Digital Signage in the Store Atmosphere:

Balancing Gains and Pains

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ABSTRACT:

As traditional retailers are becoming more adept at using digital technology to sustain against e-commerce retail models, digital displays are at the forefront to enable a rich digital shopping experience for their customers in-store. While previous studies have evidenced that digital signage (DS) can impact strategically relevant retail outcomes, a limitation is that the vast majority of the messages aren't adapted to their audience. Therefore, one of the major challenges contemporary DS applications face is not to overwhelm customers with information not relevant to them. In response, there is a new wave of digital signage that allows for interacting with and adapting the content to people passing by the screen(s). The growth of interactive and intelligent DS presents a fresh set of opportunities, but also challenges in terms of ethical concerns and legal restrictions, that the present chapter further explores.

LEARNING OUTCOMES:

1. Innovative technologies, such as digital signage, can engage different human senses and play an important role in enhancing the store atmosphere.
2. The majority of digital signage networks feature content that is generic and is rarely tailored to the audience passing by the screens. As a result, digital displays are often ignored.
3. Digital signage coupled with sensors and Artificial Intelligence allow for more relevant and personalized experiences.
4. Relevance through personalization can help retailers overcome display blindness, but challenges in terms of legal restrictions and ethical concerns exist to unlock its potential.
5. Non-touch interaction technologies, such as voice-assistants, gesture controls, facial recognition and augmented reality, present new ways of interacting with digital screens.

KEYWORDS:

1. Digital signage,
2. Smart retailing,
3. Interactivity,
4. Context-aware messages
5. Display blindness
6. Personalization-privacy paradox

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1   Introduction

Since the seminal work of Kotler (1973), the marketing literature has widely acknowledged the importance of atmosphere on the shopper's in-store experience and consequent purchase decisions. Kotler (1973) was the first to use the term atmospherics and defined it as *"the effort to design buying environments to produce specific emotional effects in the buyer that enhance his purchase probability" (p.50).* Since then, several efforts were made to further develop the concept, such as for example by Milliman & Fugate (1993).

Atmospheric cues can be established through various touchpoints (Turley & Milliman, 2000). The important role of advanced innovative technologies in enhancing store atmosphere was pointed out 6 years ago by Pantano (2014). Since then, several researchers have started to explore the role of innovative technologies as a store atmospheric stimulus (Dennis et al., 2014; Pantano, 2015; Poncin & Ben Mimoun, 2014). The topic remains a priority on marketing scholars' agendas (cf. Grewal, Noble, Roggeveen & Nordfält, 2020), as the in-store experience has been identified as a key determining factor of value creation and market competitiveness (Mathwick, Malhotra & Rigdon, 2001; Dailey, 2004; Rose, Clark, Samouel & Hair, 2012). It will also remain crucial for creating competitive advantage, as physical stores are still the preferred shopping channel and continue to account for the majority of sales transactions (Grewal et al., 2020).

Digital Signage (DS) is one of these technologies which can be employed as an effective atmospheric element of the store environment (Dennis, Brakus, Gupta & Alamanos, 2014; Pantano, 2015). DS is all around us. Whether people enter a supermarket, clothing store or travel agency, chances are high they encounter a digital screen that conveys advertising, branding, entertainment or (public) information. Retailers employ DS in different shapes and sizes, ranging from a smaller, single screen in a fitting room to a large-scaled videowall. The present chapter examines the strengths and weaknesses of DS and future practices for in-store retailing. It furthermore reflects upon potential externalities which may reduce the exploitation of all benefits of current and future DS implementations.

2   Exploiting the strengths and overcoming the weaknesses of DS

2.1   Proven effects of in-store Digital Signage

Even in its most basic, traditional form, Digital Signage has the advantage over printed point-of-sales communication materials, that it is flexible and cost-effective. Retailers do no longer need to bear print costs, and they can adapt in-store communication quasi-instantaneously. In the last decades, commercial and public places experienced a transformation from traditional, static signs to digital displays that present new forms of multimedia and user experiences (Müller et al., 2009). Well-

designed DS advertisements, that play to the strengths of the medium with videos and moving, animated images, have been demonstrated to positively impact approach behaviors (Dennis et al., 2014, Dennis, Newman, Michon, Brakus & Wright, 2010; Newman, Dennis & Zaman, 2006; Pantano, 2015), customer satisfaction and store loyalty (Garaus, Wagner & Manzinger, 2016; Garaus and Wagner, 2019), and ultimately store sales (Burke, 2009; Roggeveen, Nordfält & Grewal, 2016; Willems, Brengman & van de Sanden, 2017). DS is an effective experience provider (Dennis et al., 2014, 2010) that adds pleasure and joy to a shopping experience (Newman, Dennis, Wright & King, 2010) and stimulates shoppers to spend more time shopping in-store (Roggeveen et al., 2016).

2.2   Overcoming display blindness with personalized DS content

While these findings demonstrate a multitude of benefits to retailers, there are pitfalls as well. For instance, the content displayed on the digital screens is in most cases generic and isn't adapted to the audience passing by the screens. As a result, passersby expect DS to be irrelevant and therefore do not pay attention to what is presented to them. This phenomenon is referred to in the literature as 'display blindness' (Müller et al., 2009). Therefore, for DS to capture more attention, customers should be targeted with more relevant messages (Lee & Cho, 2017; Willems et al., 2017). Personalized DS, tailored to the individual's characteristics, can therefore be potentially more efficient. On the other hand, more personalized messages can come at the cost of being perceived as intrusive (cf. the personalization-privacy paradox explained further on).

2.3   Increasing customer engagement by rendering DS interactive

Another means to increase advertisement effectiveness is by enabling user interaction (Pavlou & Stewart, 2000). While the retailing literature provides studies offering indications of factors for designing effective DS, little attention has been paid to the possible effects of interactivity. Table 1 presents an overview of the most recent and relevant work on DS in retailing. Established databases such as Scopus and ScienceDirect were searched for relevant studies using the term: "retail displays" OR "digital displays" OR "digital signage" OR "digital screen" OR "narrowcasting" AND "store". The studies are organized based on the examined *type of interactivity*, whereby we distinguish between non-interactive DS and interactive DS. This search identified only one study (Lee & Cho, 2017), on a total of 17 retrieved references, that examined perceived interactivity. These authors found that the more interactive customers perceived the DS ads to be, the more favorable their attitudes towards the DS ads. While this finding provides initial support to assume that interactivity can indeed be an important factor to influence consumers' attitudes towards DS, further research is still required. Note that it can be expected that touch-based DS applications such as information kiosks are also addressed in the literature as a self-service technology (SST). More insights could be derived from examining this

literature stream. The same goes for searching more IT-related databases such as the ACM (Association for Computing an-d Machinery), where the focus of most work is on the technical development of DS advances. This is however beyond the scope of the present chapter.

3   Recent advances in Digital Signage for in-store marketing purposes

Today, Artificial Intelligence (AI), big data, sensors and other technologies allow DS to become more interactive, presenting new opportunities for businesses to connect with their customers and serve them in a more personal and compelling way. By finding and adopting the right combination(s), DS has the potential to transform the point-of-sale into a platform of inspiration and engagement. In this section, we first explore different ways to make DS more interactive, both on the input-side of the interaction, as well as in terms of output from the interaction. Furthermore, the integration of DS as a core element in a larger ecosystem with customer-owned smart devices is briefly introduced, which brings us finally also to a brief sketch of the potential of intelligent DS.

3.1   Innovative interaction modalities

In order to allow for a two-way dyadic interaction, DS is moving away from being a 'push' marketing communication tool, to become (also) a 'pull' promotional tool. In this section, we discuss how touch, gestures and voice-based input can further advance interactive DS, from the input side. Additionally, augmenting DS with augmented reality output features is one increasingly developed way of working on more compelling output at the output side.

Touch-screen interactivity. Touchscreens can function as an information center, an in-store webshop, a product recommender system, a self-checkout etc. Carrefour Belgium opened in 2015 its first *hypermarket of the future* and this concept was later also applied to two other store locations. The new store concept is focused on, among others, ultramodern customer shopping experiences, innovative services and a digital approach (RetailDetail, 2015). The store in Zemst employs multiple touchscreens. A touchscreen at the entrance of the store (cf. fig 1) allows customers to consult a store plan and print (personal) discount coupons. Customers can either choose to browse through the full list of available discount coupons or choose to scan their loyalty card and retrieve more personalized promotions. The kiosk allows customers to activate a loyalty card (physically available in front of the screen) and submit a question or feedback via a digital contact form.

FIG 1 HERE

Two touchscreens, one installed at the fresh food area (cf. fig 2) and the other in proximity of chocolate products (cf. fig 3), are available to inspire customers with (season-specific) recipes. In the

fresh food area, customers can search for recipes by selecting a product category (e.g. fish or meat) or on the basis of a particular ingredient. The selected recipes can be printed.

FIG 2 HERE

FIG 3 HERE

Carrefour also invested in product recommendation systems. A touchscreen installed at the book area (cf. fig 4) allows to search for a particular book, to consult a list of bestselling books, to consult a selection of recommended books and to reserve books. In the beverages area, customers can also search for a particular beer via a touchscreen application based on their own preferences (cf. fig 5). General information about the beers is also displayed on the screen and can be printed as well.

FIG 4 HERE

FIG 5 HERE

Voice-activated digital signage assistants. A novel way to interact with digital screens is by voice and face recognition. H&M installed a voice-activated interactive mirror in their largest Flagship store at Times Square, NYC (cf. fig 6). The voice assistant asks customers what they would like to do: either take a selfie in the style of a magazine cover or get fashion inspiration. While this voice assistant is unique in its kind, retailers (e.g. Rebecca Minkoff, Ralph Lauren) have been experimenting for some time now with interactive mirrors or fitting rooms to provide customers with a more customized and personalized in-store experience.

FIG 6 HERE

Gestures and motion. Gesture or motion recognition is another development in the area of interaction modalities. Hand movements, gestures and human motion can be recognized in real-time by for example cameras connected to the display (Chen, Malric, Zhang, Abid, Cordeiro, Petriu & Georganas, 2009). These movements are then converted into commands to control the digital signage display. Microsoft's Kinect is an example of a commercial gesture recognition system. Timberland installed a virtual fitting room in one of their storefronts that responds to hand gestures (cf. fig 7).

FIG 7 HERE

Augmented Reality. Timberland's virtual fitting room also makes use of augmented reality to create a virtual overlay of clothing to a persons' own image. This technology allows passersby to virtually try on a piece of clothing. Another interactive touch application that made its way into retail is the smart mirror (cf. fig 8). Neiman Marcus installed smart mirrors in 34 locations, Sephora offers a 3D augmented reality mirror to virtually try on products, such as eye shadow or lipstick, and Wella Professional Hair Stylists use the mirror to let customers try on different hair colors (Forbes, 2019). These types of technologies can elevate the vividness of the customers' experience, which positively influences customer preferences (e.g., Javornik, 2016; Grewal et al., 2020).

FIG 8 HERE

3.2 Embedding DS in a smart retail ecosystem

Broadening the scope, beyond how interactive DS can further be advanced as a medium in se, we should also take the perspective of how DS can create value in a more encompassing smart retail ecosystem. The majority of consumers possess smart devices that monitor their online behavior, their trajectories, the number of steps they take a day, their heartbeat, and so on. Within this Internet of Things era, the role of DS can also be taken to the next level.

Radio Frequency Identification (RFID). Smart technologies such as sensors and radio-frequency identification (RFID) are of growing importance within the retail sector (Anderson and Bolton, 2015; Pantano, 2019). Products that are embedded with RFID tags can communicate with a store's digital signage network. Fig 9 illustrates an interactive product catalog that was designed for the artificial grass department of Beaulieu. Each grass sample contains an RFID tag, and when placed in front of the digital screen, the screen displays information about the product.

FIG 9 HERE

Fig 10 illustrates an interactive product information kiosk installed at a Belgian fashion store. Whenever a customer approaches the digital screen with a product carrying an RFID microchip, such as a shoe, the screen displays specific content such as general information about the shoe, materials used, availability etc.

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FIG 10 HERE

Smart Devices. Smart devices can be used as a remote control to navigate the content of DS. Fig 11 illustrates an example of a storefront display of a travel agency controlled by a smartphone. By scanning a QR code that is displayed on the digital screen, the customer's mobile device becomes a remote control to navigate and download the content of DS. The voice-interactive mirror of H&M presented earlier also allows customers to download the content of the display (selfie, fashion inspiration look) to their mobile phone via a QR code.

FIG 11 HERE

Social media. Recent research has emphasized the importance of new technologies to engage customers on a social level (van Doorn et al. 2017; Grewal et al., 2020; Pantano & Gandini 2017). Today, social media are widely used in retailers' marketing campaigns. Social media content can also be used to, for example, create a social media wall on digital screens. Zotter, a company in Austria that manufactures organic and Fairtrade certified chocolates, implements such a social media wall on a digital signage screen on their tasting tour (see fig 12), displaying not only their own social media content from Twitter, Facebook and Instagram, but also scraped user-generated content containing the hashtag #zotter.

FIG 12 HERE

3.3   Intelligent digital signage

While traditional digital signage is a heavily used element in the POS promotional mix (Bae, Jun & Hough, 2016), the vast majority of these messages are not adapted to the audience passing by the screens. The relevance of the content displayed is a challenge that a growing number of retailers and technology providers aim to tackle. In this context, there is an increasing interest for *audience intelligence platforms* that rely on, for example, anonymous video analytics to distill anonymous data about the number of viewers, dwell time, attention time and demographics, such as an estimation of age and gender. Digital signage messages can then be tailored to various target audiences (cf. fig 13). The effect of tailoring DS advertisements can be measured by matching the time stamps of the interactions with the content of the DS. According to Quividi, a leading audience and campaign intelligence platform, targeted DS messages can result in higher audience engagement and more watchers per display.

FIG 13 HERE

These *intelligent* platforms thus allow retailers to rely on direct behavioral and physiological measures, rather than on questioning customers about information that is to be consciously present (e.g. self-reported measures of having noticed the digital screen and recalling the messages displayed). Besides the use of implicit measures as yet another alternative, this kind of real (unobtrusive) observations is important as, according to Haase & Wiedmann (2020), a large part of atmospheric stimuli is processed unconsciously. "C*ustomers are surrounded by all kinds of stimuli that they are not aware of but that the unconscious mind still gathers and stores*" (p.237).

4   The prospects for DS: Balancing between a bright future and a dark reality

While the possibilities of DS seem virtually unlimited, there are still hurdles to be tackled in order to capture its full potential. This final paragraph covers ethical reflections, as well as the legal boundaries that define the retailer's playground for DS implementations. Questions are raised regarding the desirability of some of the possibilities. The Personalization-Privacy Paradox Personalizing information that is provided via in-store DS has the benefit of helping shoppers to cope with today's ever increasing information overload (Aljukhadar, Senecal & Daoust, 2012). By filtering all the information the store has to share to only a relevant fraction of it, the retailer can assume its role of resource integrator in the value co-creation process (Vargo & Lush, 2004).

While personalization of in-store messages can enhance consumer engagement with the store (Grewal, Roggeveen, Nordfält, 2016), it can also come at the cost of being perceived as intrusive in relation to consumers' privacy (Aguirre, Roggeveen, Grewal & Wetzels, 2016). As consumers may recognize how much data and information retailers have about them, they may begin to worry about their privacy (Aguirre, Mahr, Grewal, de Ruyter & Wetzels, 2015; Grewal et al., 2016). While shopping in the future, as depicted in the 2002 blockbuster Minority Reports with Tom Cruise, may have seemed science-fiction at the time, today – anno 2020 – this is becoming closer to reality; a reality that some would perceive as rather dark. Data is the new oil and in order to get relevant content, shoppers are expected to pay the price with their data. But how far are they willing to go? And how far should/can retailers go?

FIG 14 HERE

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4.1 Legal restrictions to the retailer's degrees of freedom

The practice of adapting messages to the context and profile of the viewer also encounters ethical concerns and controversy among the general public. An early example of a real-life business pilot case was that of Tesco (UK) experimenting already in 2013 with Optimeyes technology to allow for such context-aware point-of-purchase communications (The Guardian, 2013). More recently, in 2017, a similar case of controversy was in the press in Belgium, where visitors of a shopping mall in Brussels were being filmed for facial recognition purposes with the ultimate aim of personalizing messages via digital screens in the mall (Schepens, 2017).

Another challenge derives from the fact that there are also binding legal boundaries that are set by privacy regulations (i.e., GDPR, e-privacy directive, and legislation on direct marketing). Especially because its interpretation remains fairly unclear (van de Sanden, Willems & Brengman, 2019). It is not so straightforward for retail managers to know what the boundaries are to rightfully use in-store targeting (and tracking) of consumers. And the advent of the General Data Protection Regulation (GDPR) in May 2018 only further blurred the picture in Europe.

4.2 Should tech substitute or complement touch?

Another critical issue that should not be neglected when it comes to digitalizing the physical retail environment, deals with a loss of human contact. The balance between touch and tech has received ample scholarly attention over the past few decades (e.g. Wünderlich, Wangenheim & Bitner, 2013).

While the digitalization of physical retailing entails obvious *potential* for both the customer as well as the retailer, it also comes at a *cost*. Every euro/dollar/pound can only be spent once, and those retailers who invest heavily in tech, may decide to save on touch. In practice, this boils down to – often lower-educated – sales personnel and frontline employees seeing their jobs jeopardized. However, in order for the introduction of any in-store technology to succeed, it is quintessential that the service staff embraces it (cf. e.g. Verhagen, van Dolen & Merikivi, 2019). Internal communication and trainings to enable the staff to properly work with digital tech, such as DS is therefore needed for it to qualify as an enabler of smart retailing (Pantano & Timmermans, 2014).

4.3 Augmented or eroded shopping experiences?

Not only for retail *frontline employees*, digitalization can entail a stress of becoming 'redundant' (cf. Harari, 2018), but also for particular *customer segments*, this evolution can imply an erosion of their retail shopping experience. Being pampered by salespeople, and having the opportunity to mingle with other shoppers, are top sources customers indicate to derive intrinsic pleasure from while shopping (cf. Cox, Cox & Anderson, 2005). Reducing these *social human interactions*, may decrease to

some the holistic hedonic value they derive from shopping in a physical store. By taking away what is - to many - still a major reason to take the pain to go shopping in town instead of conveniently via the worldwide web, this could contribute to a *further exodus of retailers in the shopping districts*, with even more vacant retail real estate.

The same goes for the *sensorial richness*, which is still a core competitive advantage that the physical store holds against online retailers (Shankar et al., 2011). While reducing physical inventory, and depicting, for example, shoes in a myriad of alternative colors on a digital screen, may help in gaining efficiency; it can also degrade the sensory experience of shopping. For certain customer segments (e.g., women that typically tend to be higher in need of touch during shopping than men; Peck & Childers, 2003), this may impact again on the overall shopping pleasure experienced (Cox, Cox & Anderson, 2005; Krishna et al., 2012; Spence, Puccinelli, Grewal & Roggeveen, 2014).

The diffusion and utilization of new technologies thus often depend on several externalities, which require careful consideration. Retailers should take a holistic and integrative approach implementing DS, and technology in general.

KEY TERMS AND DEFINITIONS:

1. **Store atmospherics** (Kotler, 1973, p.50): the effort to design buying environments to produce specific emotional effects in the buyer that enhance his purchase probability
2. **Digital signage** (Schaeffer, 2008, p. 5-6): a network of electronic displays that display multimedia messages for advertising, information, entertainment, and merchandising to target audiences
3. **Display blindness** (Müller, 2009, p.8): audience expectations of irrelevant content leads to a tendency to ignore displays
4. **Context-aware messages:** the ability to adapt and display messages based on contextual factors such as the time, location, crowdedness, weather, or audience demographics, etc.
5. **Personalization-privacy paradox** (Aguirre et al., 2016, p. 15): One the one hand, customers demand more relevant and personalized experiences. However, as personalization increases, it may also trigger privacy concerns related to how firms potentially collect and use information.

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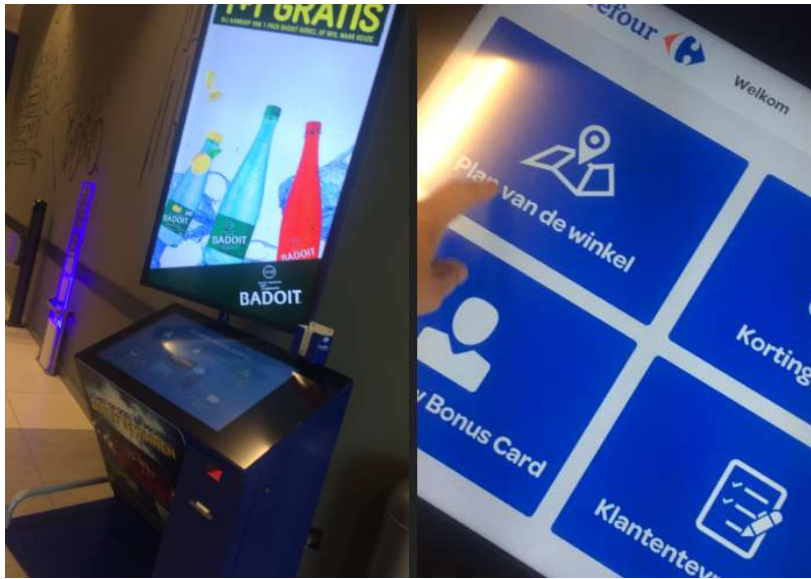

Fig 1:Welcome kiosk at Carrefour
Source. Pictures taken by co-author

Fig 2: Touchscreen recipes
Source: Picture taken by co-author

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Fig 3: Touchscreen with recipes of chocolate
Source: Picture taken by co-author

Fig 4: Book recommendation system
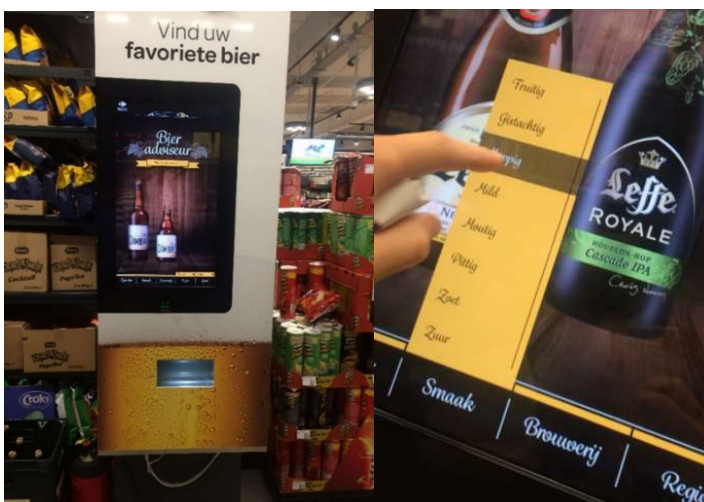*Source.* Picture taken by co-author

Fig 5: Beer recommendation system
Source. Pictures taken by co-author

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Fig 6: H&M voice-interactive mirror
Source. Picture taken from Youtube: https://www.youtube.com/watch?v=A1PifO6jdVA

Fig 7: Timberland's Virtual Fitting Room
Source. Pictures taken from Youtube
https://www.youtube.com/watch?v=5TZmQPdhpak&feature=emb_logo

Fig 8: Smart Mirror
Source. Pictures from https://memorymirror.com/

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Fig 9: Beaulieu's interactive product catalogue
Source. https://www.digitopia.be/nl/blog/een-interactieve-productcatalogus/

Fig 10: Interactive product information kiosk
Source. https://www.digitopia.be/nl/blog/een-interactieve-productcatalogus/

Fig 11: Touch and Go application
Source. https://www.digitopia.be/nl/solutions-overview/touch-and-go/

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Fig 12: social media wall display in the Zotter tasting tour
Source. https://blog.walls.io/showcases/user-generated-content-social-brand-hub/

Fig 13: Quividi-powered content scenario
Source. https://blog.walls.io/showcases/user-generated-content-social-brand-hub/

Fig 14. Smart in-store digital screens in Minority Report (2002)
Source.*https://www.google.com/search?q=minority+report+retail&tbm=isch&ved=2ahUKEwie5YW8_aPnAhUB_IUKHURX
C9cQ2-cCegQIABAA&oq=minority+report+retail&gs_l=img.3...8699.9482..10649...0.0..0.61.320.6......0....1..gws-wiz-
img.......0i19j0i8i30i19j0i30i19.j-
XaD_nCWgk&ei=OPIuXp7pKYH4lwTErq24DQ&bih=610&biw=1280&rlz=1C1WPZC_enBE840BE849#imgrc=_rYFw-EEt96srM)*

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Table 1: Literature DS

Study	Method	Research setting	Influencing factors	Dependent variables
Research stream 1: Non-interactive digital signage				
Newman et al. (2006)	Focus groups	Shopping mall	Content Location	Evaluation of digital displays Shopping mall experience
Burke (2009)	Analysis of academic and commercial experiments (study 1)	Supermarket	Content Product category	Sales uplift
Burke (2009)	Analysis of academic and commercial experiments (study 2)	Front window of a store in a shopping mall	Content	Customer traffic Sales
Burke (2009)	Analysis of academic and commercial experiments (study 3)	Shopping mall	Content Location	Shopper engagement Sales
Newman et al. (2010)	Focus groups	Shopping mall	Audio and video content Location	Image of shopping mall Shopping atmosphere
Dennis et al. (2010)	Field survey	Shopping mall	Shopping mall with DS vs without DS	Positive affect (mediator) Perception of mall (mediator) Approach behavior
Dennis et al. (2012)	Field survey	Shopping mall	Shopping mall with DS vs without DS	Perception of mall (mediator) Positive affect (mediator) Approach behavior

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Yim et al. (2010)	Observation (Study 1)	In-store	In-store video media vs static pictures	Attention
	Survey (study 2)	In-store	Attention to media Age walking distance	Brand recall Brand recognition Brand familiarity Purchase intentions
	Survey (study 3)	In-store	Moving vs fixed pictures of product	Brand recognition
Ravnik and Solina (2013)	Demographic and audience data measurement (sports clothing boutique)	In-store	Dynamic vs static content Gender	Attention time Probability of purchase
Dennis et al. (2014)	Field experiment (retail store)	In-store	Store familiarity Affective vs cognitive content	Intellectual experience Affective experience Attitude towards the ad Approach/avoidance
Nordfält et al. (2014)	Field experiment (study 1)	In-store	Display on/display off	Time spent Amount spent Approach behavior Shopping experience
	Field experiment (study 2)	In-store	Price promotion vs ambience content	Sales
Roggeveen et al. (2016)	Field experiment (hypermarket, supercenter, supermarket & convenience store)	In-store	Store format Price vs non-price content	Sales Number of items Time spent shopping

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Garaus et al. (2016)	Field experiment (supermarket)	In-store	Affective vs cognitive content	Emotions Store image Perceived merchandise quality Impulse purchases Store loyalty
Willems et al. (2017)	Field experiment (coffee shop)	In-store	Location: entrance vs register Abstract vs concrete content	Display recall Advertisement recall Purchase intention Actual purchase
Garaus and Wagner (2019)	Field experiment (supermarket)	In-store	/	Perceived waiting time Affective queuing time Store satisfaction
Lee and Cho (2017)	Field survey (entrance company food court)	In-store	Informativeness Entertainment Irritation Involvement Targeting	DS ad attention (mediator) DS ad value (mediator) DS ad memory Attitude towards DS ad
Research stream 2: Interactive digital signage				
Lee and Cho (2017)	Field survey (entrance company food court)	In-store	Perceived interactivity Privacy concern Perceived personalization Attitude towards medium	Attitude towards DS ad Attitude towards brand Purchase intentions

Note. This literature table is adapted from a full paper submitted to a special issue in the Journal of Retailing and Consumer Services (JRCS) that is linked to a special track hosted at the Recent Advances in Retailing and Consumer Science (RARCS) conference in Tallinn, 2019.