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ORIGINAL ARTICLE

Word-of-mouth, servicescapes and the impact on brand effects

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Abstract

This paper empirically tests a framework integrating servicescape satisfaction, word-of-mouth (WOM), brand image, brand love, engagement, and consumer loyalty intentions. Survey data within a noncommercial context were electronically collected from three large universities in the United States. Structural equation modeling was used to analyze the data. The findings reveal that positive WOM valence enhances servicescape satisfaction and WOM credibility positively moderates this relationship. Servicescape satisfaction directly affects brand image and brand love, as well as indirectly through the mediating mechanism of servicescape engagement. Brand image was also found to directly affect brand love. In turn, brand image and brand love yield a greater likelihood of consumer loyalty intentions including recommendation and monetary donations. Managers on a quest to achieve brand love need to place an increased focus on managing servicescape experiences. Managers must not become complacent when customer have been retained over the years. They must still monitor and respond to WOM communications and continue to find new ways to engage customers to enhance brand image and brand love. Finally, managers must recognize that servicescapes are the "packaging" that prepares consumers for the level of quality and value of the service.

Keywords Servicescape · Word-of-mouth · Brand image · Brand love · Service engagement

JEL Classification I23

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Introduction

The importance of servicescapes cannot be overstated. Consumers are immersed in all manner of man-made and natural physical spaces in their neighborhoods, when shopping, when working, and when vacationing. Indeed, one is hard-pressed to identify a task or event when the surrounding environs, and the humans occupying those spaces, are not signaling information to the consumer. Consumer perceptions of these servicescapes can yield many consequences for the relevant organizations. For example, servicescapes have been linked to consumer well-being (Sheng et al. 2016), attitude (Sahoo et al. 2016), behavioral intentions (e.g., Durna et al. 2015), and perceptions of service quality (Reimer and Kuehn 2005), as well as numerous other outcomes that have been surfaced in the wide-ranging servicescape literature. Yet, despite the plethora of servicescape articles produced since Bitner's (1992) seminal work, some important areas have received little scrutiny. In particular, a review of the literature reveals that limited attention has been applied to brand effects, word-of-mouth (WOM) communications, and servicescape engagement in relation to servicescape satisfaction. The research at hand seeks to fill these voids.

Drawing upon S–O–R theory and, uniquely, accessibility–diagnosticity theory, the current study examines the role of WOM (i.e., perceived WOM valence and credibility) in influencing servicescape satisfaction and servicescape satisfaction's ensuing effects on two key branding constructs (i.e., brand image and brand love), as well as the partial mediating effect of servicescape engagement, and the consequential outcomes involving loyalty intentions (see Fig. 1). Our work first investigates the effect of WOM on servicescape satisfaction. While some studies have examined how servicescapes may encourage WOM (e.g., Chang et al. 2013; Roy et al. 2019; Tran and Strutton 2020), we take a different bent and suggest that WOM affects how recipients of such feedback perceive and evaluate the servicescape, even as it is consumed. Specifically, we argue that WOM valence influences servicescape satisfaction and WOM credibility moderates this relationship.

The associations between servicescape satisfaction and brand image, and between servicescape satisfaction and brand love have received little attention in the literature to date, with the few extant investigations largely falling into the tourism context (e.g., Durna et al. 2015; Riorini 2017). We examine these direct relationships, but also extend these works by proposing that customer engagement partially mediates these associations. Although a few researchers have made a good start in incorporating engagement in servicescape studies (e.g., Sheng et al. 2017), more research on the role of engagement is warranted.

Finally, we examine loyalty intentions as the outcome variables. The broad brand image literature and the nascent brand love stream of research reveal that both constructs result in many positive consumer behaviors (e.g., Karjaluoto et al. 2016; Maisam and Mahsa 2016). The current study examines the impacts of brand image and brand love in an understudied servicescape setting.

This investigation makes several contributions to the literature. First, this research broadens servicescape theory by testing the direct effect of WOM valence and the moderating effect of WOM credibility on servicescape satisfaction, thus highlighting

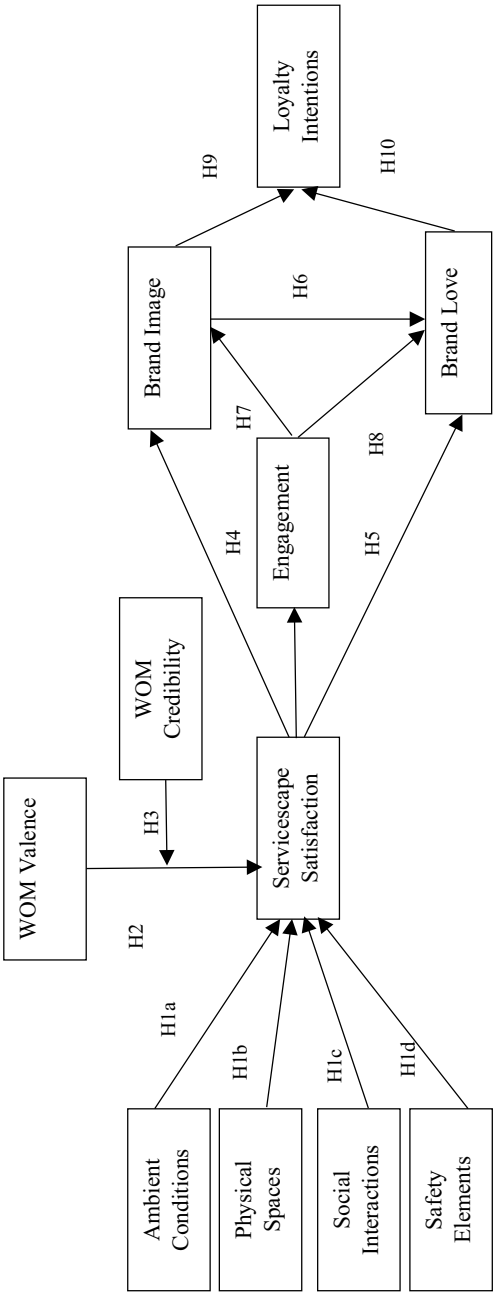

Fig. 1 Model framework

the important role of WOM in influencing consumers' perceptions and evaluations of a servicescape. Second, we add to the extant servicescape research by examining the impact of safety elements—which has previously been given short shrift in the servicescape literature—on servicescape satisfaction in relation to other dimensions, including ambient conditions, physical spaces, and social interactions. Third, the link between servicescape satisfaction and brand effects is a new contribution, as is the mediating effect of customer engagement. Thus, this research contributes not only to the bodies of work in those specific areas, but also to practice as marketers seek to reach the goal of creating favorable brand image, fostering brand love, and ultimately attaining customer loyalty. Fourth, this research takes place within a higher education context and across three different university servicescapes, thus addressing the need for more research on extended service experiences of longer durations and within non-commercial settings (e.g., Mari and Poggesi 2013). Finally, while servicescape studies have commonly used S–O–R as the theoretical underpinning for servicescape research (e.g., Bitner 1992; Roy et al. 2019; Tran and Strutton 2020), as does this study, we also uniquely incorporate accessibility–diagnosticity theory because of Feldman and Lynch's (1988) work that suggests consumers' evaluations are the result of easily accessible information deemed relevant to the judgment. Consequently, and as discussed in detail later, accessibility–diagnosticity theory appears applicable to consumer evaluations of servicescapes.

Theoretical background

The conceptual model proposed in this study is founded on Woodworth's (1929) S–O–R theory and Feldman and Lynch's (1988) accessibility–diagnosticity theory. The S–O–R theory postulates that a stimulus initiates an activity which affects the organism and results in a response. Woodworth (1929) suggests that the stimulus yields varying responses as a function of the state of the organism. Applied to the study at hand, the servicescape attributes serve as the stimuli, which in turn influence the consumers' perceived conditions, generating diverse responses in the form of consumer behaviors and intentions. S–O–R theory has been used as a theoretical foundation to examine the impacts of various servicescapes (e.g., Bitner 1992; Roy et al. 2019; Tran and Strutton 2020).

Servicescape is the totality of the environment in which the service is delivered (Bitner 1992). We suggest that in the absence of a physical product, the servicescape provides tangible clues which assist in consumer evaluations. In addition, the servicescape provides the mechanism to deliver the benefit concept (i.e., the bundle of benefits) to the consumer, in contrast to goods where the benefit concept is largely encapsulated within the good itself. We argue that the servicescape serves as "packaging" for the service provided and creates a framework for the consumer experience. Similar to a traditional package, the experiential servicescape conveys information to the consumer about the brand, quality, and value of the service before the primary service is ever consumed (Löfgren and Witell 2005).

This line of reasoning is supported by Kardes et al. (2004) who concluded that consumers struggle to completely describe products—and we contend that services

are even more difficult to describe—and, therefore, are more likely to rely on the more tangible information available, such as promotional communications, in making judgments. In turn, Athanasios and Chrysochou (2014) and Khan et al. (2017, p. 374) have observed that "packaging is physically more accessible than any other form of marketing communication." Hence, the servicescape, as the service packaging, should be the driving source of information for consumers of services.

We now turn to the accessibility–diagnosticity theory (Feldman and Lynch 1988) to underpin our model. Packaging research has frequently utilized this theory to account for the effect on consumer behaviors that results from the information the packaging conveys (e.g., Khan et al. 2017); we extend this theory into the servicescape literature. Feldman and Lynch (1988, p. 429) indicated that consumers use "the most accessible cognition sufficient to determine a response," as long as that cognition is perceived as relevant to the evaluation at hand (Meyvis and Janiszewski 2004). Because consumers are "cognitive misers" (Meyvis and Janiszewski 2004, p. 347), they do not retrieve and utilize all information available in their memories, but instead use only the most readily accessible information that is deemed sufficient and relevant to generate evaluations (Feldman and Lynch 1988). The broad servicescape in which the consumer is immersed and experiencing abounds with relevant, available information. Furthermore, WOM may be one form of that effortlessly accessed information that influences evaluations. The quality of all the information related to the servicescape may be assessed upon first sight or as the service is consumed (e.g., Löfgren 2005; Zeithaml 1988). This pertinent, highly accessible servicescape information should then modify perceptions of brand image, brand love, and loyalty intentions.

Literature review and hypotheses

Servicescape

The servicescape literature has been heavily influenced by two theoretical frameworks, one created by Baker (1986) and the other developed by Bitner (1992). Baker's (1986) work proposed the dimensions of ambient, social, and design, while Bitner (1992), suggested that the relevant dimensions were ambient; space/function; and signs, symbols, and artifacts. Both Baker (1986) and Bitner (1992) proposed that their identified dimensions affected consumer response and behaviors. Moreover, they perceived servicescape as encompassing only man-made surroundings, but over time, this definition has been broadened. As noted by Rosenbaum and Massiah (2011, p. 471), the servicescape can be now conceived holistically as consisting of "objective, measurable, and managerially controllable stimuli but also subjective, immeasurable, and often managerially uncontrollable social, symbolic, and natural stimuli, which all influence customer approach/avoidance decisions and social interaction behaviors."

As a result of the breadth of stimuli which servicescape encompasses, there is little consensus concerning the dimensions that should be included in such

investigations. Instead, the context and attributes of the servicescape itself have often determined dimensions (Sheng et al. 2017). In this study, in accord with more recent research (e.g., Siguaw et al. 2019), we employ a broad conceptualization of servicescape that includes natural, man-made, and social stimuli. We label the servicescape dimensions as ambient conditions, physical spaces, social interactions, and safety elements.

Ambient conditions involve all those atmospheric stimuli which generally are perceived as background conditions (Baker 1986), such as visuals, smells, sounds, cleanliness, and the overall feeling of the atmosphere of the surroundings. Physical spaces are both the man-made and natural components that encompass the servicescape and include buildings, layout, design, landscape, and other biotic areas within the physical environment (Arnould and Price 1993; Line et al. 2018; Rosenbaum and Massiah 2007). Adopting Baker's (1986) sociological perspective to servicescapes which recognizes that human interactions and stimuli affect the servicescape experience (Harris and Ezeh 2008; Line et al. 2018), we define the social interactions dimension as comprising those stimuli arising from the presence of social events and interactions among consumers with other stakeholders, which may include both employees and other consumers, as described by Baker (1986) and Rosenbaum (2006).

Safety as a fourth servicescape dimension has often been overlooked in the literature (Siguaw et al. 2019), although it is difficult to fathom any environment in which personal safety is not consciously or unconsciously assessed before voluntarily entering the said environment. In the very limited servicescape works that have included safety, the element has always been found to be critical (Brand et al. 1997; Haytko and Baker 2004; Hilliard and Baloglu 2008; Jeon and Kim 2012; Parish et al. 2008). Other than these prior works, safety elements are largely missing from the vast servicescape literature. The safety dimension, including elements such as security, timely safety alerts, and lighting, is especially significant to this study's context of university campus servicescapes, but also important for other public spaces such as shopping areas, concert halls, and sports arenas. Based on the preceding discussion, we first offer:

> **H1a–d**: Satisfaction with a servicescape's (a) ambient conditions, (b) physical spaces, (c) social interactions, and (d) safety elements positively affect the overall satisfaction with the servicescape (hereafter servicescape satisfaction).

Word of mouth

WOM is often defined as any positive or negative statements made by current, former, or prospective customers (Hennig-Thurau et al. 2004). WOM communications are highly influential in the formation of consumer attitudes and intentions (e.g., Chevalier and Mayzlin 2006; Reza Jalilvand and Samiei 2012) and affect consumer pre-purchase and post-purchase perceptions of a brand (e.g., Pauwels et al. 2016; Tirunillai and Tellis 2012) because they are often deemed more credible (e.g., Mangold et al. 1999) and have longer-lasting effects than marketer-driven communications (Trusov et al. 2009).

Pollack (2017, p. 513) notes that WOM recommendations are "the most trusted information source for purchase decisions." Prior studies have indicated that consumers are more accepting of a product when WOM about the product is positive and more likely to reject the product when the WOM is negative (e.g., Sheth 1971; Wang 2011). These WOM studies, however, for the most part involve nascent or short-term consumer relationships with a brand or service. In this study, our context is a long-term consumer relationship with a servicescape, which as Sabiote and Román (2009, p. 450) note is substantially different than shorter relationships. Prior related findings reveal that when consumers are interacting with a business for a longer period of time, the relationship will likely evolve (see, for example, Cooil et al. 2007; Coulter and Coulter 2002) and such relationships may be more susceptible to negative influences (Grayson and Ambler 1999; Moorman et al. 1992). Consequently, understanding the role of WOM within a long-term servicescape experience is essential.

Following the above line of support from the literature, we expect that when the WOM regarding a long-term servicescape experience is perceived as positive, this positive influence will likely translate into enhanced satisfaction towards the servicescape. Thus, we suggest:

H2: Perceived positive WOM valence positively influences servicescape satisfaction.

Communication theories have long held that the source of a message is an important factor in the reader's assessment of the information provided (e.g., McKnight and Kacmar 2006; Wathen and Burkell 2002). The level of credibility attributed to the source influences the degree to which the receiver accepts the information contained in the message (e.g., Jung and Cho 2016). Hence, the greater (lower) the perceived credibility of the sender, the more likely the receiver is to accept (discount) the information (Cheung et al. 2009; McKnight and Kacmar 2006). As a result, WOM communications from a friend are generally perceived by the receiver to be an honest sharing of information (Balter and Butman 2005) and likely carry more weight and have a greater effect on the relationship between WOM valence and the receiver's attitudes (Godes and Mayzlin 2004). Based on this discussion, we propose:

H3: WOM credibility strengthens the positive effect of WOM valence on servicescape satisfaction.

Brand image

While definitions of brand image abound in the literature (e.g., Keller 1993, 2003; Low and Lamb 2000), the one most fitting to the study at hand describes brand image as: "a consumer-constructed notion of the brand. Consumers ascribe a persona or an image to the brand based on subjective perceptions of a set of associations that they have about the brand" (Nandan 2005, p. 267). This definition recognizes that the totality of servicescape attributes may shape consumers' perceptions of brand image—as established by prior research (e.g., Durna et al. 2015; Nguyen 2006)—more than the service itself

because the servicescape components are tangible elements, whereas the service offering itself is intangible (Durna et al. 2015). That is, the tangibility of the servicescape provides physical cues and aids consumers in evaluating their environment, thus influencing brand image (e.g., Walls et al. 2011). Therefore, we propose:

H4: Servicescape satisfaction positively affects brand image.

Brand love

Several researchers have suggested that brand love is an integral part of the way that a consumer's self-expressiveness is conveyed to self and to others (e.g., Albert et al. 2008; Karjaluoto et al. 2016; Wallace et al. 2014). Building on the work of Carroll and Ahuvia (2006), brand love is conceptualized by Batra et al. (2012) and Ahuvia et al. (2014) as a consumer–brand relationship characterized by positive attitude valence, positive emotional connection, self-brand integration, passion-driven behaviors, long-term relationships, anticipated separation distress, and attitude strength. Fostering consumer brand love stems first from satisfaction with the brand (e.g., Albert et al. 2008; Carroll and Ahuvia 2006).

To date, empirical studies regarding the antecedents of brand love have been few; self-expressiveness, hedonic value, brand trust, and brand identification—which incorporates brand image—have been confirmed by Albert and Merunka (2013), Carroll and Ahuvia (2006), Huber et al. (2015), and Karjaluoto et al. (2016). Critically, we note that all of these prior empirical studies are largely based on the affection–passion components of a brand love measure. Batra et al. (2012) have cited shortcomings with this approach. Ahuvia et al. (2014) argue that brand "love" may be an emotion, a relationship, or some other form of love. Batra et al. (2012) and Bagozzi et al. (2017) incorporate love emotion and love relationship into their conceptualization and operationalization of brand love, but they also include self-brand integration (conceptually similar to brand identification), separation distress, and attitude valence and strength.

Augmenting the contributions above, we add to the antecedents of brand love literature by proposing that servicescape satisfaction and a favorable brand image associated with the servicescape both contribute to creating a greater brand love. Thus, we propose:

H5: Servicescape satisfaction positively affects brand love.
H6: Brand image positively affects brand love.

Servicescape engagement

Studies involving engagement have noted that engaged customers spend more money, thereby enhancing the firm's financial performance (Kumar and Pansari 2016); converse about the brand on social media (Hogan et al. 2003); and contribute to the brand's reputation and recognition (Verhoef et al. 2010). Clearly, engagement is an important construct to consider when projecting marketing outcomes.

We adopt a holistic approach to examine *servicescape engagement* and, in alignment with So et al. (2016), define the construct as the degree to which the consumer

is psychologically and behaviorally involved in the servicescape. We conceptualize servicescape engagement as a higher-order construct comprising five first-order factors, including enthusiasm, attention, absorption, interaction, and identification (see So et al. 2016). Whereas enthusiasm embodies the excitement and interest that a consumer has towards the focus of engagement, such as a servicescape, attention describes a consumer's attentiveness to the servicescape. Absorption represents a pleasant psychological state associated with being immersed within a servicescape, while interaction refers to involvement with servicescape activities. Identification is a consumer's perceived belongingness to a servicescape.

In this study, we suggest that the more satisfied consumers are with a servicescape, the more engaged they will be with the servicescape and that this positive effect of servicescape satisfaction on engagement will in turn enhance brand image and brand love. While other studies have not examined the linkage between servicescape engagement and perceived brand image and brand love, there is some tangential support. The positive connection engendered by engagement as envisioned by prior researchers (So et al. 2014, 2016) is very likely to increase the favorable impressions that in total constitute brand image and build the love relationship with the brand. That is, if a consumer is engaged through, for example, participating in various activities and events that a servicescape offers, then he or she will be more likely to have a positive image and develop a bond with that brand. Indeed, So et al. (2016) found that consumers' engagement with a certain airline or hotel brand enhanced their service brand evaluation, which was measured as a second-order construct comprising service quality, perceived value, and customer satisfaction. Extending this line of reasoning to the current research, we propose:

H7: Servicescape engagement positively mediates the impact of servicescape satisfaction on brand image.
H8: Servicescape engagement positively mediates the impact of servicescape satisfaction on brand love.

Loyalty intentions

In this study, we conceptualize loyalty intentions regarding a certain brand as a multi-item measure comprising recommendations and commitment. While brand recommendation is synonymous with positive WOM about a brand, we use the term recommendation to avoid a potential confusion with the WOM comments that a consumer receives (e.g., WOM valence in this study) rather than those communications one gives (e.g., recommendation in loyalty intentions in this study). Hence, *brand recommendation* is defined as any positive or negative comment about a brand made by future, current, or former users (e.g., Hennig-Thurau et al. 2004). Brand love has been linked to brand recommendation by multiple researchers (e.g., Albert and Merunka 2013; Batra et al. 2012; Karjaluoto et al. 2016).

Brand commitment is often defined in terms of a psychological attachment to a brand (Moorman et al. 1992; Sung and Campbell 2009, p. 97). As previously noted, Albert and Merunka (2013) have identified a link between brand love and this dispositional attachment form of brand commitment. However, conceptually, that definition

creates an overlap with brand love. To avoid this issue, commitment in this study is viewed in terms of activities or financial funding to support the brand; that is, behaviors that would actually demonstrate commitment. Following the above discussion, we hypothesize:

H9: Brand image positively affects loyalty intentions.
H10: Brand love positively affects loyalty intentions.

Hypotheses 1–10 are depicted in the research model shown in Fig. 1.

Methodology

Scenario development and pretest

We situated our study within noncommercial, higher education settings. We developed six scenarios in which WOM communication was varied by message valence (negative, neutral, or positive) and by message source (from a close friend or from a third-party review website) in order to understand the effect of WOM valence and source on servicescape evaluation. The content of these WOM communications was derived from multiple online forums such as http://www.gradreports.com and http://www.studentsreview.com. These websites collect, compile, and electronically disseminate student reviews of universities and colleges. Two Masters of Business Administration students culled through the websites and sorted them into positive, neutral, and negative comments. One of the researchers then reviewed the listings for accuracy and crafted the scenarios. Each scenario was adjusted to be approximately the same length to ensure that the processing load and cognitive load of reading the scenarios were balanced. These scenarios were reviewed and approved by two other researchers and two colleagues not involved in the study before all six scenarios were finalized.

College students at a large southeastern state university in the United States were encouraged to complete an anonymous online Qualtrics survey during a recent semester. A small amount of extra course credit was awarded to 97 undergraduate students who participated in the study. Study participants first read a randomly assigned scenario and then responded to a set of seven-point semantic differential scale questions—i.e. negative–positive, bad–good, awful–great—and four statements about the trustworthiness of the message or the person. The data indicated that the WOM scenarios functioned as intended.

Data collection

After the pretest of the scenarios as described above, we conducted a full online survey study in the following semester at three large state universities from the southeastern, western, and southern areas of the United States. Given that higher education was our study context and that we were most interested in sophomores or higher levels of class standing because freshmen may not have sufficient experience on campus to adequately assess the servicescape components, we used purposive

sampling in this study and contacted faculty who taught sophomore or upper-level business courses to inform and encourage their students to participate in the study. Our target sample size was 784, calculated based on a confidence level of 95% and a confidence interval of 3.5. A total of 779 respondents participated in the survey. After removing 59 participants who did not answer several attention check questions correctly, the final sample contained 720 respondents.

Measures

We selected the measures included in our questionnaire on the basis of a review of current marketing research and adapted mostly existing multi-item scales (see Table 1). Items for measuring satisfaction with each of the four servicescape dimensions, i.e., ambient conditions, physical spaces, social interactions, and safety elements, were adapted from Baker (1986), Bitner (1992); Sheng et al. (2017), and Siguaw et al. (2019) and assessed on a five-point scale with 1 indicating "Very dissatisfied" and 5 indicating "Very satisfied." Overall satisfaction with the servicescape was measured with twelve items newly developed for the study. Specifically, respondents were asked to indicate their overall feelings about the ambience, physical space and function, social aspects, and safety of their campus on a five-point semantic differential scale with anchor words "Very dissatisfied" and "Very satisfied," "Negative" and "Positive," and "Below expectations" and "Exceeds expectations."

Study participants were randomly provided with 3 (WOM valence: positive, neutral, or negative) × 2 (WOM source: a close college friend vs. a third-party online forum) reviews about their respective university; these reviews were previously tested in the aforementioned pilot study. That is, half of the participants were told that the message was sent to them by a close college friend. The other half of the participants were told that they read the opinion about their university on studentsreview.com, an online discussion forum. Two sample scenarios can be found in the supplementary material.

To assess perceptions of WOM valence, we asked study participants to indicate their level of agreement with one statement concerning how they perceived the review they had just read on a seven-point semantic differential scale with anchor words "Negative" and "Positive." WOM credibility was tapped by asking respondents to indicate their level of agreement with each of the two statements on a seven-point Likert: "I trust this message." and "I trust the person who wrote this message."

Brand image was assessed with six items adapted from Nguyen et al. (2016), Cretu and Brodie (2007), Davis et al. (2008), and Mudambi et al. (1997) on a seven-point Likert scale (1 = "Strongly disagree" and 7 = "Strongly agree"). Brand love was measured with items adapted from the 13-item scale developed and validated by Bagozzi et al. (2017). Engagement was measured using a 25-item, five-dimension (identification, enthusiasm, attention, absorption, and interaction) customer engagement scale adapted from So et al. (2016) on a seven-point Likert scale. Finally, loyalty intentions were assessed on a seven-point scale anchored by 1 = "Extremely unlikely" and 7 = "Extremely likely," asking respondents to indicate the likelihood

Table 1 Constructs and measures

Construct and measures	Factor loadings
Servicescape Satisfaction (Baker 1986; Bitner 1992; Sheng et al. 2017; Siguaw et al. 2019) (Cronbach's $\alpha = 0.937$, CR = 0.946, AVE = 0.593)	
What is your overall feeling about the ambience (sights, smells, sounds, etc.) of your campus?	
Below expectations—exceeds expectations	0.759
Negative–positive	0.775
Very dissatisfied—very satisfied	0.793
What is your overall feeling about the physical space and function of your campus?	
Below expectations—exceeds expectations	0.781
Negative–positive	0.815
Very dissatisfied—very satisfied	0.816
What is your overall feeling about the social aspects of your campus?	
Below expectations—exceeds expectations	0.755
Negative–positive	0.76
Very dissatisfied—very satisfied	0.792
What is your overall feeling about the safety on your campus?	
Below expectations—exceeds expectations	0.708
Negative–positive	0.739
Very dissatisfied—very satisfied	0.737
Ambient conditions: "How satisfied are you with each of the following campus characteristics?" (Cronbach's $\alpha = 0.847$, CR = 0.887, AVE = 0.568)	
Cleanliness	0.692
Visuals (what you see on campus)	0.786
Smells	0.705
Sounds	0.717
Campus climate (overall feel of the campus)	0.805
Atmosphere	0.809
Physical spaces: "How satisfied are you with each of the following campus characteristics?" (Cronbach's $\alpha = 0.843$, CR = 0.888, AVE = 0.614)	
Campus layout	0.772
Campus size	0.796
Facilities	0.77
Landscape	0.799
Architecture	0.782
Social interactions: "How satisfied are you with each of the following campus characteristics?" (Cronbach's $\alpha = 0.849$, CR = 0.899, AVE = 0.689)	
Interactions with other students	0.774
Social gatherings	0.86
Outdoor activities	0.827
Special events	0.857
Safety elements: "How satisfied are you with each of the following campus characteristics?" (Cronbach's $\alpha = 0.869$, CR = 0.906, AVE = 0.659)	
Campus security	0.879
Police safety escorts	0.851

Table 1 (continued)

Construct and measures	Factor loadings
Call boxes on campus	0.772
Timely emergency alerts	0.785
Campus lighting	0.763
Engagement (So et al. 2016): "Please indicate the degree to which you agree or disagree with each of the following statements" (Cronbach's $\alpha = 0.958$, CR = 0.962, AVE = 0.6)	
Enthusiasm (Cronbach's $\alpha = 0.903$, CR = 0.954, AVE = 0.912)	
I am enthusiastic about my university	0.953
I feel excited about my university	0.957
Attention (Cronbach's $\alpha = 0.913$, CR = 0.939, AVE = 0.793)	
I like to learn more about university activities	0.881
Anything related to my university grabs my attention	0.909
I concentrate a lot on my university activities	0.891
I like learning more about university activities	0.881
Absorption (Cronbach's $\alpha = 0.91$, CR = 0.933, AVE = 0.737)	
When I am interacting in university activities, I forget everything else around me	0.833
Time flies when I am involved in university activities	0.883
When I am involved in university activities, I get carried away	0.843
When interacting in university activities, it is difficult to detach myself	0.842
In my interaction in university activities, I am immersed	0.889
Interaction (Cronbach's $\alpha = 0.884$, CR = 0.92., AVE = 0.743)	
In general, I like to get involved in university community discussions	0.866
I am someone who likes actively participating in university community discussions	0.868
In general, I thoroughly enjoy exchanging ideas with other people in the university community	0.897
I often participate in activities of the university community	0.816
Identification (Cronbach's $\alpha = 0.77$, CR = 0.92, AVE = 0.743)	
When someone praises my university, it feels like a personal compliment	0.898
My university's successes are my successes	0.905
Brand image (Nguyen et al. 2016; Cretu and Brodie 2007; Davis et al. 2008; Mudambi et al. 1997): "I perceive my university as…" (Cronbach's $\alpha = 0.917$, CR = 0.936, AVE = 0.709)	
Technically advanced	0.788
A trustworthy brand	0.881
An innovative brand	0.875
A student-focused brand	0.856
A well-managed brand	0.863
Rich in history and experience	0.781
Brand love (Bagozzi et al. 2017): "Please indicate to what extent you agree with the following statements" (Cronbach's $\alpha = 0.938$, CR = 0.948, AVE = 0.671)	
I feel that attending my chosen university says something "true" and "deep" about who I am as a person	0.776
Attending my university allows me to be who I want to be	0.805
Attending my university makes my life more meaningful	0.806

Table 1 (continued)

Construct and measures	Factor loadings
I find myself thinking about my university	0.762
I find myself desiring to wear my university branded apparel	0.782
I feel there is a natural "fit" between me and my university	0.892
I feel emotionally connected to my university	0.869
I feel my university is fun	0.822
I will be supporting my university for a long time	0.85
Loyalty intentions: "Please indicate how likely you are to take the following actions concerning your university" (Cronbach's $\alpha = 0.851$, CR = 0.91, AVE = 0.772)	
Recommend the university to others	0.887
Remain involved	0.92
Donate monetary funds back	0.827
Perceived WOM credibility: "Please indicate your agreement with the following items about how you perceive the review you just read" (Cronbach's $\alpha = 0.94$, CR = 0.971, AVE = 0.943)	
I trust this message	0.969
I trust the person who wrote this message	0.973

of them recommending the university to others, remaining involved with the university, and donating monetary funds to the university.

Results

The manipulation check for the WOM valence confirmed that the positive WOM condition ($M = 5.79$) was perceived as higher in direction than the neutral ($M = 5.14$) or the negative condition ($M = 2.66$; $F(2,717) = 272.54$; $p < 0.0001$) using a seven-point Likert scale with anchor words "Bad" and "Good," and "Awful" and "Great." Additionally, the manipulation check for WOM source was significant from the close college friend condition ($M = 2.78$) seen as from a known person than the third-party online forum condition ($M = 2.03$; $F(1,718) = 38.98$; $p < 0.0001$), using two manipulation check statements on a seven-point Likert scale: "This message was written by someone I don't know," and "This message was from someone I know well." Next, we used PLS-SEM (SmartPLS, 3.2.4; Ringle et al. 2016) to test the proposed model and followed Hair et al. (2017) PLS-SEM guidelines by first assessing the measurement model and then the structural model. We chose to use PLS-SEM as the testing method for two reasons. First, we had a large sample size with 720 valid observations in the data set. Second, our proposed research model consisted of 11 constructs with one single-item construct (i.e., WOM valence) and one second-order reflective construct comprising 5 dimensions (i.e., engagement). The large sample size coupled with the complexity of the research model makes PLS-SEM a more preferred approach. As noted by Hair et al. (2011, p. 143), PLS-SEM is "more robust with

fewer identification issues" and works with "much smaller as well as much larger samples."

Measurement model

Following Hair et al.'s (2017) evaluative criteria for reflective measurement models, we first examined indicators' outer loadings. We removed indicators with loadings lower than the recommended cutoff value of 0.40. We then assessed indicators with loadings between 0.40 and 0.70 and based our decision to retain or delete a certain indicator by conducting the outer loading relevance testing per Hair et al.'s (2017) recommendation. Based upon the relevance testing, additional indicators were removed from further analysis because the deletion of these indicators substantially increased the internal consistency reliability of the constructs. As seen in Table 1, outer loadings for the remaining indicators were all above 0.692, supporting convergent validity. Average variance extracted (AVE) was above 0.568 for all latent constructs, thus providing additional support for convergent validity. Internal consistency reliability was assessed by composite reliability (CR) and by Cronbach's α. As Table 1 shows, CR values were above 0.887. Cronbach's α values were above 0.77, supporting the internal consistency reliability of the measurement items. Discriminant validity was evaluated by the Fornell–Larcker criterion and by assessing the heterotrait–monotrait (HTMT) ratios. Table 2 provides the AVE and inter-construct correlations. Table 3 provides the HTMT ratios, which were all lower than 0.841, below the critical threshold of 0.9. Harman's single-factor test was also run by conducting an exploratory factor analysis on all measurement items. The unrotated factor solution yielded 14 factors with eigenvalues greater than 1, explaining 69.86% of the total variance. The first factor accounted for 29.70% of the total variance, the second factor explained 10.81%, and the remaining factors explained 1.32–4.81% of the total variance. These results indicate that common method bias was not a concern.

Structural model

We next examined the structural model to find overall satisfaction with the servicescape was positively affected by satisfaction with each of the four servicescape dimensions, i.e., the ambient conditions ($\beta = 0.312$, $t = 9.118$, $p < 0.001$), physical spaces ($\beta = 0.116$, $t = 3.205$, $p = 0.001$), social interactions ($\beta = 0.234$, $t = 8.051$, $p < 0.001$), and safety elements ($\beta = 0.264$, $t = 9.417$, $p < 0.001$). Therefore, H1a–d were supported. WOM valence had a significant and positive effect on servicescape satisfaction ($\beta = 0.138$, $t = 4.266$, $p < 0.001$). Perceived WOM credibility strengthened the positive effect of WOM valence on servicescape satisfaction, as indicated by the significant interaction effect ($\beta = 0.097$, $t = 3.603$, $p < 0.001$). Therefore, H2 and H3 were supported. As predicted, servicescape satisfaction significantly enhanced brand image ($\beta = 0.49$, $t = 11.935$, $p < 0.001$) and brand love ($\beta = 0.288$, $t = 6.68$, $p < 0.001$), supporting H4 and H5. A positive brand image resulted in greater brand love ($\beta = 0.288$, $t = 7.027$, $p < 0.001$), supporting H6.

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Table 2 AVE and inter-construct correlations

	Ambient	Brand Image	Brand Love	Engagement	Loyalty	Physical	Safety	Servicescape_sat	Social	WOM credible	WOM valence
Ambient	0.754										
Brand image	0.491	0.842									
Brand love	0.481	0.573	0.808								
Engagement	0.288	0.361	0.558	0.775							
Loyalty	0.248	0.387	0.537	0.546	0.879						
Physical	0.715	0.472	0.497	0.336	0.332	0.784					
Safety	0.558	0.447	0.43	0.251	0.242	0.563	0.811				
Servicescape_sat	0.716	0.556	0.58	0.384	0.357	0.665	0.659	0.77			
Social	0.557	0.458	0.549	0.435	0.343	0.563	0.484	0.643	0.83		
WOM credible	0.114	0.12	0.1	0.03	-0.051	0.091	0.086	0.154	0.152	0.971	
WOM valence	0.162	0.141	0.132	0.084	0.018	0.171	0.123	0.249	0.188	0.626	1

Table 3 Heterotrait–monotrait ratio (HTMT)

	Ambient	Brand Image	Brand Love	Engagement	Loyalty	Physical	Safety	Servicescape_sat	Social	WOM credible	WOM valence
Ambient											
Brand image	0.546										
Brand love	0.526	0.613									
Engagement	0.303	0.375	0.576								
Loyalty	0.278	0.437	0.597	0.591							
Physical	0.841	0.536	0.557	0.366	0.393						
Safety	0.652	0.501	0.476	0.268	0.281	0.657					
Servicescape_sat	0.797	0.598	0.613	0.393	0.396	0.744	0.736				
Social	0.644	0.517	0.61	0.472	0.403	0.666	0.565	0.711			
WOM credible	0.134	0.129	0.108	0.032	0.057	0.103	0.094	0.165	0.171		
WOM valence	0.18	0.147	0.138	0.084	0.025	0.187	0.131	0.256	0.204	0.647	

We used Hayes (2018) PROCESS v3.4 macro (Model 4; 10,000 bootstrap sampling) (Hayes 2018) in testing H7 and H8. Results indicated that the indirect effect of servicescape satisfaction on brand image through engagement as a mediator was positive and significant ($M = 0.0599$), with a 95%, bias-corrected confidence interval excluding zero (0.0297–0.0977). Further, the direct effect of servicescape satisfaction on brand image was positive and significant ($M = 0.496$, $p < 0.001$). As expected, servicescape satisfaction positively affected engagement ($\beta = 0.376$, $t = 10.859$, $p < 0.001$) and that engagement positively affected brand image ($\beta = 0.1596$, $t = 4.842$, $p < 0.001$). Taken together, these results indicated that engagement partially mediated the effect of servicescape satisfaction on brand image, supporting H7. Likewise, the indirect effect of servicescape satisfaction on brand love through engagement was positive and significant ($M = 0.14$), with a 95%, bias-corrected confidence interval excluding zero (0.0916–0.2005). The direct effect of servicescape satisfaction on brand love was positive and significant ($M = 0.4436$, $p < 0.001$). Servicescape satisfaction positively affected engagement ($\beta = 0.376$, $t = 10.859$, $p < 0.001$) and that engagement positively affected brand love ($\beta = 0.373$, $t = 12.607$, $p < 0.001$). These results indicated that engagement partially mediated the effect of servicescape satisfaction on brand love, supporting H8.

Finally, brand image ($\beta = 0.116$, $t = 2.475$, $p = 0.013$) and brand love ($\beta = 0.473$, $t = 10.15$, $p < 0.001$) both contributed to greater loyalty intentions, providing support for H9 and H10. The R^2 value was 0.685, 0.335, 0.524, and 0.3 for servicescape satisfaction, brand image, brand love, and loyalty intentions, respectively. The Q^2 value was 0.4 for servicescape satisfaction, 0.237 for brand image, 0.34 for brand love, and 0.226 for loyalty intentions, providing evidence of the predictive validity of the research model. Table 4 summarizes the results from hypothesis testing.

General discussion

This paper is among the first to examine the interrelationships and consequences of WOM, servicescape satisfaction, engagement, brand image, and brand love within a single framework. Results from testing the proposed research model yield numerous insights. First, all four dimensions of servicescape were found to be significant predictors of servicescape satisfaction. While ambient conditions, physical spaces, and social interactions have commonly been found to be key dimensions of servicescape, the finding that the safety elements dimension significantly impacts overall servicescape satisfaction in a university servicescape context warrants special attention and adds to a miniscule body of literature that has recognized the importance of safety as a critical component of servicescapes. Further, this finding broadens servicescape theory by empirically illustrating the criticality of safety elements as a servicescape dimension, which has previously been neglected in the servicescape literature. Indeed, one could argue that except for thrill-seekers, it would be difficult to imagine consumers voluntarily entering or remaining in a servicescape that feels threatening to their well-being. We believe the safety elements dimension should be a mainstay in all future servicescape studies, as previously advocated by Siguaw et al. (2019).

Table 4 Summary of hypothesis testing results

	Original sample (*O*)	Sample mean (*M*)	Standard deviation (STDEV)	*T* statistics (|*O*/STDEV|)	*p* values
H1a: Ambient conditions → Servicescape_sat	0.312	0.312	0.034	9.118	0
H1b: Physical spaces → Servicescape_sat	0.116	0.116	0.036	3.205	0.001
H1c: Social interactions → Servicescape_sat	0.234	0.234	0.029	8.051	0
H1d: Safety elements → Servicescape_sat	0.264	0.263	0.028	9.417	0
H2: WOM valence → Servicescape_sat	0.138	0.14	0.032	4.266	0
H3: Valence × credibility → Servicescape_sat	0.097	0.098	0.027	3.603	0
H4: Servicescape_sat → Brand image	0.49	0.49	0.041	11.935	0
H5: Servicescape_sat → Brand love	0.288	0.286	0.043	6.68	0
H6: Brand Image → Brand love	0.288	0.288	0.041	7.027	0
H7: Engagement mediates the effect of servicescape satisfaction on brand image					
	Effect	LLCI	ULCI		
Indirect effect of servicescape satisfaction on brand image through engagement	0.0599	0.0297	0.0977		
Direct effect of servicescape satisfaction on brand image	0.4962	0.4315	0.5609		
H8: Engagement mediates the effect of servicescape satisfaction on brand love					
	Effect	LLCI	ULCI		
Indirect effect of servicescape satisfaction on brand love through engagement	0.1401	0.0916	0.2005		
Direct effect of servicescape satisfaction on brand love	0.4436	0.3855	0.5018		
H9: Brand image → Loyalty intentions	0.116	0.118	0.047	2.475	0.013
H10: Brand love → Loyalty intentions	0.473	0.474	0.047	10.15	0

LLCI lower level of confidence interval, *ULCI* upper level of confidence interval

Second, in this age of readily accessible opinions across multiple forms of communication mechanisms, we tested the impact of WOM in terms of its valence and perceived credibility on servicescape satisfaction in an extended experience. Despite consumer familiarity with the servicescape, our results show that WOM perceived as positive in valence significantly enhanced servicescape satisfaction, indicating that positive WOM helps improve servicescape satisfaction even in an extended-stay context. Moreover, the moderating effect of WOM credibility suggests that the positive impact of WOM on servicescape satisfaction is further strengthened when the source of the WOM is perceived as credible, such as when it is from a close friend. These findings forge a connection between the WOM literature and the servicescape research, thus contributing to both research streams. To our knowledge, WOM communication has not been incorporated in the study of servicescapes. As such, findings from this research not only add to the extant servicescape research by identifying WOM valence as an antecedent and WOM credibility as a boundary condition but also enrich the extant WOM literature by testing the effect of WOM communication in the novel context of servicescape. This is a direct response to a call on identifying substantive topics for the development of theories related to servicescape (Rosenbaum and Russell-Bennett 2019).

Third, our results demonstrate that servicescape satisfaction has positive effects on brand image and brand love and that a favorable brand image results in greater brand love. These results substantiated the wide-ranging impact of servicescape perceptions on brand-related constructs, an under-researched area in both the extant servicescape literature and the brand literature, and answered the call for more research identifying antecedents to brand love (Vernuccio et al. 2015). Taken together, these findings indicate that marketers on a quest to achieve brand love and its positive consequences need to place an increased focus on managing servicescapes. This result also reinforces the accessibility–diagnosticity theory (Feldman and Lynch 1988) as a basis for understanding how consumers perceive and evaluate the information that stems from servicescape attributes and the outcomes of such an assessment.

Relatedly, servicescape engagement is shown to partially mediate the positive effect of servicescape satisfaction on brand image and brand love. This finding identifies engagement as a mediating mechanism through which servicescape exerts direct and indirect impacts on brand image and brand love, adding to the relatively nascent engagement literature.

Another contribution from the current research is the novelty of the study context. This study takes places within a higher education setting and across three different university servicescapes, and thus contributes to servicescape research by addressing the need for research focused on extended servicescape experiences of longer duration and by examining servicescapes outside the commercial environment (e.g., Arnould and Price 1993; Mari and Poggesi 2013; Sheng et al. 2017). However, the findings surfaced in this study should apply to other commercial and non-commercial servicescapes.

Further, and not surprisingly, brand love resulted in the positive outcomes of loyalty intentions as manifested in a greater likelihood of recommending the university to family and friends and donating monetary funds to the university. From both a profit and non-profit business standpoint, these consequences of brand love are vital

to sustain the organization. It is important to state that these above informational effects derived through servicescape satisfaction led to loyalty intentions at the end, in support of S–O–R theory (Woodworth 1929) and the accessibility–diagnosticity theory (Feldman and Lynch 1988).

Finally, we also note that while the accessibility–diagnosticity theory (Feldman and Lynch 1988) has been previously extended to packaging (Khan et al. 2017) and branding (e.g., Boisvert 2015; Vaidyanathan 2000), this is the first study of which we are aware that has advanced this theory into the context of servicescape research. The accessibility–diagnosticity theory has been underutilized in marketing and its applicability in this study should encourage further exploration of this theory in relation to servicescape studies.

Managerial implications

Our results also have important managerial implications. Findings that positive WOM contributed to greater satisfaction in an extended servicescape experience and that WOM perceived as credible further enhanced the effect of positive WOM underscores the importance of tracking and managing WOM communications. Quickly responding to instances involving negative WOM or even firestorms (Hansen et al. 2018) that likely will result in poor servicescape evaluations by consumers is critical.

The results concerning engagement offer interesting managerial implications. The finding that servicescape engagement mediates positive relationships from servicescape satisfaction to brand image and brand love suggests that brand managers will need to understand that high servicescape satisfaction is necessary to engage consumers both psychologically and behaviorally. Such efforts will aid in sustaining positive brand image and brand love.

In addition, managers need to understand how much the servicescape is conveying to consumers. Servicescapes are the "packaging" that prepares consumers for the level of quality and value of the service before the primary service is ever experienced. Consumer perceptions of the servicescape yield significant effects on brand image and brand love. Thus, when the servicescape "packaging" presents as shabby facilities, trashy grounds, inept frontline personnel, and interactions with overly aggressive or inappropriate "other consumers," marketing efforts to heighten brand image and achieve brand love will be unsuccessful.

Limitations and future research

This study has some limitations that suggest avenues for future research. First, a viable area for research is an in-depth focus on the effects of WOM communications on servicescape satisfaction. Recent work by Fang (2014) indicates that two paths can influence WOM acceptance: (1) a conventional cognitive path composed of cognitive stimuli and source credibility, and (2) an affective path composed of affective stimuli and arousal. Understanding which of these two paths has a greater effect on

servicescape satisfaction would be beneficial for marketing managers who are seeking to grasp the full potential of WOM communications in its many forms. In this same vein, future research could also examine the volume of WOM communications and its impact on servicescape satisfaction. Second, the significant, direct relationship between servicescape satisfaction and brand love is a new finding and, as such, offers a new direction for those researchers trying to understand the antecedents of this highly lauded construct. We suggest additional research to explore this relationship. Finally, a limitation of the current investigation is that all data are from one country and one servicescape context. Future research could collect data from countries outside of the US and use a different servicescape context to test the model. One possibility is fitness gyms and wellness clubs in multiple countries where members will likely have extended service experiences and interactions.

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