have insignificant impact on campus attachment.

Research limitations/implications: This study emphasises the social dimension when interacting in e-servicescapes. Person-based interactions are more influential than content-based interactions for student engagement. Educational service providers should integrate the e-servicescape and the physical servicescape by encouraging more student–student interactions to contribute to ecosystem well-being at the micro, meso, and macro levels.

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Originality/value: This study indicates that customer-to-customer interaction serves to integrate customer engagement across the digital and physical realms for process-based services like education.

Keywords: COVID-19; place attachment; student engagement; e-servicescape; tertiary education



Online Student Engagement and Place Attachment to Campus in the New Service Marketplace: An Exploratory Study

Introduction

The Coronavirus 2019 (COVID-19) pandemic has created extensive challenges for individuals and communities and put pressure on service industries (Finsterwalder & Kuppelwieser, 2020). Specifically, customer or actor engagement requires to be revisited in such context, as the pandemic is calling for new and evolving ways of engaging consumers, such as via online channels (Karpen & Conduit, 2020). Tertiary teaching as a unique type of educational service (Ng & Forbes, 2009) has also been heavily influenced by the pandemic (Kang, 2021). At its peak in 2020, 172 countries had implemented nationwide closures, i.e. lockdowns, and the majority of schools and universities enforced localised closures, influencing about 85% of the world's student population (UNESCO, 2020). Students experienced an unprecedented "mass migration" from conventional face-to-face lectures to online lectures, leading to a significant gap between expected and actual (e-)campus experience (Crawford et al., 2020). It also led to a sudden demand of virtual learning options which oftentimes resulted in poorly executed online teaching in tertiary institutions (Chen et al., 2020).

There is a likely continuation apparent indicating that after the pandemic online learning in tertiary education may become a more significant supplement or even substitute for traditional face-to-face teaching activities (Murphy, 2020), requiring integration of physical and digital tools and methods for learning (Rapanta et al., 2021). Regarding education as a service, tertiary institutions provide both a physical servicescape, that is, campus and its built environment and tangible aspects (Siguaw et al., 2019) but also e-servicescapes for online learning, particularly relevant during pandemics (Dassanayake & Senevirathne, 2018). A transition to online-only course delivery during pandemics calls for a better understanding of

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3 student–campus psychology in such environment, which may further shed light on e-
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5 servicescape requirements provided by educational institutions (Ballantyne & Nilsson, 2017;
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7 Dassanayake & Senevirathne, 2018) and the design of university service ecosystems (Akaka &
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9 Vargo, 2015). Research shows that students’ individual and collective wellbeing fundamentally
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11 depends on effective student engagement on campus (Chu, 2020), which may be via the
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13 development of attachment to campus in a physical and social realm (Bolton et al., 2018;
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15 Ramkissoon, 2020). Therefore, the swift shift from physical engagement on campus to online
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17 learning due to the pandemic provides a suitable scenario to investigate the service ecosystem
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19 of university education and potential influence on student attachment to place.
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24 Online learning in such e-servicescapes has been evaluated using various concepts,
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26 including student engagement (Butts et al., 2013), student learning (Priluck, 2004),
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28 effectiveness of learning (Comer et al., 2015), student performance (Dendir, 2018), student
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30 satisfaction (Landrum et al., 2021), class experiences (Eastman & Swift, 2001), student
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32 preferences and experiences (Weldy, 2018), and principles of good practice (McCabe &
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34 Meuter, 2011). Among these concepts, student engagement emphasises interactions in teaching
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36 and learning environments (Trowler, 2010). Students interacting and engaging in a campus
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38 environment entails a process of endowing meaning to the place and can foster campus
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40 attachment (Chen et al., 2021). Studies have identified the associations between student
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42 engagement and campus attachment while students are on campus physically (e.g., Bogdan et
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44 al., 2012; Lovett & Chi, 2015; O'Rourke & Baldwin, 2016). However, as the outbreak of
45
46 COVID-19 induced the rapid transformation from conventional education to online learning,
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48 the lack of on-site activities might not have facilitated place attachment to be fostered.
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54 Therefore, the purpose of this study is to conduct exploratory research to analyse
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56 student engagement in e-servicescapes and campus attachment, while being physically off-
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58 campus during a pandemic related lockdown. Student engagement in online lectures refers to
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3 the interaction among students, with instructors and with the learning content (Bolliger &
4 Martin, 2018), comprising of the resulting overall customer experience in a digital realm. Place
5 attachment refers to the bond formed by people to a place through the interactional process of
6 place meaning-making (Milligan, 1998), and thus entails the customer experience in a physical
7 realm. Students' interactions with peers and instructors in both the digital and physical realms
8 reflect the customer experience in the social realm. As customer experiences arise at the
9 intersection of the digital, physical, and social realms (Bolton et al., 2018), this study argues
10 that student engagement in the form of social interactions in online lectures (digital realm) can
11 endow meaning-making to campus and thus enhance attachment to campus in the physical
12 realm. Therefore, this exploratory study investigates the potential relationship between online
13 student engagement in e-servicescapes and attachment to a physical campus, providing insights
14 into understanding students' psychological makeup in light of navigating a virtual service
15 marketplace.

32 **Conceptual development**

33 *e-servicescapes for online teaching and learning*

34
35 The concept of servicescape was coined to describe an organisation's physical
36 environment (Bitner, 1992) and organisations increasingly provide services in online
37 environments. The concept of e-servicescape is defined as the aspects of the atmospheric
38 environment in the virtual space where service encounters occur between service providers and
39 customers (Harris & Goode, 2010). Taking this perspective, educational institutions tend to
40 provide the physical servicescape in the form of traditional campus settings but increasingly
41 combine it with an e-servicescape by providing online teaching spaces. The e-servicescape
42 enables students' online learning experiences (Dassanayake & Senevirathne, 2018). Based on
43 the framework of the perceived servicescape (Rosenbaum & Massiah, 2011), the e-
44 servicescape for online learning contains: 1) a physical dimension which includes the design
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3 and layout of the online platform and its tools as well as the learning materials provided online
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5 to enable virtual learning; 2) a social dimension, referring to the instructors, other students and
6
7 support staff who facilitate and enhance the online activities; 3) a socially symbolic dimension,
8
9 denoting the cultural artefacts, signs, and symbols of educational institutions with socio-
10
11 collective meanings. In the context of distance education, service providers of e-servicescapes
12
13 have to pay special attention to the social dimension because students seek and maintain
14
15 interactions with peers, instructors, and other support staff based on their inner tendency to
16
17 belong (Eldegwy et al., 2018).
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21 ***Student engagement in online lectures***

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24 Customer and actor engagement have emerged as important topics in service research
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26 (Karpen & Conduit, 2020). In this context, the term engagement denotes a “dynamic and
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28 iterative process that reflects actors’ dispositions to invest resources in their interactions with
29
30 other connected actors in a service system” (Brodie et al., 2019, p. 174).
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34 In the context of COVID-19, engagement has been investigated for various service
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36 sectors, relating to community engagement (Burgess et al., 2021; Gilmore et al., 2020),
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38 consumer engagement (Mundel & Yang, 2021), public engagement (Mundel & Yang, 2021),
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40 employee engagement (Chanana, 2020) or media engagement (Bhati et al., 2020). Regarding
41
42 the dramatic change in the education sector, student engagement in online lectures has also
43
44 attracted extensive attention as it has significant impact on a university’s service ecosystem
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46 consisting of students, instructors, administrative and other staff as well as available resources
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48 (Carter & Yeo, 2016; Finsterwalder & Kuppelwieser, 2020). Enhanced student engagement can
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50 contribute to highly valued educational outcomes, such as students’ improved academic
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52 achievement, enhanced teaching practice for instructors, and better managed and developed
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54 services for educational institutions (Chu, 2020; Ogunmokun et al., 2021).
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3 Student engagement indicates how environmental conditions, individual dispositions,
4 quantity and quality of student effort influence learning effectiveness (Schindler et al., 2017).
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6 Trowler (2010, p. 2) defines *student engagement* as “the interaction between the time, effort
7 and other relevant resources invested by both students and [the service providing human actors
8 in] their institutions intended to optimize the student experience and enhance the learning
9 outcomes and development of students and the performance, and reputation of the institution.”
10
11 The resources include the virtual learning context (Rajabalee et al., 2020; Schindler et al.,
12 2017). This definition resonates well with the above mentioned definition of actor engagement,
13 both highlighting the elements of interaction, time spanning processes, multiple actors and
14 resources, and the systemic environment or institutional context (Brodie et al., 2019; Trowler,
15 2010).

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17 Fostering interactions is instrumental in enhancing student engagement in an online
18 learning environment (Bolliger & Martin, 2018), including frequent and quality interactions
19 with instructors (student–instructor), dynamic discussions with peers (student–student), and
20 transparent interfaces with the technological platforms and content (student–content) (Swan,
21 2003). Due to the fact that some students may experience increased anxiety, stress, and
22 depression of varying degrees during the pandemic (Finsterwalder, 2021; Parola et al., 2020),
23 enhancing student engagement can also contribute to individual wellbeing (Ogunmokun et al.,
24 2021).

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26 Similar to Swan (2003), Young and Bruce (2011) focus on the interactive elements of
27 engagement by employing classmate community, instructor community, and learning
28 engagement, in the following applied to e-servicescapes:

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30 *Classmate community (CC)* is defined as “the connections among students (...) that
31 lead to increased learning” and hence relates to student–student interactions (Young & Bruce,
32 2011, p. 220). Through shared activities, such as discussions, collaboration, and resource
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3 partaking in a classmate community (Bolliger & Martin, 2018), students can familiarise
4 themselves with each other, develop feelings of belonging, and further increase wellbeing
5 during the pandemic (Stepich & Ertmer, 2003). CC reflects the social dimension of the e-
6 servicescape.
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12 *Instructor community (IC)* refers to the relationship between learner and instructor and
13 hence includes student–instructor interactions (Young & Bruce, 2011). IC is vital in stimulating
14 students’ interest in online learning environments, which play a critical role in achieving their
15 maximum educational potential (Chen et al., 2008). Zhong et al. (2021) indicate that high-
16 quality student–instructor interactions and effective faculty teaching practices can impart hope
17 and keep students on track with their goals and pathways during the pandemic. Similar to CC,
18 IC reflects another aspect of the e-servicescape’s social realm.
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29 *Learning engagement (LE)* is defined as “the interest and motivation students have in
30 their own individual learning of course content” and relates to student–content interaction in
31 online learning (Young & Bruce, 2011, p. 220). Here, students interact with the physical
32 dimension, that is, the learning content provided in the e-servicescape. Students with high
33 learning engagement in online lectures can achieve a high level of educational outcomes, such
34 as visible in the quality of their work and participation, despite the challenges of a pandemic
35 (Wang et al., 2021).
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44 ***Attachment to campus as the “place”***

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47 Campus is positioned as the essential “place” or the servicescape from a consumer
48 perspective. The architectural model of an educational institution, including the teaching spaces
49 (lecture theatres, tutorial rooms, and libraries), administrative and working areas, and social and
50 leisure environments, has dominated the fashion of a traditional educational servicescape
51 throughout the 20th and parts of the 21st century (Jamieson et al., 2000). While the student–
52 campus relationship remains a key factor influencing students’ learning experience and sense of
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3 community (Radloff, 1998) and results in students' identification and attachment (Qingjiu &
4 Maliki, 2013), there is an increasing shift towards online components in the teaching
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6 environment. That is, the modern concept of "campus" is a combination of the physical
7
8 servicescape including buildings, space, and facilities, and the e-servicescape fulfilling
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10 supplementary or substitutional educational functions enabled by information and
11
12 communication technologies (Jamieson et al., 2000). More recently, post-pandemic studies
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14 claim that the pandemic has not rendered campus futile as a location but has led to its evolution
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16 and a place where learning is fostered and collective experiences are shaped (e.g., Deshmukh,
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18 2021; Hill et al., 2020; Nenonen & Danivska, 2021). Thus far, place attachment has been
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20 developed to examine people's attitude toward a physical setting (Chen et al., 2021). Scholars
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22 have investigated place attachment to places in pandemic and post-pandemic contexts,
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24 including home (Meagher & Cheadle, 2020), town (Grocke et al., 2021), and city (Wnuk &
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26 Oleksy, 2021). These studies indicate that enhancing place attachment can contribute to
27
28 individual wellbeing during a pandemic. Equally, studies in a tertiary context also emphasise
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30 the significance of developing place attachment to campus to enhance student wellbeing (e.g.,
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32 McLane & Kozinets, 2019; Sun & Maliki, 2013; Xu et al., 2015). Moreover, while to date
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34 literature on place attachment has examined the places where people stay physically (Manzo &
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36 Devine-Wright, 2020), our work investigates students' place attachment to the physical campus
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38 while interacting and learning in virtual spaces.
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47 As indicated, the concept of place attachment focuses on the people–place relationship
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49 (Chen et al., 2021). The word 'attachment' highlights affection, and the term 'place'
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51 emphasises the environmental settings to which people give meanings and are attached to
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53 (Cresswell, 2015; Low & Altman, 1992, p. 5). Place attachment is "formed by an individual to
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55 a physical site that has been given meaning through interaction" (Milligan, 1998, p. 2). As a
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57 multidimensional concept, place attachment can be measured with two types of dimensions.
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3 *Accumulation-based* dimensions (i.e., place identity, place dependence, affective attachment,
4 social bonding) have been widely adopted for a long-term perspective to place (Kyle et al.,
5 2005), i.e. actors need to remain for a longer period of time in a given place to develop
6 attachment. *Interaction-based* dimensions (i.e., place memory, place expectation) indicate place
7 attachment as the limited experience actors have on-site when visiting short-term (Chen et al.,
8 2014). Student experience on campus varies depending on their study level. For instance,
9 freshmen usually have a more limited experience due to not having been on campus for long.
10 To investigate students' campus attachment the current study thus employs the six dimensions
11 in combination as explicated below.
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24 As the broadest dimension of place attachment, *place identity (PI)* is regarded as a
25 cognitive sub-structure of self-identity (Proshansky et al., 1983) and as the association between
26 individual actors and particular places that contains “memories, interpretations, ideas and
27 related feelings about physical settings as well as types of settings” (Proshansky et al., 1983, p.
28 62). Regarding campus identity, previous studies indicate that students' demographics, subject
29 major, visitation frequency and visiting for a course can influence their behaviour on campus
30 via place identity (Lawrence, 2012).
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40 *Place dependence (PD)* refers to the functionality and specificity of a particular place
41 (Kyle et al., 2005), which is an outcome of the cognitive justification process according to
42 comparisons and evaluations (Chen & Dwyer, 2018). For example, Xu et al. (2015) claim that
43 social responsibility and social relationships indicated by place identity entail campus
44 dependence through campus activities, such as learning, entertainment, and peer
45 communication.
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54 *Affective attachment (AA)* is conceptualised as an emotive link that individuals develop
55 by building their sentiments about a place and giving meaning to it (Tuan, 1977). The
56 geographic spaces can be endued with the emotional significance based on human experiences
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3 and transformed into “places” (Giuliani, 2003). Dworkin (1986) investigates affective
4 attachment in a school context and finds that feelings of prestige and usefulness of the learning
5 process, and a sense of communality at the school, contribute to affective attachment toward
6 the school.
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12 *Social bonding (SB)* is regarded as both a conative dimension and an affective
13 dimension. The conative aspect emphasises individuals’ behaviours of establishing and
14 maintaining interpersonal relationships within this setting (Kyle et al., 2004; Mesch & Manor,
15 1998), while the affective component highlights the experiences with close social relationships,
16 such as family (Kyle & Chick, 2007; Lin & Lockwood, 2014). Previous studies have identified
17 students’ social relations as a key aspect of place attachment in a campus context (e.g., McLane
18 & Kozinets, 2019; Rioux et al., 2017; Scopelliti, 2010).
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28 *Place memory (PM)* is defined as “how strong (...) the memories of stories associated
29 with a place” are, depending on the individual actor’s unique experiences enhanced by the
30 events, activities, atmosphere, culture and history of the place (Chen et al., 2014, p. 327).
31 Bogdan et al. (2012) indicate that place attachment increases with community life opportunities
32 producing campus experience and memory.
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40 *Place expectation (PE)* is defined as “how much the future experiences [are] perceived
41 as likely to occur in a place” (Chen et al., 2014, p. 327), which is mainly affected by personal
42 interaction with place (Milligan, 1998). Geagea et al. (2019) state that campus expectations are
43 developed by facilitating students’ access to the people and information related to their desired
44 university, enhancing their expectations of the tertiary education provider.
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52 In the light of technological advancements, organisations increasingly provide services
53 both on online platforms and in physical places to create consistently superior customer
54 experiences which thus arise at the intersection of the physical, digital, and social realms
55 (Bolton et al., 2018). With this in mind, a sudden transition from face-to-face lectures to online
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3 learning due to a lockdown could facilitate a closer integration of students' experiences
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5 partaking in online lectures (digital realm) with their experiences on campus (physical realm)
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7 via their interactions with peers, instructors, and other support staff (social realm).
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10 Several studies have identified a positive relationship between servicescape and place
11 attachment (e.g., Hanks et al., 2020; Johnstone & Todd, 2012; Xu & Gursoy, 2020). As
12 outlined above, in this study, CC and IC reflect the social dimension of the e-servicescape, and
13
14 LE reflects its physical dimension. This study argues that student engagement in e-
15 servicescapes can reinforce campus attachment by integrating students' experiences across the
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17 physical, digital, and social realms and thus endowing meaning to campus. It has been found
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19 that customer engagement in online brand communities, with its high similarity to virtual
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21 student engagement in a tertiary education context, significantly drives members' commitment
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23 and continued participation in the community relationships as well as the sense of belonging
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25 (Wirtz et al., 2013). Originating from attachment theory, the engagement–attachment
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27 relationship has also been evidenced in educational contexts, such as relating to student
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29 attachment and academic engagement (Johnson et al., 2001). Based on the dimensionality of
30
31 student engagement and place attachment, in the theoretical framework for the study we thus
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33 hypothesise as follows (see Figure 1):
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42 **Hypothesis 1:** Classmate community (CC) positively influences place identity (PI) (H1a),
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44 place dependence (PD) (H1b), affective attachment (AA) (H1c), social bonding (SB) (H1d),
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46 place memory (PM) (H1e), and place expectation (PE) (H1f).
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49 **Hypothesis 2:** Instructor community (IC) positively influences PI (H2a), PD (H2b), AA
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51 (H2c), SB (H2d), PM (H2e), and PE (H2f).
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54 **Hypothesis 3:** Learning engagement (LE) positively influences PI (H3a), PD (H3b), AA
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56 (H3c), SB (H3d), PM (H3e), and PE (H3f).
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59 --- Insert Figure 1 about here ---
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Methodology

Data collection

This study chose a major university in New Zealand as the study site and used the online survey platform facilitated by Qualtrics to collect data in the third quarter of 2020 (after two national lockdowns). The online survey was distributed using links on students' virtual noticeboards of two courses and via three social media groups established by students. The two courses were randomly selected from a list of 30 marketing courses using a randomisation software. There were also a variety of student social media groups with follower numbers ranging from 200 to 32,000 members. Using the same software, three social media groups were randomly chosen. A total of 98 usable responses were collected for this study. The sample demographics are indicated in Table 1.

--- Insert Table 1 about here ---

Measurement

The questionnaire consisted of four sections and all measurement scales were adopted from previous studies. Measurement of *student engagement in online lectures* was adopted from Young and Bruce (2011) based on a multi-dimensional measurement and included 23 items across class community, instructor community and learning engagement. The second section surveyed 19 items for *campus attachment* with six dimensions (i.e., place identity, place dependence, affective attachment, social bonding, place memory, place expectation) proposed by Chen et al. (2018). The third section surveyed the overall evaluation of online lectures with one item: "*Overall, my experience with online lectures during the lockdown was of high quality*". All items were measured using 5-point Likert scales from 1 = strongly disagree to 5 = strongly agree. The last section consisted of nominal items for demographics and students' preferences for lecture types.

Results

The survey responses were analysed with IBM SPSS statistics 27. As the measurement of student engagement is unidimensional, an exploratory factor analysis (EFA) was conducted to extract identifiable and interpretable factors from the 23 items and test construct validity. The Kaiser-Meyer-Olkin (KMO) value between 0.8 and 1 (see Table 2) indicates that the sampling is adequate.

--- Insert Table 2 about here ---

The CFA results for student engagement with four factors in the solution are provided in Table 3. According to the dimensionality proposed by Young and Bruce (2011), factors 1, 2 and 3 were labelled as CC, IC, LE, respectively. Factor 4 with its two items was removed as it did not match the pre-set dimensions. As a result, the constructs of the three factors of student engagement in online lectures were valid. Additionally, the 19 items of campus attachment were multidimensional with the six factors, i.e., PI, PD, AA, SB, PM and PE. Factor scores were calculated in SPSS for regression analysis.

--- Insert Table 3 about here ---

Composite scales for all variables were created for the analysis, where item responses were summed and divided by the number of items in the overall scale. A summary of the intercorrelations between variables, together with means, standard deviations (SD), and Cronbach's alpha, are provided in Table 4. Cronbach's alpha results were over 0.70, indicating that the measurements of each dimension were reliable (Field, 2013). The intercorrelations among CC, IC, LE and among PI, PD, AA, SB, PM, PE were significant and close to 1, indicating that the measurements of student engagement and campus attachment were valid (Field, 2013).

--- Insert Table 4 about here ---

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3 Six multiple linear regressions were conducted to predict each dimension of place
4 attachment based on CC, IC, LE and controlled for the demographics (i.e., gender, age group,
5 study level, enrolment, course-load, years on campus, accommodation). All variables had
6 acceptable ranges of skewness (-1; 1) and kurtosis (-2; 2), meeting normality requirements
7 (Field, 2013). All models passed Durbin-Watson's test of autocorrelation and met the criteria of
8 $1.5 < d < 2.5$, indicating that there was no autocorrelation in the data (Field, 2013). From Table
9 5, the regression models of five campus attachment dimensions were significant for CC, except
10 for PE. CC had significant impact on PI ($\beta = 0.443, p < 0.001$), PD ($\beta = 0.365, p < 0.01$), AA
11 ($\beta = 0.395, p < 0.01$), SB ($\beta = 0.533, p < 0.001$) and PM ($\beta = 0.492, p < 0.001$). The results
12 thus supported H1a, H1b, H1c, H1d, and H1e. Interestingly, IC and LE did not significantly
13 influence any dimension of campus attachment.
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31 Additionally, surveying students' perceived experience with online lectures, the results
32 show that 43% of students believed that online lectures were of good quality while 38% did not
33 think so, with 19% of students being indifferent. The current study also surveyed students'
34 preferred lecture type and found that 48% of students favoured face-to-face lectures, 46%
35 preferred a mix of face-to-face and online lectures, and only 6% desired online courses.
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43 Discussion

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45 The current study examined the dimensionality of student engagement in e-
46 servicescapes when moving to an online study format during a lockdown and found that
47 classmate community is the most influential factor, followed by instructor community and
48 learning engagement. This is consistent with the findings by Young and Bruce (2011).
49 Considering the sudden transition from face-to-face lectures to online learning during a
50 lockdown, the findings emphasize that person-to-person interactions enable students to
51 maintain engagement in e-servicescapes. Since students have limited opportunities for face-to-
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3 face interactions during such times, they are more likely to interact with others in such e-
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5 servicescapes to fulfil their need of belongingness to the community (Eldegwy et al., 2018).
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7 The relatively weak influence of learning engagement can be explained by the lack of
8
9 appropriate learning content prepared for online lectures due to the sudden transition.
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12 Classmate community positively influences place identity, place dependence, affective
13 attachment, social bonding, and place memory, while the influence on place expectation is
14 nonsignificant. Luzón (2018) uncovered that communicating and collaborating online can
15 benefit identity construction which could explain the positive relationship between classmate
16 community and *campus identity*. Classmate community provides students with richer
17 opportunities for collaborative learning (Paulsen & McCormick, 2020), emphasising the
18 importance of the social fabric and reinforcing *campus dependence*. Human beings are more
19 likely to have a sense of isolation and campus outsidersness during the pandemic (Wang et al.,
20 2021). However, online classmate community enhances *affective attachment* and *social*
21 *bonding* to campus. As the interactions among class members significantly influence student
22 experience in online lectures (Brockfeld et al., 2018), positive experiences during this period
23 can benefit students' *campus memory*. The nonsignificant relationship between student
24 engagement and *campus expectation*. can be explained with the short-term experience of
25 attending online lectures, as students believed that they still had the opportunity to return to
26 face-to-face lectures after the lockdown.
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46 Instructor community and learning engagement does not influence campus attachment
47 in this study. Student–lecturer and student–content interactions are likely to be less relevant for
48 feeling attached to having an experience on *campus*. This finding also indicates that the near-
49 irreplaceability of conventional face-to-face lectures in relation to place attachment is mainly
50 due to the fact that some online lectures to date might not provide equivalent student–instructor
51 interaction and appropriate engagement with learning content compared to face-to-face lectures
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3 (Kang, 2021). The sudden shift to an online format resulted in a short preparation time for
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5 instructors to move from physical lectures to online lectures, for the instructors often leading to
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7 an abrupt adaption of in-class content for online teaching and limited online learning content
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9 appropriately designed for the students (Sandars et al., 2020).
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12 Customer-to-Customer (C2C) interactions in the digital realm, such as students'
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14 discussions, activities in a flipped e-classroom or shared evaluations of a course in online
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16 education, can influence students' future "approach or avoidance" decisions when it comes to
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18 course selection as well as their attachment to place and the physical realm (Bolton et al.,
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20 2018). However, thus far student interactions with tertiary service providers and the service
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22 itself have not been integrated across the physical and digital realms.
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26 In regard to students' evaluation of online courses, their lack of quality can be explained
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28 by two phenomena: 1) potential problems occurring having unstable internet access while mass
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30 accessing university servers from home or other places that might have poor connections
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32 (Adnan, 2020), and 2) the above mentioned short preparation time for instructors when moving
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34 from face-to-face instruction to online lectures (Sandars et al., 2020). The preference for face-
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36 to-face or a mix of face-to-face and online lectures revealed that at this stage online courses
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38 cannot replace face-to-face lectures completely, even with today's advanced learning
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40 technologies during the pandemic (Totlis et al., 2021).
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47 ***Theoretical implications***

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49 By exploring student engagement in an e-servicescape at a tertiary education provider
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51 during a lockdown this study extends the literature on student engagement and place
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53 attachment with empirical evidence for a pandemic context. Our work captures the essence of
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55 people-based and content-based interactions, providing insights for a new (virtual) service
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57 marketplace with online learning platforms as e-servicescapes becoming more relevant. Similar
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3 to previous studies, the findings indicate that the social realm (both across CC & IC) plays a
4 more important role than the physical dimension (LE) for e-servicescapes (Ballantyne &
5 Nilsson, 2017; Basu & Mandal, 2021; Dassanayake & Senevirathne, 2018). It also re-iterates
6 the above mentioned near-irreplaceability of physical servicescapes in process-based services
7 like education in relation to place attachment.
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15 Further, this study identifies that student–student interactions in online lectures have
16 positive impact on attachment to physical campus. This can be regarded as the extension of
17 what the place represents symbolically to individuals or communities (McLane & Kozinets,
18 2019). These interactions were endowed by campus and initially occurred on campus, and they
19 could transform into meaning-making of campus life during a lockdown. For the service
20 literature, this could imply that customer engagement in the digital realm can be integrated with
21 the physical realm via the vehicle of a connecting social realm. Specifically, while service
22 researchers have made progress to identify customer experience at the intersection of the
23 digital, physical, and social realms (Bolton et al., 2018), these have not been linked properly.
24 Moreover, withstanding a replacement of physical servicescapes by e-servicescapes as
25 advocated in service research (Ballantyne & Nilsson, 2017), this study reinforces the
26 importance of the physical servicescape in process-based services like education but permits to
27 connect these two physical and digital realms via C2C interaction.
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47 ***Managerial implications***

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50 Regarding e-servicescapes, such as online lecture spaces and platforms, these could be
51 further enhanced and developed as enhanced and “new” service marketplaces post-pandemic.
52 Virtual learning can become an effective supplementary or even substitutional learning tool as
53 is the case in some universities. The e-servicescape for online lectures has to be integrated
54 seamlessly with the physical campus (Ballantyne & Nilsson, 2017) by emphasising and
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3 enabling social interactions in both the physical and digital realms. Online lectures as a service
4 provided by educational institutions located within a broader service ecosystem, if
5
6 (re-)designed and customised properly as an alternative servicescape to in-class instruction, can
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8 minimise the destructive impact of future crises and explore novel avenues of value and
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10 wellbeing co-creation (Chen et al., 2021). While the pandemic has been quite disruptive and
11
12 not given some tertiary education providers ample opportunities to set up online environments
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14 properly which were not in place prior to the disaster, ad-hoc innovations during the pandemic
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16 could be capitalised on and integrated into future e-learning and teaching to improve online
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18 experience and student engagement.
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24 Aligned with a service ecosystem approach for a disaster context as proposed by
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26 Finsterwalder and Kuppelwieser (2020), micro level, meso level, and macro level can be
27
28 distinguished. For an e-servicescape to become a new (virtual) service marketplace, at the
29
30 *micro level*, e-learners' collaborative learning and instructors' online teaching strategies should
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32 be promoted and trained to reinforce individualised ways of online interacting (Paulsen &
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34 McCormick, 2020). These can result in better study outcomes and wellbeing by strengthening
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36 student engagement in online lectures (Chu, 2020), and individual psychological benefits by
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38 enhancing campus attachment (Scannell & Gifford, 2017). At the *meso level*, educational
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40 service providers should pay more attention to integrating the e-servicescape for online
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42 teaching and learning with the physical campus servicescape to improve the student experience.
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44 This can be achieved by facilitating student–student interactions in the e-servicescape, such as
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46 by designing more discussions, brainstorming sessions or flipped e-classrooms when delivering
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48 online lectures. Moreover, student clubs should be encouraged to organise events not only on
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50 campus but also online. This can be supported by providing spaces for socialising on campus,
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52 having supportive campus services, and creating inclusive campus environments to promote
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54 communication among all members on campus (McLane & Kozinets, 2019; Raaper & Brown,
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2020). E-servicescape (re-)design should be at the forefront to enable more interaction among students alongside the on-campus experience. Our findings also have wider implications for scholars and service providers of other process-oriented services. The encouraging results that online peer-to-peer interactions can influence place attachment might stimulate research in other areas and service domains where providers might struggle to maintain online relationships with customers. Fostering social interactions with and among groups of customers in e-servicescapes can build a stronger bond to the physical place and possibly also to the brand and may lead to a competitive advantage. For example, hospitality industry is a suitable example to illustrate the challenges brought about by the pandemic. Hospitality providers have learned to create adaptable physical (e.g., outdoor glasshouses for diners) and online servicescapes (e.g., strong social media presence) which may be crucial for the future development of this industry. Hospitality and other service providers should feel encouraged to rethink their online platforms to maintain active engagement with and among their customers, such as by asking customers to share their favourite recipe with others or to jointly decide on a dish of the week they would like the restaurant's chef to cook for them.

At the *macro level*, the transition to online lectures offers an opportunity to reimagine educational practices and interactions. "Each crisis raises the ultimate question of what community or form of 'human living-together' is possible when its (potential) members no longer have anything [physically] in common?" (Raaper & Brown, 2020, p. 344). Educational reforms following the crisis should encourage society, tertiary education providers and government alike to recognise and advance the virtual evolution instigated by the shift from place-based interactions to person-to-person connections (Raaper & Brown, 2020). To develop and individualise ways of person-to-person interaction in online lectures, namely classmate community in this study, governments, policymakers, and educational institutions could develop related theories and policies to underpin remote practices, facilitate Information and

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3 Communication Technology (ICT) infrastructure development and implementation, provide
4 technical and pedagogical competencies and training for remote study, improve and accelerate
5 the domain of online learning via technology and market forces (Kibuku et al., 2020).
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10 Moreover, enhanced student engagement in online lectures and place attachment to campus can
11 encourage lifelong learning, which further benefits societal wellbeing relating to the social
12 fabric (Eynon & Malmberg, 2021).
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16 17 18 19 20 **Limitations and future research**

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22 The study has some limitations. We surveyed undergraduate and postgraduate students
23 at one university with a sample size of 98 responses. This limits the generalisability of the results
24 regarding students at other study levels and other types of educational institutions. In our study,
25 students at different study levels had various types of online lectures. Some students, especially
26 in small-sized classes, were offered live online lectures using online platforms like Zoom. By
27 contrast, students in bigger-sized classes were more likely to watch recorded lectures on the
28 courses' established e-platforms. Live online lectures and recorded lectures might have had
29 different levels of person-to-person interactions regarding student engagement. This is because
30 recorded lectures usually provide fewer interaction opportunities with classmates and instructors
31 compared to live online lectures. Furthermore, the survey was conducted in New Zealand where
32 students experienced some of the shortest lockdowns compared to other countries with more
33 severe outbreaks of COVID-19 in 2020. Therefore, participants in this study might have had
34 higher student engagement in online lectures and a stronger attachment to campus – also due to
35 some on-campus physical presence before and after the lockdown – than students in other
36 countries. Moreover, due to the semesterisation of teaching, research participants with a two-
37 semester study cycle might have experienced a shorter lockdown due to study breaks compared
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3 to those learning in trimesters at the same institution, which might have also influenced student
4 engagement in virtual classes.
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8 In order to advance the findings from this study, some key areas could be further
9 investigated. First, previous studies have developed evaluation tools for online educational
10 services. However, apart from student engagement, future studies could develop more of these
11 tools concerning students' personal values, capabilities, identities and preferences instead of
12 study outcomes and student performance. Second, for a reshaped educational service
13 marketplace in a post-pandemic world, place attachment in online contexts needs further research.
14 Investigating online place attachment with various antecedents and behavioural outcomes in the
15 education sector would be fruitful. Moreover, as the pandemic accelerates a "new normal" of
16 providing both online and face-to-face lectures in the education sector, the integration of
17 customer engagement across the physical, digital and social realms should be explored in a
18 longitudinal study, further analysing place attachment and the relationship between e-
19 servicescape and physical servicescape.
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37 **Conclusion**

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39 The pandemic has resulted in the transition to online formats for many service
40 providers, such as tertiary education providers. While the pandemic has been disruptive to
41 people's lives it can be seen as a catalyst in the sense that has started to reconstitute human
42 communities. It also encourages the service ecosystem of tertiary education providers to rethink
43 value co-creation at the micro, meso, and macro levels via different means. By examining
44 student–student, student–instructor, and student–content interactions in online lectures, as well
45 as the people–place interactions on campus during a lockdown, the current study indicates that
46 enhanced C2C interactions in the digital realm can reinforce customers' place attachment to the
47 physical realm. This exploratory study can be viewed as a first important step to better
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3 understand student engagement and place attachment during extraordinary circumstances to
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5 explore opportunities for the future of online service marketplaces. This is to better shape
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7 forthcoming interactions in a post-COVID service world.
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Table 1. Sample demographics (n = 98).

Gender	n	%
Female	63	64.29
Male	35	35.71
Age	n	%
Under 20	39	39.80
21-25	44	44.90
Above26	15	15.31
Study level	n	%
Undergraduate	79	80.61
Postgraduate	19	19.39
Enrolment	n	%
Domestic	78	79.59
International	20	20.41
Course Load	n	%
Full-time	93	94.90
Part-time	5	5.10
Years on Campus	n	%
Less than 1 year	37	37.76
1-2 years	10	10.20
2-3 years	17	17.35
3-4 years	23	23.47
More than 4 years	11	11.22
Accommodation	n	%
Dorms/Halls	10	10.20
Flatting/Renting	49	50.00
Other	39	39.80

Table 2. KMO and Bartlett's test of student engagement in online lectures.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.868
Bartlett's Test of Sphericity	Approx. Chi-Square	1456.466
	df	253
	Sig.	0.000

Table 3. Factor analysis for student engagement in online lectures (N=98).

Factor/Items (n=98)	Factor Loading	Eigen value	% of Variance	Cumula tive %
Factor 1 - Classmate community		9.109	20.133	20.133
I connected personally with classmates.	0.902			
I helped my fellow classmates.	0.826			
I interacted with classmates on course material.	0.809			
I shared personal concerns with others.	0.780			
I was committed to working with my classmates so that we could help each other learn.	0.737			
I didn't feel isolated in the class.	0.606			
I enjoyed interacting in my class.	0.599			
Factor 2 - Instructor community		2.579	19.042	39.174
I knew that I could contact my instructor when I needed to.	0.819			
My instructor was consistent about enforcing course rules.	0.772			
My instructor was present and active in class discussions.	0.762			
The course rules were clear.	0.734			
My instructor provided a well-organized course.	0.714			
I trusted my instructor to handle inappropriateness in online class interactions.	0.702			
My instructor was responsive to me when I had questions.	0.611			
Factor 3 - Learning engagement		2.439	18.652	57.826
I was well organized in my learning.	0.836			
I gave a great deal of effort to the class.	0.756			
I visited the course website regularly.	0.748			
I completed all of the assigned class work.	0.741			
I earned a good grade in the course.	0.688			
I truly desired to learn the course material.	0.641			
I stayed caught up on readings.	0.614			
Factor 4		1.441	9.863	67.689
I asked questions in discussions when I didn't understand.	0.786			
I participated actively in online discussions.	0.753			
		15.568	67.690	67.689

Table 4. Means, standard deviations, Cronbach's alpha, and correlations among variables. (n=98).

	CC	IC	LE	PI	PD	AA	SB	PM	PE	Mean	SD	α
CC	1									2.90	1.136	0.914
IC	0.469***	1								3.77	0.846	0.892
LE	0.483***	0.445***	1							3.57	0.964	0.886
PI	0.448***	0.166	0.234*	1						3.37	0.974	0.902
PD	0.280**	0.045	0.08	0.749***	1					2.84	1.078	0.822
AA	0.385***	0.082	0.194	0.850***	0.832***	1				2.95	1.048	0.878
SB	0.408***	0.058	0.118	0.576***	0.498***	0.584***	1			3.46	1.024	0.743
PM	0.469***	0.133	0.162	0.789***	0.760***	0.794***	0.593***	1		3.16	1.050	0.889
PE	0.314**	0.207*	0.229*	0.670***	0.589***	0.648***	0.399***	0.614***	1	3.49	0.829	0.827

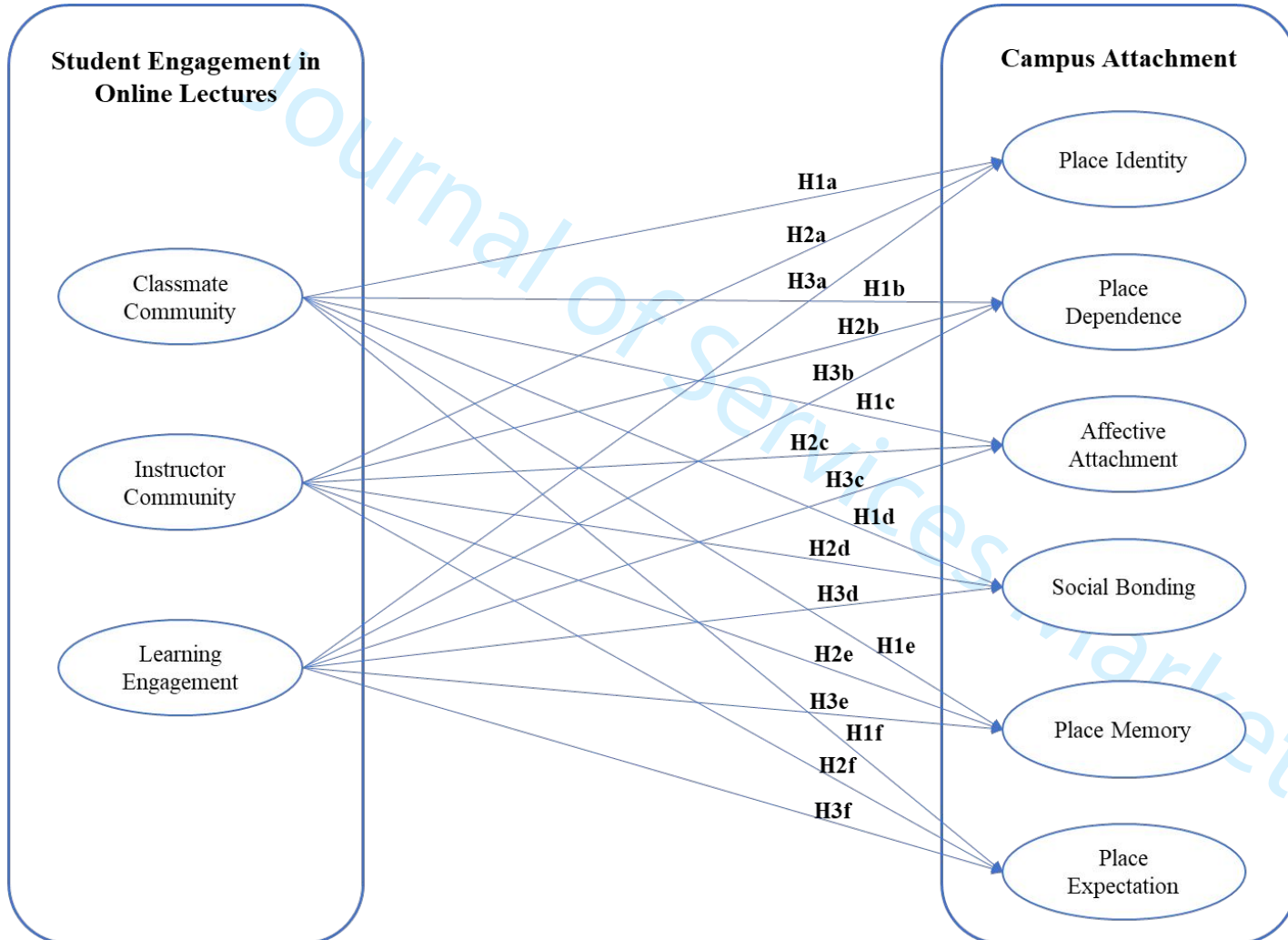
Note: *** $p < 0.001$; ** $p < 0.01$, * $p < 0.05$.

Table 5. Regression analysis.

Dependent	Independent	Hypotheses	β	t -test	F -test	R^2
PI	CC	H1a	0.443	3.712***	3.966***	0.234
	IC	H2a	-0.078	-0.712		
	LE	H3a	0.052	0.419		
PD	CC	H1b	0.365	2.909**	2.765**	0.154
	IC	H2b	-0.128	-1.115		
	LE	H3b	-0.034	-0.259		
AA	CC	H1c	0.395	3.127**	2.591**	0.141
	IC	H2c	-0.158	-1.369		
	LE	H3c	0.082	0.626		
SB	CC	H1d	0.533	4.221***	2.605**	0.142
	IC	H2d	-0.174	-1.512		
	LE	H3d	-0.073	-0.554		
PM	CC	H1e	0.492	4.155***	4.126***	0.244
	IC	H2e	-0.103	-0.954		
	LE	H3e	-0.019	-0.156		
PE	CC	H1f	0.238	1.796	1.542	0.053
	IC	H2f	0.030	0.245		
	LE	H3f	0.134	0.970		

Note: *** $p < 0.001$; ** $p < 0.01$, * $p < 0.05$.

Figure 1. Theoretical framework



Appendix: Measurement of Campus Attachment (Adapted from Chen et al., 2018).

PI	I identify strongly with the campus.
	I feel committed to the campus.
	I feel that I can really be myself on the campus.
	The campus is very special to me.
PD	I prefer the campus to others for the activities that I enjoy.
	The campus is my favourite place to be.
	I really miss the campus when I am away from it for too long.
AA	The campus means a lot to me.
	I feel a sense of belonging to the campus.
	I feel an emotional attachment to the campus.
SB	I have made some social connections at the campus.
	If I were to stop visiting the campus, I would lose some social contacts.
	Many of my social connections prefer the campus over other places.
PM	My experiences on the campus are unique.
	My experiences on the campus are unforgettable.
	My experiences on the campus make me feel loving this place more.
PE	The campus will be better in the future.
	In the future, the campus will continue creating unique experiences for me.
	I will be enjoying the campus in the future more than now.