Joy to the (shopper) world: An S-O-R view of digital place-based media in upmarket shopping malls

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Abstract

A few studies have investigated the effects of digital media at point of sale; however, there is a lack of understanding of shoppers' experience of digital place-based media in shopping malls. The paper draws on environmental psychology (the stimulus- organism-response model) to provide an in-depth exploration of shoppers' experience of digital media as they journey through upmarket shopping malls. The findings reveal that the media provide enjoyment and usefulness to shoppers' experiences, and that this influences their responses. Some managerial advice to improve the experience with digital place-based media are offered. It is also one of the first papers to explore the cross-effects between other media and digital place-based mall media. The findings can assist advertisers to enhance shoppers' experiences, thus also enhancing engagement possibilities.

Keywords

Retail; digital signage; out-of-home advertising

Introduction

'A thing of beauty is a joy forever' (Keats, 1818). The media landscape has changed dramatically due to 'digitization', resulting in grey areas in advertising media and stimulating remarkable growth in digital out-of-home (DOOH) advertising (Franke & Taylor 2017; Lee & Cho, 2017). DOOH media will continue to grow at a time when the advertising industry is challenged in its ability to engage with consumers (PriceWaterhouseCoopers, 2018a).

DOOH advertising grew at 17% and accounted for 22% of the total global out-of-home (OOH) advertising expenditure in 2019 (Magna Global, 2019). Echoing global development tendencies, even higher growth rates are predicted in emerging markets (PriceWaterhouseCoopers 2018b). The marketing communication roles of DOOH media platforms vary across different locations (IAB, 2016). Digital signage located at point of sale

(POS), such as at the cash registers or in the aisles of a specific store (Lee et al., 2015), is aimed at increasing impulse purchase behavior (Lanjewar, 2015) and sales of particular brands in a store (Kelsen, 2012). On the other hand, place-based media located in any public place, such as in office buildings, shopping malls and transport facilities, offer a wider range of beneficial applications. These include delivering advertising, community information, education (Taylor, 2015) and acting as interactive way-finding facilities (Huang et al., 2018). This paper focused on digital place-based media with hedonic and utilitarian advertising in upmarket shopping malls.

Notwithstanding global attractiveness (Magna Global 2019; PricewaterhouseCoopers 2018a), promising potential across various environments (IAB, 2016), and the exciting opportunities created by innovative digital technology – which has modernized the traditional 'outdoor' medium (Taylor, 2015) – DOOH media remain a topic largely ignored by academic scholars (Khang et al., 2016). The majority of such studies have focused on digital signage advertising's behavioral effects at POS (Burke, 2009; Dennis et al., 2013; Dennis et al., 2014; Lee & Cho, 2017; Roggeveen et al., 2016; Willems et al., 2017; Yim et al., 2010). And past studies typically applied quantitative methodologies and information processing models to examine consumers' cognitive processing of content (Dennis et al., 2013; Dennis et al., 2014; Yim et al., 2010). Many relied on experimental designs with manipulated advertising content and rigorous control of extraneous environmental variables (Roggeveen et al., 2016; Willems et al., 2017).

Little attempt has been made to understand shoppers' actual experiences of digital place-based media during their shopping journey through a mall space. Avant et al. (2017), in a review paper on 30 years of advertising research in prominent journals, recommend that researchers consider a wider scope of theoretical approaches and be amenable to qualitative work. Because digital place-based media in malls are experienced by shoppers as an integrated

part of the mall environment, this article followed a qualitative research approach to offer novel and deep insights on how it affects consumers' outcomes and responses. Understanding consumers' perspectives helped to formulate guidelines to make it more effective in the public spaces of shopping malls.

The authors hold the view that the shopper's mall journey should (and can) be a pleasurable experience, especially when considering that an average of 48% to 61% of shoppers patronize regional and/or super-regional centers weekly (Prinsloo, 2018). South Africa, which ranks fifth worldwide in the number of shopping centers (Prinsloo, 2016), features several super-regional (<100 000m^2) shopping malls that attract a variety of clientele across different socio-demographic groups. In fact, malls that would typically target higher income groups have been broadening their target audiences due to the rising middle market (Shopping SA, 2016). South African malls feature a variety of national and global brands, often lending a cosmopolitan 'feel' to the mall space. Local and international advertisers thus have the opportunity to use the highly adaptable digital media available in many large shopping malls to influence shopper behavior.

This study adds to the limited research on the topic as follows. Methodologically, it applies an interpretivist paradigm and uses qualitative personal interviews with shoppers as they experience actual digital place-based media in shopping malls, featuring authentic, non-manipulated content in order to elicit organic (natural, spontaneous) responses in real time. This approach helps to understand shoppers' experiences of digital place-based media through the meanings that they assign to them.

Theoretically, it pertinently explores how the Mehrabian-Russell (M-R) theory of environmental influence (Mehrabian & Russell, 1974), in the form of the stimulus-organism-response (S-O-R) model, can explain shopper responses. It furthermore presents novel ideas based on consumers' experiences to improve digital place-based media and utilize media

synergy. In so doing, this paper is not merely applying information processing models to measure cognitive responses often applied in OOH advertising research, but rather is delving more deeply into understanding the affective responses and experiences of shoppers. This paper answers the following research question: *How do shoppers organically experience actual digital place-based media in a shopping mall environment?* Answering this question as guided by the S-O-R framework (Fiore & Kim, 2007) resulted in specific novel ideas not found in the current literature and recommendations to guide decision-makers on how digital place-based media might need to be adapted to optimize shoppers' experiences inside the mall environment.

This study is informed by two streams of literature: place-based media, as a specific type of OOH advertising; and environmental influence theory, to study how digital place-based media affect shopper responses. These are discussed in the following sections. This is followed by the research methods, and the results and insights obtained from the in-depth interviews. The article concludes with implications for theory and practice, followed by directives for future research.

Place-based media as a specific type of out-of-home (OOH) advertising

Background

OOH advertising media originated with static billboards and evolved to occupy contemporary platforms such as outdoor, transit, street-and-retail furniture advertising, and DOOH advertising (Roux et al., 2013). The Out of Home Advertising Association of America classifies OOH advertising into two major categories, based on the audience types targeted: *large-format displays*, found in public areas and aimed at pedestrians and/or vehicular traffic; and *place-based media*, located where particular groups of people congregate for a specific purpose, such as shopping malls, airports, and grocery stores (IAB, 2016). Large-format displays fall outside the scope of the current study.

Lehmann and Shemwell (2011) recognize the ability to target specific demographic characteristics, availability across geographic locations at a relatively low cost, and the ability to deliver high reach and frequency, as the unique advantages of place-based advertising media. Wilson and Suh (2018) view consumers in the vicinity of place-based advertising as 'moving targets' for brand messages. They regard the limited cognitive resources of mobile consumers for message processing as a potential disadvantage of place-based advertising media. This is because the media are typically placed at a specific location (e.g., doctors' waiting rooms, common areas of health clubs or shopping malls, restrooms), whereas the consumers exposed to place-based advertising are typically mobile. Gambetti (2010) does not regard placement in public OOH spaces as a disadvantage. She argues that this type of placement allows consumers to be reached in public places and at times when their advertising consciousness is deactivated. Place-based advertising thus becomes part of the daily life activities and environments where consumers socialize, work, and relax.

Research on place-based media

Past research on place-based media mainly examines the influence of the advertising content and/or media using surveys (Baack et al., 2008; Dennis et al., 2010; Lehmann & Shemwell 2011; Müller et al. 2009) or quasi-experiments (Dennis et al., 2012) in non-POS environments. The environments include captive settings such as bathrooms (Lehmann & Shemwell 2011) and movie theatres (Wilson & Till 2013), as well as broader environments such as airport terminals (Baack et al., 2008) and shopping malls (Dennis et al., 2010; Dennis et al., 2012).

The focal stimuli of these studies include traditional non-digital and digital place-based advertising media. The main distinctions between these types of media are the digital media's interactive capabilities, dynamic multi-media content, and flexibility (Roux, 2018). Dynamic multi-media content, containing audio, video, and animation, attracts the attention of a passing target audience (Koeck & Warnaby, 2014) and mentally moves consumers to create a stronger

emotional connection with a brand (Roggeveen et al., 2016). Being flexible to contextual conditions implies that advertisers can adapt their messages instantaneously, depending on the audience, location, and time of the day or week; whereas the change of content on traditional place-based media is far more time-bound and expensive (Roux, 2018). As the focus of this paper is on digital media, digital place-based media are defined as digital displays in mall spaces that facilitate real-time interaction with consumers, and that are controlled via a centralized network (Lee & Cho, 2017).

A few studies have examined digital place-based media in various settings. Müller et al. (2009) examined the cognitive factors influencing attention paid to different public display settings in Munich, Germany. Their study used actual displays featuring varied content, such as television programs, advertisements, and fashion videos displayed in lecture halls and citizen bureaus. Their findings suggest that effectiveness depends on bottom-up factors (e.g., colorfulness, attractiveness, visibility, and size of the display) and on top-down factors (audience expectations and needs). They however did not explore shoppers' experiences (e.g. emotions, mood) and positive of negative behavioral responses to digital place-based media place across locations in shopping malls or used a theory guiding the analysis. Research by other prominent digital media scholars used trial installations of digital media in malls in the United Kingdom (Dennis et al., 2010; Dennis et al., 2012). Their theoretical views included information processing models, such as the elaboration likelihood model (ELM) and the limited capacity model of mediated message processing (LCM). These studies showed that both utilitarian (processed via central route to persuasion) and hedonic content (processed peripherally) have a positive influence on approach behavior (Dennis et al. 2010; Dennis et al. 2012).

These findings are consistent with research in POS settings that indicated that effectiveness depends on the content of the message, the context where it is viewed, and the

quality of the exposure (Burke, 2009; Roggeveen et al., 2016). Furthermore, utilitarian (informational) and hedonic (entertaining) content has been shown to influence shoppers' actions (Dennis et al., 2010; Dennis et al., 2012).

The existing research on place-based media in malls seems to lack depth and insight into how a shopper experiences and interprets actual digital media located across the shopper's organic journey through the retail mall space. This is problematic, since affective reactions to stimuli are often the very first reactions, occurring automatically and subsequently guiding information processing and judgment (Finucane et al., 2000). The qualitative research reported in this paper aims to add organic insights to the limited body of literature and offer practical guidance on how to enhance the effectiveness of digital place-based media inside the mall environment. The S-O-R model, as explicated through the M-R theory of environmental influence, is thus used to enhance the understanding of shoppers' experience of digital place-based media in the mall environment.

Mehrabian-Russell's (M-R) theory of environmental influence

According to Kaltcheva and Weitz (2006), Mehrabian and Russell's seminal work proposes that environmental sensory modality forms, the amount of information presented, and individual differences will have an influence on how consumers respond to a particular environment. The M-R approach is rooted in the stimuli-organism-response (S-O-R) model and is a widely used theory to study how retail atmospherics affect shopper responses and advertising effectiveness (Tsiotsou, 2013). It has also recently been applied in both qualitative and quantitative studies to understand shoppers' responses to digital designs and technologies in the retail space (e.g., Pantano, 2016; Reydet & Carsana, 2017).

The S-O-R model

The S-O-R framework models the interaction between environmental stimuli (S) and the individual's emotions (O), and the resulting approach or avoidance actions (R).
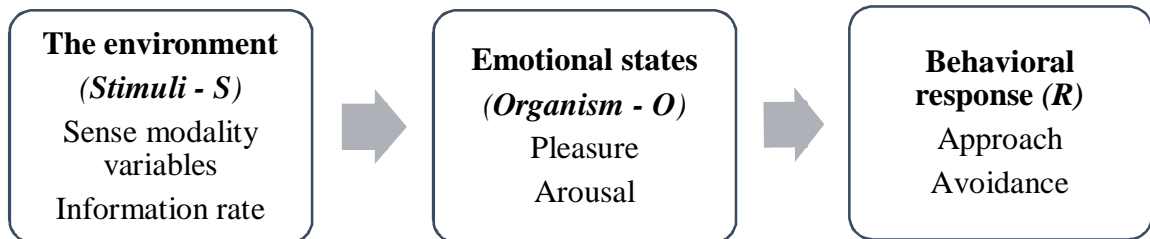
| The environment *(Stimuli - S)* Sense modality variables Information rate | → | Emotional states *(Organism - O)* Pleasure Arousal | → | Behavioral response *(R)* Approach Avoidance |

Figure 1: The S-O-R model

Figure 1 shows that the individual's emotional conditions (O) are influenced by environmental stimuli (S), and that this leads to behavioral responses (R). Stimuli tend to be context-specific, and encompass sensory forms (e.g., colors or sound) and information rate (load) (e.g., novelty and complexity) (Donovan & Rossiter, 1982). This view of environmental stimuli is compatible with the nature of digital place-based media. Sense-modality variables in digital place-based media can encompass a variety of attention-attracting forms, as the capabilities allow for moving images and video-format displays (Koeck & Warnaby, 2014). These capabilities also allow for varying degrees of novelty and complexity in presenting information (Roux, 2018). High-load displays should stimulate excitement, whereas low-load ones should have a calming effect (Donovan & Rossiter, 1982). Varying degrees of functional information and sensory-affective cues may be displayed using digital media (Dennis et al.; 2014).

The S-O-R model proposes that consumers can experience three emotional states in response to environmental stimuli: pleasure, arousal, and dominance. Pleasure refers to the 'hedonic valence' of an emotional response; arousal is the continuum of affective response that

ranges from 'sleep to frantic excitement'; and dominance refers to the degree to which an individual feel unhampered in choosing various actions (Mehrabian & Russell, 1974).

According to Vieira (2013), both pleasure and arousal are associated with hedonic and utilitarian values experienced in a retail context. Emotional responses lead to two opposing behaviors: approach or avoidance. These include the individual's inclination to interact with or within the environment in four ways: physically remaining (or leaving), exploring (or refraining from exploring), communicating with others (or avoiding doing so), and the level at which satisfaction is enhanced or hindered (Donovan & Rossiter, 1982).

A systematic review of studies focusing on the impact of physical shopping environments (servicescapes) on consumer behavior states that expanding on the S-O-R model is an emerging trend (Mari & Poggesi, 2013). This suggests that examining supplementary elements in combination with the original elements is advisable.

An expanded S-O-R model: The integrative framework of shopping experience

Fiore and Kim (2007) proposed an integrative framework that expands the S-O-R model to capture the consumer's hedonic and utilitarian shopping experience. In their framework, three types of *stimuli* are differentiated: ambient factors (non-structural elements of the retail environment), design cues (architecture, physical elements, and display features), and social factors (human features related to interactions with staff and other shoppers). Pantano (2016) and Willems et al. (2017) assert that the introduction of innovative digital retail technologies could result in the improvement of physical design cues by delivering utilitarian (i.e. convenience, personalized recommendations, customization) and hedonic benefits (i.e. inspiration/education, aesthetics, social value, playfulness). Therefore, this paper proposes that digital place-based media form part of design cues that advance shoppers' assessment and attractiveness of large malls.

Past studies of three-dimensional non-digital retail displays found that these design cues do indeed influence the affective and behavioral outcomes of shoppers (Lanjewar, 2015; Law, et al., 2012; Mehta & Chugan, 2013). However, studies exploring the potential of digital design cues as stimuli are limited (Reydet & Carsana 2017). A few focused on interactive location-based advertising (Zhu et al., 2017), digital design in retail banking (Reydet & Carsana 2017), and interactive displays in retail settings (Lecointre-Erickson et al., 2018; Pantano, 2016). Pantano's (2016) qualitative study explored Italian shoppers' experiences with interactive displays and found that interactive technology is regarded as stimulating and inventive.

The *organism* element is extended by considering cognition, consciousness, affect, emotion, and value (Fiore & Kim 2007). Cognition and affect are supported by the cognition-affect-behavior (CAB) model, while consciousness, emotion, and value are explained by the consciousness-emotion-value (CEV) model. Cognition represents the consumer's beliefs, thoughts, and perceptions. Affect refers to attitudinal liking, and emotion includes the original S-O-R model's pleasure-arousal-dominance and consumer mood. Value is derived from hedonic and utilitarian benefits. Research on digital design cues supports this view: Zhu et al. (2017) found that location-based advertising (e.g., electronic coupons accessed via mobile phones) could increase pleasure and arousal in shoppers. Similarly, Lecointre-Erickson et al. (2018) report that interactive window displays had a substantial effect on the arousal of positive emotions, which then affected patronage intentions, in a tourist bureau in France. Pantano's (2016) findings implied that digital retail technologies could increase hedonic value by introducing a playful or entertaining dimension to solicit consumers' attention, and to satisfy utilitarian motivations, such as making purchases and avoiding in-store lines.

As for *response,* the integrative framework redefines the approach/avoid outcomes as actual (e.g., time and money) and perceived (e.g., unplanned) spending. They also include behavioral intentions (e.g., willingness to purchase) and satisfaction and loyalty measures, such

as word-of-mouth. Research by Reydet and Carsana (2017) established that the utilitarian (e.g., layout) and aesthetic (hedonic) elements of digital design (e.g., style) could enhance customers' positive affective experiences, perceptions, and positive word-of-mouth in the French retail banking sector.

For this research, the integrative S-O-R framework is reflected on by exploring digital place-based media as design cues (*stimuli*); shoppers' perceptions, affect and emotion, and the hedonic and utilitarian value derived from these media (*organism*). How shoppers narrate their potential (or actual) behavior (*response*) based on the experience of these media is also explored.

Methodology

As mentioned, the limited past research on digital advertising in retail contexts typically applies quantitative surveys and quasi-experimental research using manipulated content. These research approaches were valuable to investigate measurable numerical relationships in past studies; however, they did not allow for the in-depth exploration of experiences in an actual setting such as the sounds, the smells, and the presence of other shoppers. These methods quantitative were appropriate since the foci were in-store digital signage aimed at promoting a single retailer or brand, but they are not ideal when exploring the transient nature of digital place-based media reception. Since shoppers' experience of environmental design cues and the role of the retail marketing communication mix may change considerably when moving across retail spaces (Burke, 2009; Koeck & Warnaby, 2014), the current methodology was designed to understand shoppers' experiences with digital place-based media while moving in the mall space.

The current study explored shoppers' organic experiences of digital place-based media inside the overall retail environment, rather than the influence of in-store digital signage on

sales. It applied a qualitative research approach allowing the exploration of consumers' sensations and reasons behind their responses to this digital medium in the public spaces of shopping malls. Some methodological adjustments were therefore implemented to address the exploratory research question. Data collection was executed inside actual shopping mall environments to explore the experience of digital place-based media as cues within a relevant setting and location. This allowed the researchers to elicit organic responses from the shoppers as they journeyed through the mall and present novel ideas to improve digital place-based media experiences and media synergy in a shopping mall environment. An exploratory qualitative investigation, guided by the integrated S-O-R model, was employed to provide in-depth insight into shoppers' experience of digital place-based media. This is in line with the qualitative approaches followed in previous research aimed at understanding shopping mall experiences (Fiore & Kim 2007; Sit et al., 2003), and the limited studies exploring consumers' views of marketing communication media (Loureiro & Ribeiro 2014).

Participant selection and context

Non-probability purposive sampling was used to select 30 shoppers from three of the largest upmarket super-regional shopping malls in South Africa. These shopping malls were selected based on (a) their high concentration and variety of contemporary digital place-based media (video walls, LED displays, and touchscreens) provided by global OOH media owners (e.g., Clear Channel and JCDecaux) (Digitalsignagetoday, 2018, JCDecaux, 2018), and (b) their upmarket appeal and the wide variety and number of stores. Some photos taken in the malls have been included in Figure 2 to offer some perspective on the context of the study.
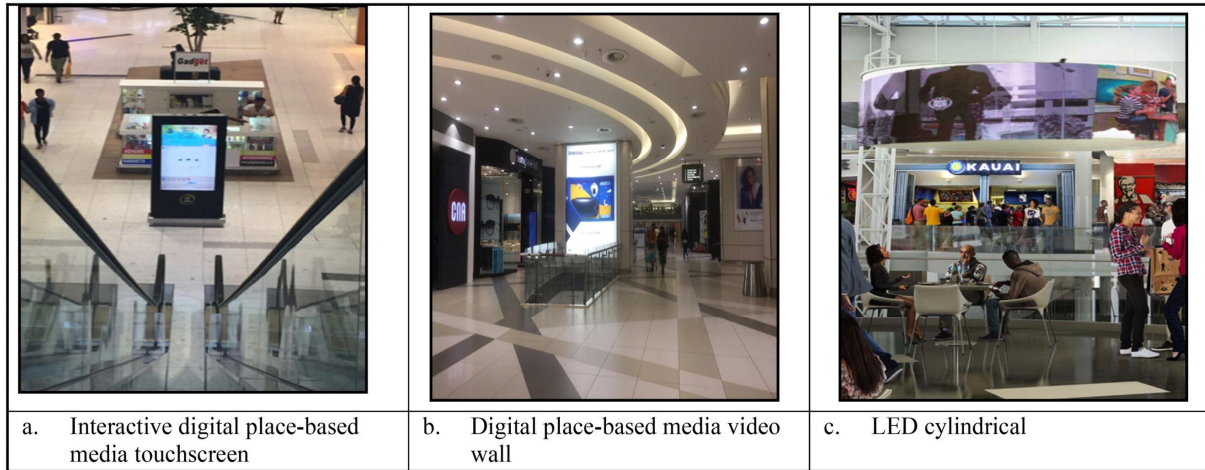
| a. Interactive digital place-based media touchscreen | b. Digital place-based media video wall | c. LED cylindrical |

Figure 2: Images of digital place-based media as design cues in malls

Figure 2, (a) depicts a highly visible interactive digital place-based media touchscreen to give directions in places of high customer flow; (b) shows a digital place-based media video wall incorporated into the design of a modern mall interior; and (c) is an LED cylindrical screen in the food court of a mall where shoppers are relatively stationary.

Since the purpose of this exploratory qualitative enquiry is not to make generalized hypothesis statements, but rather to describe and understand shoppers' experiences from their own point of view, a large sample size was not required (O'Reilley & Parker 2013). Furthermore, implementing this qualitative research project with shoppers in actual mall spaces was restricted by practical constraints in terms of available resources and the time allowed for data collection by the mall owners. The researchers were therefore pragmatic and flexible in their approach and followed the advice of O'Reilley and Parker (2013) that an adequate sample size is one that sufficiently answers the research question.

The demographic profile of shoppers obtained from mall management was used as the basis to select and intercept shoppers (Table 1) near digital place-based media located in the general mall area and in the food court. Sample selection in the malls hinged on two criteria: that subjects (a) have noticed digital place-based media; and (b) visit malls for both utilitarian

and hedonic reasons. Shoppers motivated by hedonic and utilitarian motives were included, since the place-based media in the respective malls displayed hedonic and utilitarian content. Shoppers not conscious of the digital place-based media or mall features were not included in this study, since they were unlikely to be able to answer the questions posed. Shoppers not meeting the selection criteria (eight per cent had not noticed the mall's digital place-based media; 11 per cent visited these malls either for hedonic or for utilitarian purposes) were excluded.

Table 1: Demographic comparison of shoppers and participants

	Profile of shoppers			*Profile of participants*					
	Mall A	*Mall B*	*Mall C*	*Mall A*		*Mall B*		*Mall C*	
Gender	*%*	*%*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Female	60%	55%	65%	5	63%	7	58%	7	70%
Male	40%	45%	35%	3	38%	5	42%	3	30%
Age group	*%*	*%*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
18-20 years	10%	15%	10%	1	13%	2	17%	1	10%
21-30 years	40%	45%	55%	2	25%	4	33%	5	50%
31-40 years	30%	25%	25%	2	25%	3	25%	2	20%
41-50 years	20%	20%	10%	2	25%	2	17%	1	10%
50 years plus	10%	10%	10%	1	13%	1	8%	1	10%

Data collection and analyses

Opdenakker (2006) distinguishes between four qualitative semi-structured interview modes: face-to-face, telephone, email, and instant messaging. For this study, in-person interviews offered distinct advantages: (a) establishing and maintaining rapport between the researcher and the participants, (b) allowing the use of visual cues (digital place-based media), and (c) collecting the data while being aware what is happening in the actual environment (mall) (Irvine et al., 2013). The semi-structured qualitative personal interviews were conducted using an interview protocol as the instrument of inquiry, asking questions for specific information related to the aims of the study (Patton, 2001), specifically to understand shoppers' experience of digital place-based media as design cues The instrument created a sense of order by enabling the collection of similar types of data from all the participants (Fontana & Frey, 2005) while

still allowing flexibility to probe for detail about issues that arose, based on the point of view of the participants (Doody & Noonan 2013; Gubrium et al., 2012).

The interview protocol (Table 2) was organized in three sections, with each beginning with an introductory question, followed by some general questions that were designed to probe for information. Participants were first asked questions about their experience of the shopping mall's features and atmosphere (Section 1). They were then invited to share their experience of the digital place-based media across the general mall area (Section 2). The conversation then moved into their enjoyment of the content/message displayed on the digital place-based media in the food court (Section 3). The researchers collected the data at the malls, with two assistants dealing with logistics and recording equipment.

Table 2: Outline of the questions included in the interview protocol

Screening	Noticed digital place-based media (DPBP) Regularly visited malls
Section 1:	**Location 1: Restaurant**
Profile	Gender, age, home language
Questions:	Please tell us about your overall experience of the shopping mall features and atmosphere?
	● What do like about the atmosphere/ambiance of the mall?
	● How can the mall improve your shopping experience?
	● Any other aspects regarding the mall atmosphere?
Section 2:	**Location 2: General mall area with high concentration of DPBP**
Questions:	How do you experience the DPBP (not the messages on the screen)?
	● Does this DPBP contribute to your overall experience of the mall atmosphere?
	● How do the features and locations of the DPBP influence your shopping experience/behavior?
	● Any other aspects regarding the digital place-based media in this mall?
Section 3:	**Location: Food court while viewing DPBP**
Questions:	How do you experience the content/message displayed on the digital screens?
	● How entertaining/enjoyable are the content/messages displayed on the screen?
	● How useful/relevant did you find the content/messages displayed on the screen?
	● Did you like the content format? (Listen for: video, static pictures, colors, text, sound)
	● Any other aspects regarding the content/message displayed on the digitals screen?

Data collection began after permission for the research had been obtained from the respective malls. Informed consent was obtained from the participants after telling them about

the use and scope of the research, and about their right to anonymity, confidentiality, and withdrawal from the study (Allmark et al., 2009).

Data collection was implemented in three upmarket shopping malls over a two-month period. The interviews lasted 45 minutes on average and ranged from 40 to 60 minutes in length. The participants were offered mall vouchers (ZAR300/20USD) as a token of appreciation for the time and effort they provided in participating in the research.

Data analysis followed the steps as suggested by Dey (2003): (1) Become familiar with the data. The interviews were digitally recorded and transcribed verbatim to facilitate the development of an audit trail, as suggested by Gubrium et al. (2012). Cross-checking was done by comparing the original recordings with the verbatim transcriptions, and then read and re-read to understand the meaning and value of the data. (2) Answer the particular research question by focusing on the analysis. The transcribed interviews were read several times to identify categories and themes. The coding system was developed by applying it to six of the interview transcriptions. The differences in the coding were discussed between the two researchers, and some of the codes were adjusted; the transcriptions were then re-coded. (3) Identify patterns and make connections. After all the data had been coded, the codes were sorted by similarity, and patterns were identified and documented. (4) Report on the findings after interpreting the meaning of the data.

Methodological integrity

Qualitative studies should be evaluated by considering methodological integrity as the underlying basis of trustworthiness (Levitt et al., 2018; Lincoln & Guba, 1985). In the current study, collecting data from purposively selected shoppers near digital place-based media inside actual shopping malls to answer the specific research question enhanced its adequacy. Considering the location and surrounding retail environment where the data was collected

helped to contextualize the data. The findings were grounded on the evidence collected, as demonstrated by direct quotations, and framed within previous research to ensure their groundedness. The analyses led to insights that meaningfully addressed the research objectives. The findings were interpreted and compared with the literature to ensure coherence among the findings. The limits of the scope of transferability that should be borne in mind when using findings across contexts were described in the participant selection and context.

Results and insights

Profile of the participants

The interviewee profile closely reflected the population in the upmarket shopping malls, as planned (Table 3). The demographic profile of the participants shows that most of the participants were female, between 21 and 30 years old, and spoke an African language at home. The participants interviewed visited malls at least once a week and spent an average of one to two hours per visit.

Table 3: Demographic profile of participants

Participant	Mall	Gender	Age	Home language	Participant	Mall	Gender	Age	Home language	Participant	Mall	Gender	Age	Home language
P1	A	F	19	NA	P11	B	M	42	A	P21	C	M	44	NA
P2	A	M	41	A	P12	B	F	20	A	P22	C	F	40	A
P3	A	M	51	A	P13	B	M	60	A	P23	C	F	24	A
P4	A	F	30	A	P14	B	F	18	NA	P24	C	F	30	A
P5	A	M	40	A	P15	B	M	22	A	P25	C	F	22	A
P6	A	F	25	A	P16	B	F	28	A	P26	C	F	51	A
P7	A	F	32	A	P17	B	F	34	A	P27	C	M	23	A
P8	A	F	40	A	P18	B	F	31	A	P28	C	M	40	A
P9	B	M	38	A	P19	B	M	43	A	P29	C	F	20	NA
P10	B	F	26	NA	P20	B	F	30	A	P30	C	F	26	A
NA= Non-African home language, A=African home language														

Findings

This study was guided by the S-O-R framework (Fiore & Kim 2007) as a theoretical framework to understand shoppers' experiences of digital place-based media as design cues in the mall environment. The major themes of the findings are visually presented in Figure 3.
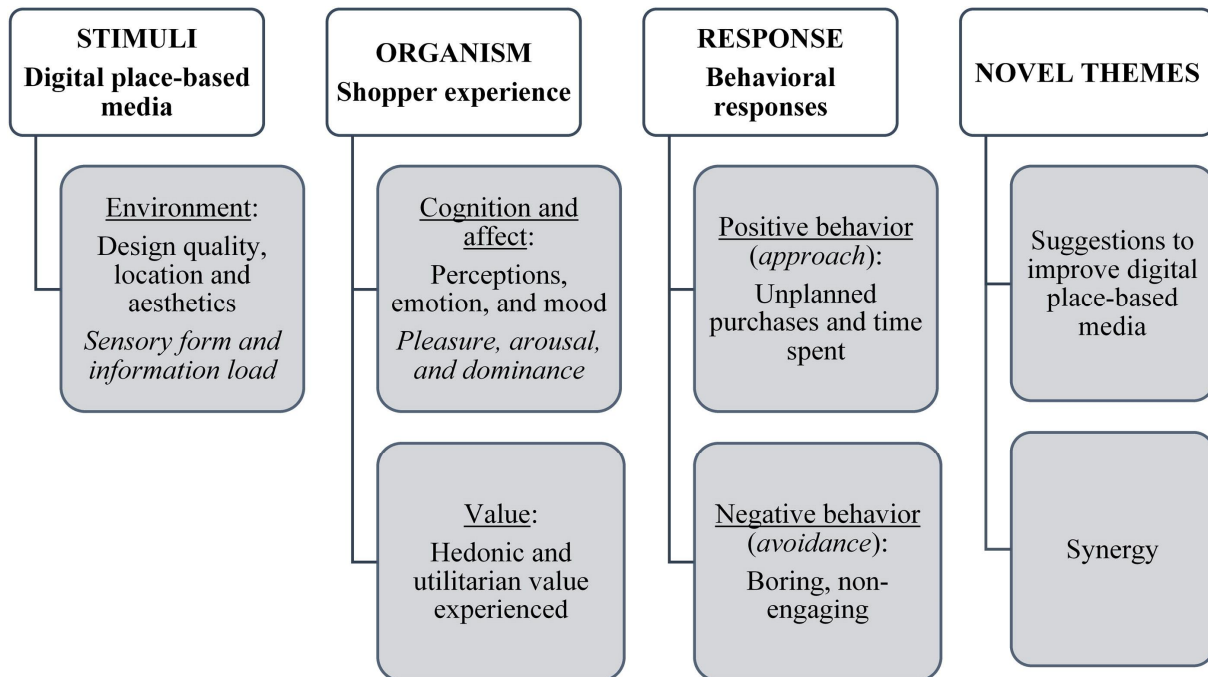
Note: *Italics* indicate alignment with the original S-O-R theoretical model

Figure 3: Major themes of the findings in alignment with the integrated S-O-R model

In summarizing Figure 3, the results suggest that digital place-based media do enhance the participant's shopper experience, and this in turn promotes positive (approach) behavior in line with the integrative S-O-R framework. Novel themes arose from the consumers' perspectives on how to enhance the potential effectiveness of digital place-based media in shopping malls.

Details of the findings summarized in Figure 3 will be discussed next. Verbatim quotations of participants' responses are shown using quotation marks, and individual responses are indicated by their number (e.g., 'P1' refers to Participant 1).

Digital place-based media (stimuli)

Interviews with the participants revealed that the design quality, location, and aesthetics of the digital place-based media enhanced their experience of the mall environment.

Design quality, location, and aesthetics. The interviews revealed that the visual impact (i.e., sensory aspects) of digital place-based media is regarded as a positive design enhancement of the mall environment. Participants considered the digital place-based media to be complementary to the visual retailing design, and thus an integral part of the malls' design. The contemporary image of the mall space was complemented by the images displayed.

> The colourful lights of the signs enhance the light feeling of the mall ambience. (P17)
>
> It creates a modern feel. Malls look ancient and boring when these digital signs are not there. (P11)
>
> You know the vibrant videos and large screen. It makes it seem as if the mall is modern. Some shopping malls do not have this type of technology. (P16)

Some participants observed the assortment of digital place-based media due to the repetitive display of certain brands at different locations across the mall space. The quotes below reflect these observations.

> There are displays in many different locations, so that is good. (P6)
>
> I enjoy the different videos across all the displays, for example at the entrance, or the parking and the escalator. (P18)

Well-known international brands (e.g., Clinique; Adidas; Food Network TV channel) and local brands (e.g., Vodacom SA mobile; Edgars clothing store) advertised on a variety of digital place-based media at different locations in the malls. The quote that follows illustrates

how visual brand dominance (by advertising on a combination of mall media in noticeable locations) can contribute to a sensory shopping experience.

> When entering this courtyard, I'm obviously conscious of Clinique's presence. They appear to occupy this space. If you look at the simple and clean designed ads and the classic light green and silver packaging. I love the halo light effect around the Clinique ads on all the digital screens and the soft clean green on the elevators and escalators. (P30).

Appreciation for the aesthetic values delivered by these media was voiced, and participants pointed out high-resolution quality displays and synchronized playback of content over multiple digital place-based media displays.

> The large screen is beautiful. It looks lovely, it's like a gigantic phone. The brightly lit displays make this area appealing. (P2)
>
> I have spotted Vodacom's red slogan on quite a few screens all over the mall space. (P9)
>
> I like that the pictures are very clear in terms of colours, and screen resolution is large and detailed. (P3)

The findings suggest that digital place-based media in upmarket shopping malls could play a similar role to that of non-digital retail displays to increase pleasure and/or other emotions, thereby altering the view of the environment's aesthetic appeal (Lanjewar, 2015; Law et al., 2012; Mehta & Chugan 2013). Quality of exposure and location (context) of viewing of marketing messages also affect consumers' responses (Burke, 2009; Dennis et al., 2010; Dennis et al. 2012; Müller et al., 2009; Roggeveen et al., 2016).

Shopper experience (Organism)

The shoppers' experiences of digital place-based media were affected by their perceptions of the media, how these made them feel (emotion), and how they could influence their moods. The participants also pointed out the value that they experience through these media and made some recommendations to enhance effectiveness.

Perceptions, emotion, and mood.

The participants perceived the visual imagery and entertaining design of the media favorably, which increased their enjoyment of the shopping experience. Participants noted that well-designed media with relevant content – especially when aligned with their shopping purpose – could influence their mood.

> It can be quite entertaining to watch the different visuals, especially if the visuals are well designed. (P4)
>
> If you were sad and you entered the mall events area, by hearing sound or music, it could change your mood. Good music puts me in a good mood. Like when shopping for fashion or eating with my friends. (P1)
>
> Here it must be calming, such as pictures or videos of nature or wildlife, because I go to a mall to relax, and this will help me to relax more. (P21)

Enjoyable atmospheres are associated with positive moods and increased unplanned purchases and provide enabling environments for the achievement of consumer goals (Vieira & Torres, 2014). The findings revealed that the eye-catching designs of the digital place-based media positively influenced the participants' perceptions of the mall environment. The pleasure that shoppers derive from these media can thus enhance their shopping experience.

Value: hedonic and utilitarian experience.

Digital place-based media were regarded as potential sources of entertainment (hedonic experience) and information (utilitarian experience) for shoppers. The findings suggest that shoppers who see the digital place-based media as offering hedonic value (entertainment) will experience enjoyment of the shopping event:

I will enjoy the experience when shopping, if it is wonderful creative or attractive scenes.

(P4)

Several shoppers emphasized the utilitarian value of the digital place-based media that offer relevant information (e.g., special deals, new outlets, specials, events) and interactive wayfinding that allows navigation to improve satisfaction.

I like it when they display special deals that are offered by different stores, because this

will let me know as a shopper where I can get certain products for less. (P1)

Having digital options that informs me about new stores in the mall, like stores that

people don't really know about help me knowing what is up. (P29)

It allows me to get various information effectively. For example, what are the specials,

events. (P5)

Also, it so uncomfortable, asking somebody at every corner, in this new mall with

multiple floors and long hallways, finding all these stores can be a hassle. So, I'm glad

that I can simply use the touchscreen to show me the way and give me a hassle-free

shopping experience. (P2)

These results relating to hedonic and utilitarian experiences with media are in line with the previous research on in-store digital signage. Dennis et al. (2014) found that digital signage that evokes certain experiences (aesthetically pleasing sensory-affective or decision-helping intellectual) could affect shoppers' behaviors. Roggeveen et al. (2016) found that dynamic

video content can mentally move shoppers to create a stronger emotional connection with a brand and can even reduce customer price sensitivity.

Behavioral responses in malls (Response)

Digital place-based media as design cues have the potential to augment the mall environment and influence actual and intended behavior. The participants revealed both positive and possibly negative reactions to the media.

Positive behavior (Approach). The narratives reveal that shoppers' experience of the media could increase actual resource expenditure (time and money spent). The evidence suggests that digital place-based media could lead to unplanned purchases if delivered in appropriate areas and timed well. Such promotional messages should be need-relevant and personalized, based on the time of the day and the need of the shoppers.

> You know, when I see something that catches my eye or is important to me at the time, I will buy it even it is not according to my shopping mall purpose. (P15)
>
> Sometimes, when I'm inside the mall, specials on digital signage in the food court just make me so hungry and that I then I just decide where I want to eat and what I want to eat. (P12)

The participants' articulated preference for personalization of content in relation to their immediate needs is supported by Zhu et al. (2017). They indicate that, when consumers' current needs are linked to accurate content of location-based advertising, they would be more likely to feel pleasure; and that, in turn, increases store patronage intention.

Negative behavior (Avoidance). The participants noted a few aspects that can be considered avoidance factors, which could have a negative influence on their behavior.

I hate these repetitive loops with TV or magazine ads. It should be made different for
malls. (P5)

When I'm on shopping mission I won't give attention to boring screens with long TV
ads, even if they are everywhere at busy intersections. I will just march past everything
unless they are dynamic and relevant enough to arrest my attention. (P2)

Their narratives emphasized contemporary sophisticated shoppers' expectations of upmarket shopping environments, and their need for customized content as opposed to generalized, marketer-driven stimuli. Thus, advertisers that merely repurpose existing content, such as television advertisements or corporate branding, to display on digital place-based media in malls were viewed unfavorably by the participants. These findings serve as a cautionary note for advertisers as the potential advertising effectiveness of repurposed messages are questionable.

Novel themes

Specific novel ideas that are not found in the current literature were also discovered. Practical suggestions to improve digital place-based media in a shopping mall environment were offered. Another original finding was the role of media synergy in the shopper experience.

Suggestions to improve digital place-based media. The participants freely provided some novel ideas to improve digital place-based media. These novel insights are not reflected in current quantitative studies on digital signage (Dennis et al., 2013; Dennis et al., 2014; Roggeveen, et al., 2016; Willems et al., 2017; Yim et al., 2010) and are thus part of the unique findings delivered by the current study. Some key recommendations to develop this medium in mall spaces are discussed below.

- Relate and localize content to support shoppers' tasks and their need-states

The participants criticized the lack of customized content, suggesting that the quality of information could be improved. Several responses reflected the need for local content rather than the current global commercial content typically displayed in these upmarket malls. The shoppers specifically welcomed local and sports events, community news, and guidance on shopping offerings.

> I want to see some highlights of local events, art shows and festivals. (P7)
>
> But they can add some local information about the city or like current news. Or what about sports news or results? (P19)
>
> …or what about sports news or results delivering live match footage? (P27)
>
> Where there are sales or promotion? They must update it immediately. This can save me time if I'm busy being a bargain hunter. Or if there is arrival of new stock like fashion or technology items – it will attract some of my friends who like to be the fashion leaders. (P18)

The need for community information (local content) means that the potential of digital retail technologies to deliver utilitarian benefits by offering customization and social value is not optimized. The participants' narrative suggested that, to maintain the value of (especially utilitarian) content, consistent, relevant, and timely updates are crucial. These expectations are often not met due to advertiser not updating or localizing content.

- Modification of content relative to location

Some participants expressed negative sentiments towards the standardized content displayed across mall settings. This suggests a demand for different bespoke digital place-based media content and formats at locations with limited viewing time (e.g., the mall entrance and

exit) compared with those located in areas where shoppers are waiting around or when the dwell time is higher (such as food courts or escalators).

> As I'm entering the mall, I want to feel pleasure. I would like content that plays urban and upbeat music, because I like music and I find music entertaining. (P1)
>
> When you are sitting down in a restaurant in the food court and looking at screens, you would be prepared for longer programs, like appetizing food or latest entertainment.
>
> When entering the malls, I would like to know about the stores and offers. When exiting, watching out for the parking tariffs or local events will make me interested. (P14)

The findings show that media with too many stimuli or irrelevant messages lose their effectiveness, as the viewer is given more than they can, or want to, process. This is particularly true of shoppers in a mall environment, as they often shop with specific time constraints (or not), and typically with a purpose. This could be to enjoy the shopping as an experience (which would indicate giving it more time), or it could be a utilitarian act of obtaining products or services. Ideally, content displayed on digital place-based media should be congruent with the shoppers' need state and focal task – particularly as the audience may be approaching the media in a hurried state. The audience mobility requires that the message execution should aim to retain the attention of the mobile audience by focusing 'to consolidate the message, to speak silently yet read loudly….'.

● Offering updated multi-media interactive content

The findings reveal that digitally savvy shoppers expect technology that allows interactivity and multi-media features, rather than video content displaying simply a repetitive loop of information.

> I will enjoy more video or animation combined with text. This keeps me as onlooker
>
> engaged. They must update the content on the screen quicker; for example, instead of
>
> taking a day to change the content, it can be changed after every 30 minutes. (P10)

Incorporating interactive features would allow shoppers to use the medium for different purposes. One potential role is sharing content on social media platforms.

> They can stream live social media feeds from Facebook, Twitter or Instagram on the
>
> LEDs. I also want to be able to interact with it like on my phone or sharing on Facebook
>
> (P7)

Another beneficial role that interactive content can play is to offer inventory information to warn shoppers in advance if a product is out of stock.

> I think that would be great to be more interactive. It would have to be something GPS
>
> based. For example, I would like to check stock of store beforehand. You don't want to
>
> be here on a Saturday at the end of the month and have to fight through the crowds only
>
> to be told it is sold out. (P8)

These findings about the lack of updated multi-media interactive content suggest that media practitioners aimed at targeting these mall shoppers are still employing this contemporary medium as if it were traditional non-digital advertising signage. They are thus not capitalizing on the potential of dynamic multi-media content containing auditory and moving visuals to hold the interest of a passing target audience or mentally move them to create a deeper emotional association with a brand. These practices by media practitioners negate the effectiveness of the advertising content. Furthermore, not exploring the potential of social media or mobile phone integration with digital place-based media means losing out on the potential to drive online engagement and information searches.

An additional unique discovery was the opportunity to enhance media synergy as part of a pleasant shopping mall experience. This theme is presented next.

Synergy. The shoppers' narratives revealed that marketing communication synergy plays a role in their noticing digital place-based media (and messages) and contributes to their experience of the media in the mall space. Interviewees alluded to the recall of brands displayed on digital place-based media that have also been advertised on television.

> The ads on the screens are about dancing or shaking and also giving stuff for free if you sign up. I understand the idea because it made me think of their TV ads about the hilarious ways in which South Africans dance at occasions. (P9)
> I'm totally mad about that beautiful [Clinique] Pop Matte Lip Colour lipstick colours. I know the colours because they also advertise it all over, on TV. Then again, I am still in love with their Almost Lipstick in Black Honey (P30).

This recollection of advertisements on television when seeing the brands displayed on digital place-based media in these contemporary malls is an example of forward encoding, which occurs when exposure to initial stimuli increases the probability of processing the meaning presented in a subsequent medium (Voorveld, Neijens, and Smit 2012). The memory trace, as a result of the initial exposure, stimulates deeper processing and easier encoding of the stimuli presented in the second medium (Roux and van der Waldt 2016). This also speaks to the integration and synergy of digital place-based media within the broader marketing communication mix.

Implications for theory and practice

The findings suggest that well-designed digital place-based media that contain relevant, useful, and entertaining content, and that are placed at optimal locations in a mall, could influence shoppers positively by increasing their unplanned purchases, and could counteract avoidance behavior.

The novel suggestions on how to improve the experience of digital place-based media provide unique insights to marketers and mall managers. These recommendations revolved around the importance of localized and customized content both in terms of shopper's need states as well as their location in the mall environment, as well as the value of targeted interactive content. Furthermore, the prominence of media synergy enhanced the shopper's experience of digital place-based media. Based on the study findings and the novel themes that emerged, several implications are presented.

Implications for theory

In this research, specific themes that concur with the integrated S-O-R model emerged. When considering visually appealing digital place-based media as stimuli, it was experienced as positive design cues in the mall environment. In reference to the cognitions, affect, and value (organism) derived from the media, the positive perceptions of digital place-based media and the entertainment (hedonic) value attached to the stimulating (arousing) content increased the pleasure of the narrated shopping experience. The desired shopping behavior (such as unplanned purchases) and undesirable behavior aligned with the theoretical model's approach-avoidance behavioral outcomes (response). These theoretical themes could also have applicability to other shopping realms such as online stores, shopping applications (apps), and other servicescape settings. The importance of experiential pleasure of digital place-based media may transfer to online settings, as evidenced by cross-platform social media research

(Huang, 2020). As design also plays an important role in virtual environments, it follows that enhancing design elements to reflect the needs states of target consumers should enhance the experiential value on virtual platforms. Indeed, Fiore and Kim (2007) indicate that experiential and utilitarian value can arise from (among others) online shopping experiences due to the shopper's cognitive and affective processes.

Implications for retail and advertising managers

From the findings of this research, several practical recommendations to enhance the shopping experience of shoppers exposed to digital place-based media in malls can be made. It is suggested that the advertising content be manipulated for the purposes of providing utilitarian and hedonic benefits. Providing useful information when and where shoppers need it could create utilitarian value, as supported by Dennis et al. (2014). This can be applied in the mall setting by displaying locally relevant and customized content, and using a newsworthy appeal type rather than just traditional brand messages or advertising on digital signage. For example, advertising current or forthcoming events (e.g. Valentine's Day events or new pop-up stores) and real-time store promotions. Advertisers and mall managers could consider adding multi-media interactive features for price and promotional information during seasonal promotions such as Christmas or Black Friday. The addition of such interactivity enhances shopper engagement, which may assist store brands in offering differentiated value propositions (Turner & Shockley, 2014). Particularly in seasonal promotions, people often face competition from other shoppers, and being able to check stocks or current promotions would enhance the shopper's experience and minimize disappointment if out-of-stock situations occur. Should mall managers thus buy into the growing interactive technologies by connecting them with mobile capabilities, this feature could further enhance the individual shopper's experience. This

consideration also speaks to relating the physical landscape with the virtual servicescape (Mari & Poggesi, 2013). This type of cross-modal congruity may also expand cross-media synergy.

Hedonic value is created by displaying entertaining and visually attractive content that enhances pleasure and enjoyment. The use of creative visuals and stimulating graphics to attract shoppers' attention and to encourage interaction is therefore recommended. Advertisers are advised to carefully consider the aesthetics of the content in relation to the target consumer and the mall space to enhance the novelty and entertainment value of the visual message. Digital place-based media should thus be used strategically to evoke sensory aesthetic experiences by incorporating pleasant scenes and sounds or music, in appropriate locations. These considerations could expand to online shopping environments and shopping apps as the design of these virtual environments allows customization to the individual user, thus enhancing value.

These strategies should also serve to attract consumers, and to persuade them to remain in the shopping environment. The opportunity for shopper interaction and engagement is higher at locations with longer dwelling times, such as while waiting to pay for parking or while eating at food courts, thus presenting opportunities to deliver more detailed, tailored messages. A behavioral reinforcement approach should be followed to maximize impact by placing digital place-based media at locations that allow shoppers more time to process and act on stimuli. Mall environments must constantly be re-evaluated and adjusted to follow shoppers' mobility patterns and information needs throughout their journey.

A novel and important finding is the fact that participants specifically mentioned multi-media exposure. This is a strong indicator of marketing communication media synergy, which is crucial for brand recall (Voorveld, Neijens, & Smit 2012) and encoding of the messages presented in a multimedia campaign (Roux & van der Waldt 2016).

The synergy between other communication media (for example, TV ads) and digital place-based mall media strengthens image transfer, allowing shoppers to recall previous brand

messages. Keller (2016) asserts that effective coordination of a variety of related marketing communications allows for synergistic cross-effects that may 'strategically boost communication effects' of exposure to a particular communication option. In the case of this study, cross-effects were evident between previously seen messages in other media and digital place-based media in the mall space. This cross-effect reinforces brand recall and assists in creating a consistent brand image. It is important that, when digital place-based media are used as a secondary medium to support the primary medium (such as TV), they should be localized and customized, based on regional and mall differences. Advertisers should include brand content that is relevant to the region and that will speak to the specific mall audience. It is crucial that the content of TV or print advertising be customized to the digital space, and not be regurgitated as is. Huang (2020) echoes this sentiment by asserting that variation in advertising content is superior to mere repetition, and their advice to adapt some of the executional aspects of the advertising while retaining a unified theme could benefit the effectiveness of the advertisement.

Advertisers should create visual brand presence in strategic locations in the mall to assist in retaining brand awareness as the shopper journeys through the mall. This strategy should be successful for most brands, and advertisers are advised to continue this, and to ensure that such exposures are placed in locations relevant to the shopper's journey and need states.

Limitations and directions for future research

This study is not without limitations. Only the retail mall environment was considered for this study; future research should explore place-based media located in other public spaces, such as in office buildings, hotels, and transport facilities. Examining media in alternative outdoor facilities such as sports arenas may also be considered due to the use of digital media to present sponsorship (and other brand) messages in those environments. Additionally, expanding this

theme to the online shoppers or users of digital shopping applications could have interesting results as design elements play an important role in the functioning of such platforms. This could be done qualitatively, partly replicating this study; or it could use mixed methods by including an empirical examination in these settings, as proposed by Mari and Poggesi (2013). Further investigation of the marketing communication synergy finding in this research is strongly advised – especially considering the potential of cross-over effects to strengthen brand recall and to build brands. Synergy between diverse IMC components is important to achieve brand objectives (Maanda, Abratt & Mingione, 2020). Such research can also delve into the cross-media synergy effects of local versus international brands.

This study considered only the environmental influence theory (S-O-R framework) as a theoretical lens for examining mall shoppers' experience of digital signage; however, other theoretical frameworks could be explored in future research. Researchers could consider including information processing theories (beyond ELM) with environmental theory to explore a holistic view of the shopper experience. For example, Huang (2020), citing multiple-source effect theory, asserts that multiple messages with the same view allow deeper processing of information, which enhances memory. Coupling this with the extended view of S-O-R as per this research may provide a broader understanding of the mall retail landscape. Furthermore, this paper focused on place-based media as design cues as per Fiore and Kim's (2007) model; future work could explore the intersection between these media and other influencing elements in the mall shopping environment. Bitner's (1992) servicescape model, for example, proposes the influence of social actors, which may impact the overall shopper experience.

As this research utilized qualitative methodology, some inherent limitations (e.g. small sample size) may be mitigated by follow-up studies using alternative methods. This paper reports on a sample of shoppers at upmarket shopping malls; future research should consider collecting data from a wider scope of shoppers (e.g. malls targeted at lower-income groups) to

explore if other insights arise from those shoppers' experiences. This study paves the way for future quantitative studies, which could use field experiments to test various forms of digital place-based media types to examine their influence on shopping behaviors in the mall environment, as well as in other settings. It would also be valuable to compare the effectiveness of utilitarian versus hedonic cues in contributing to shoppers' positive experiences and consumer outcomes. Customizing localized versus international content for regional areas could provide valuable insights into the effectiveness of such strategies.

Conclusion

This article explored shoppers' experiences of digital place-based media, and therefore provides useful in-depth insights into the quantitative data most commonly found in media research. The presence of upmarket shopping malls in the context of any country will allow for the replication of this work or for building on its foundations. The environmental psychology theory (S-O-R model) is not new to the retail realm, in both general and traditional advertising effectiveness (Tsiotsou, 2013). However, it is not commonly drawn on in a qualitative manner to explore the individual consumer's organic experience of digital place-based media in shopping malls.

The contributions of this study include going beyond quantitatively examining the aspects that influence advertising recall, to exploring qualitatively the authentic emotions and reactions elicited by actual digital place-based media in real time. This methodology elicited deep insights into how digital place-based media may be more effective as well as how consumer responses are affected. This study considered how the stimuli made the participants feel, and how that could enhance the mall experience and prompt behaviors. It also showed that the integrated S-O-R model is a suitable theoretical lens through which to view how DOOH media are experienced by shoppers in the retail mall environment.

A novel insight is shoppers' organic suggestions to improve digital place-based media. Another important finding from this research is how media synergy is experienced by shoppers during their shopper journey. This bodes well for advertisers and brands seeking cross-effects and wanting to enhance brand recall.

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