

Storytelling in online shops: the impacts on explicit and implicit user experience, brand perceptions and behavioral intention

Evmorfia Karampournioti and Klaus-Peter Wiedmann
*School of Economics and Management, Institute of Marketing and Management,
Leibniz University Hannover, Hannover, Germany*

Abstract

Purpose – This paper examines in detail how the use of storytelling with parallax technology can influence the user experience (UX) in online shops as well as brand- and behavior-relevant variables. Furthermore, this study analyzes the causal relationships between UX, brand attitudes and brand-related behavioral intentions in terms of purchase intention and price premiums. Explicit and implicit paths of human information processing are considered.

Design/methodology/approach – A sample of 266 respondents completed a web-based experiment under two conditions (text-based vs parallax storytelling online shop). An existing and operational online shop was used. The causal relationships were assessed by using partial least squares structural equation modeling (PLS-SEM). To measure implicit information processing, a single category implicit association test was applied.

Findings – By applying the storytelling technique with parallax scrolling, the online shop increased visitors' UX on explicit and implicit information processing levels and increased the online shop's overall perceived attractiveness. Storytelling with parallax motion enables an efficient transmission of brand-related associations to consumers' minds, enhances their explicit and implicit brand attitudes and increases their willingness to pay a higher price. Moreover, this study provides empirical evidence on the effects of UX on brand-related measures by applying PLS-SEM and thus reveals a causal chain of effects from UX on online shop attractiveness, brand attitude and behavioral intentions. Again, explicit and implicit perceptions were considered.

Originality/value – Science and practice are increasingly emphasizing that storytelling emotionalizes content, which facilitates effective communication and builds strong relationships with customers. Little evidence exists about its efficient implementation in an online shopping context and in fulfilling hedonic and pragmatic needs throughout the online journey. This study provides novel insights into managing online shoppers' UX, brand-related perceptions and behavioral intentions with the optimal use of techniques to implement storytelling. Furthermore, this is one of the first studies to holistically consider the human perception of online shops by drawing on theories and methods of psychology, marketing, consumer behavior, brand research and consumer neuroscience and considering explicit and implicit information processing in terms of hedonic and pragmatic UX and brand-related measures.

Keywords Storytelling, User experience, Parallax motion, Explicit and implicit measures, Implicit association test, Consumer neuroscience, Brand research, Purchase intention, Price premium, Online shop attractiveness, Hedonic user experience, Pragmatic user experience

Paper type Research paper

1. Introduction

The population of Internet users has grown at remarkable rates worldwide in recent decades. According to the International Telecommunications Union, the percentage of the population

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that uses the Internet in developed countries reached 80.9% in 2018. In addition, retail e-commerce sales worldwide reached 2.304bn US dollars in 2017 and are forecasted to increase to 4.878 billion by 2021 (eMarketer, 2018). This development presents tremendous opportunities for companies that sell their products online since consumers are becoming increasingly active in the online environment, and even for small and mid-sized merchants, an e-commerce presence is no longer a “nice to have” but a necessity (Siok, 2018). Moreover, the rise of online shopping and the concurrent increase in online shops have created challenges for marketers to gain customers’ attention, attract customers and convert shoppers into paying customers (Hassan, 2017). Due to the rapidity with which consumers are moving and interacting online, companies are facing challenges in catching consumers’ attention and leaving an impression on them. Company survival in the competitive e-commerce environment, where competitors are only one click away (Bilgihan, 2016), requires the creation of a user experience (UX) that fulfills pragmatic qualities in terms of, e.g. efficiency and perspicuity while emphasizing the users’ subjective reactions and emotional aspects, such as through uniqueness and stimulation (Rauschenberger *et al.*, 2013; Wang *et al.*, 2015). However, companies must find efficient ways to effectively communicate and interact with consumers throughout the digital touchpoint and beyond. To achieve this goal, online shops must be designed in such a way that they attract consumers’ attention and communicate and transmit the values and virtues of a brand and its products. Storytelling has gained particular importance in research and in practice when presented as an efficient means of brand communication and represents a timeless skill that every company can use to inspire and motivate its audience (Snow, 2014; Da Costa, 2019). By telling stories, brands can create valuable experiences for their audience, differentiate themselves from their competitors and reinforce positive brand associations (Lundqvist *et al.*, 2013; Fog *et al.*, 2010). Stories make ideas stick, and they help persuade.

Science and practice are increasingly emphasizing that stories and content must be emotionalized. Stories should be used to evoke emotional reactions, build emotional relationships with the consumer and thus anchor companies in the minds of consumers in a sustainable and persistent way (Gutjahr, 2015; Leventhal and Papadatos, 2006; Merchant *et al.*, 2010; Delgado-Ballester and Fernández-Sabiote, 2016; Herskovitz and Crystal, 2010; Hasford *et al.*, 2015). The discipline of storytelling has become a veritable hype. However, storytelling is more than mere emotionalization. Especially in the online context, practitioners must holistically satisfy the UX, which is regarded as one of the most important performance indicators in the online context (Huang, 2003). This means that in addition to hedonic needs, utilitarian needs should also be met; therefore, several factors must be addressed (see the UX criteria above) (Laugwitz *et al.*, 2008; O’Brien, 2010; Bridges and Florsheim, 2008).

Rarely, however, do research and practice address the question of which method can be used to implement storytelling efficiently in an online context, and, thus, very little empirical evidence exists. Even a good story in terms of content does not offer the necessary effect if certain techniques are not implemented, and online shoppers are no longer satisfied with simple text-based websites through which they can scroll; online shoppers demand unique designs and experiences. Here, parallax can be a solution. Through parallax, interactive and three-dimensional effects are implemented, thereby creating a depth of images for users (Wang and Shyu, 2014). Advocates of the parallax technique claim that in addition to engaging users, it improves the overall UX on a website (Frederick *et al.*, 2015), directs the course of visitor attention, makes the site easily navigable and helps create a compelling narrative (Wang and Sundar, 2018; Rutherford, 2014). Through parallax and its modality interactivity (Oh *et al.*, 2013), stories can be interactively designed, conveyed and brought to life.

It is precisely this gap, the targeted design and implementation of storytelling in online shops that is addressed in this paper. The research objectives of this study are twofold. First, it examines in detail how the use of storytelling with parallax technology can influence UX

with an online shop and identifies its effects on brand- and behavior-relevant variables. Second, this study aims to provide a detailed and more holistic understanding of the causal effects of UX on brand-related key performance indicators (KPIs). Since consumers' reactions to stimuli underlie explicit reflective and automatic implicit processes (Evans and Stanovich, 2013), a combined measurement approach implements methods of consumer neuroscience that examine both implicit and explicit information processing to holistically assess consumers' UX and brand associations evoked by storytelling techniques. The remainder of the manuscript is organized as follows. The theoretical foundation of storytelling and explicit and implicit information processing is described in the next section. The conceptual model and related hypotheses are subsequently presented. The methodology section outlines the methods and the samples used for the empirical study, and then, the results are presented and discussed.

2. Theoretical background

2.1 The essence of storytelling

Throughout the ages, all aspects of life in societies and cultures have been influenced by stories that form human values and dreams. As the oldest and most effective form of passing knowledge, wisdom and beliefs between generations (Ellington, 2014; Hurlburt and Voas, 2011), the art of storytelling represents the way people perceive and interpret past, present and future events. According to Denning (2001), storytelling is natural, easy, entertaining and energizing, and it helps humans understand complexities and enhance or change their perceptions. Stories are easy to remember, engage feelings and enable individuals to see themselves in a different light. Consequently, consumers can make decisions and change their behavior in accordance with these new perceptions, insights and identities. Hence, the art of storytelling has survived because "*Stories are how we explain, how we teach, how we entertain ourselves, and how we often do all three at once. They are the juncture where facts and feelings meet. And for those reasons, they are central to civilization – in fact, civilization takes form in our minds as a series of narratives*" (Fulford, 1999, p. 9). Furthermore, humans think in narrative structures and mostly remember facts in story form, which means that stories mirror human thought (Mileski et al., 2015).

Humans have always used stories as a means to understand the world. Although the historical origins of storytelling cannot be traced to a particular time in the past, it can be stated that the desire to hear and tell stories existed even before humans had the capacity of speech. Cavemen drew story pictures in a time long before languages and writing existed (Beamish and Beamish, 2015). Throughout the years, stories moved from caves to campfires to library floors and have become a "communication tool" embraced by corporate leaders, gurus of knowledge management and practitioners of strategy and design (Sametz and Maydoney, 2003). Especially in marketing and communication, stories have become a powerful tool to create value, and through the rise of the digital era, they have become more prevalent than ever (van Laer et al., 2019). Rather than featuring solely factual product characteristics, storytelling focuses on conveying brand values through emotional content (Dessart, 2018). Accordingly, a company's story is stored in memory in multiple ways – factually, visually and emotionally – which makes it memorable in the consumer's mind (Mossberg and Nissen Johansen, 2006). A creative and authentic story that is told and shared allows the creation of a bond between brands and consumers, while this relationship-building experience moves customers to take action (Lim and Childs, 2020), which consequently represents an important success factor in a competitive environment (Escalas, 2004a; Singh and Sonnenburg, 2012). In addition to the personal connection between a company and its customers that can result from storytelling, it additionally helps to engage with customers in online environments (Anaza et al., 2020; Kim et al., 2020), enables an easily comprehensible

sharing of reliable information and knowledge with the customer (Kemp *et al.*, 2021) and appeals to positive emotions and lowers resistance (van Laer *et al.*, 2019). Particularly in marketing and management, storytelling has received increasing interest offline, especially in online communication, as a way to convey brand values (Lundqvist *et al.*, 2013), create desirable images and foster consumer-brand interaction.

2.2 UX

UX is a broad concept that describes the qualities of interactive products that customers have experienced throughout their usage and interaction with these objects (Raptis *et al.*, 2017). Earlier studies on human-computer interaction (HCI) focused solely on usability as an important aspect of the interaction between consumers and digital products. The emphasis in research and in practice was on performance, efficient accomplishment and goal achievement (Lee *et al.*, 2018). According to the ISO - International Organization for Standardization (ISO) (2010) and its 9241-210 standard, *usability focuses on the “extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use”*. Since interactive products should not solely be useable and useful, a sole focus on criteria that enhance product usability is not sufficient in contemporary times (Hassenzahl and Tractinsky, 2006; Garrett, 2011). UX goes beyond the instrumental understanding of usability (Bargas-Avila and Hornbæk, 2011) and encompasses “a person’s perceptions and responses that result from the use and/or anticipated use of a product, system or service” (ISO, 2010). Due to the broad spectrum of possible consumer “responses and perceptions”, scholars have attempted to identify different components of UX. Hedonic qualities and criteria related to the joy of use, beauty, originality and affective and experiential aspects have become essential as technology has matured (Hatscher, 2001; Preece *et al.*, 2015; Hassenzahl and Tractinsky, 2006). Recent research studies have emphasized the importance of usability, affective responses, value, esthetic pleasure, emotional response, attribution of meaning (Desmet and Hekkert, 2007), usefulness (Kim, 2015), utility, availability and aesthetics (Hiltunen *et al.*, 2002). By summarizing the proposed and identified dimensions, it becomes obvious that UX is composed of pragmatic and hedonic key elements that occur due to the interaction between humans and digital products (Rauschenberger *et al.*, 2013; Laugwitz *et al.*, 2008). Nevertheless, creating a common definition of UX has proven to be difficult (Coursaris and Kim, 2011; Law *et al.*, 2014; Sauro and Zarolia, 2017). The highly competitive online environment demands that online shops focus on both the pragmatic and hedonic aspects of their online presence to remain competitive within their marketplace. A positive UX is related to the intention to return to a website (Koufaris, 2002) and to increasing consumer loyalty (Gabisch, 2011; Bilgihan *et al.*, 2016). Positive UX compels consumers to buy products in the marketplace and provides enjoyment in the online shopping experience (Bilgihan *et al.*, 2014; Bilgihan and Bujisic, 2015; Loiacono *et al.*, 2002).

3. Conceptual model

The purposes of the present study are twofold. The first goal is to investigate whether a text-based or storytelling-based online shop (implemented with parallax) design is efficient in targeting and improving online shop-specific and brand-specific KPIs. In an online shop, hedonic and pragmatic aspects of UX and the overall attractiveness of the shop are considered to be meaningful KPIs. Regarding brand-related KPIs, we focus on the perception of communicated brand values (here, sustainability perception), brand attitude and brand-related behavior (behavioral intentions, such as paying a higher price or a price premium and purchase intention). Second, structural equation modeling (SEM) is used to detect the causal relationships between the UX with the online shop and brand-related KPIs. Therefore, this

study analyzes how UX affects brand attitudes and how brand attitudes influence brand-related behavioral intentions in terms of purchase intention and price premiums. In this way, this study recognizes the explicit and implicit information processing of humans and thus considers a combination of explicit and implicit facets of all perceptual measures, UX, online shop attractiveness, brand values and brand attitude. The expected causal relationships are represented in [Figure 1](#).

3.1 *The explicit and implicit effects of storytelling on brand-related KPIs*

Since “human memory is story-based” ([Schank, 1999](#)), emotional stories aim to construct a particular mental representation of a brand and to remain in long-term memory. Stories catch consumers’ interest ([Escalas, 2004b](#); [Mossberg and Nissen Johansen, 2006](#)) and enable them to experience a transformative immersion that leaves them changed ([Escalas, 2004b](#); [Green and Brock, 2000](#); [van Laer et al., 2014](#)). Accordingly, a story is no longer simply seen; rather, consumers experience “*a feeling of entering the world evoked by the narrative*” ([van Laer et al., 2014](#), p. 798), that is, they take a journey into the story world ([Escalas, 2004b](#); [Green and Brock, 2000](#)). Especially through the use of human protagonists, brand attitudes can be positively influenced and increase advertising efficiency ([Dessart, 2018](#)). Furthermore, stories help entertain and engage the audience and strengthen the emotional relationships between brands and their customers ([Escalas, 2004a](#); [Woodside, 2010](#); [Singh and Sonnenburg, 2012](#)). Research has also found that stories encourage risk taking and inspire enthusiasm ([Auvinen et al., 2013](#); [Barry and Girona, 2018](#)). Typically, companies use storytelling to communicate not only their brand values but also what the companies represent ([Fog et al., 2005](#)). Stories provide meaning to brands ([Halliday, 1998](#); [Salzer-Mörling and Strannegård, 2004](#); [Simmons, 2006](#)), help customers understand the benefits of the brand ([Kaufman, 2003](#); [Akgiin et al., 2015](#); [Singh and Sonnenburg, 2012](#)) and positively affect brand perceptions ([Guber, 2007](#); [Kelley and Littman, 2005](#)). Even in a social purpose context, storytelling enhances the engagement between crowdfunding platforms and their users and donation performance ([Robiady et al., 2021](#)). Through storytelling, brand values are illustrated in a unique and meaningful way ([Lundqvist et al., 2013](#)). This helps add favorable associations to a brand and create and reinforce a certain image in the minds of the audience, which, in turn, fosters brand building, and brand communication ([Fog et al., 2010](#)) increases customer brand equity ([Keller, 1993](#); [Leone et al., 2006](#); [Wood, 2000](#)) and perceived brand authenticity ([Huang and Guo, 2021](#)). In the created story world, the communicated advantages are perceived more strongly. Furthermore, consumers can intensively imagine the consumption of the advertised products/brands and the resulting consequences more realistically ([Mattila, 2000](#); [Boller, 1990](#); [Boller and Olson, 1991](#)). Storytelling advertisements increase the transportability of people and can affect attitudes toward brands. However, attention must be given to the choice of characters because the use of nonhuman characters can make an ad less effective ([Dessart, 2018](#)). It has also been confirmed in the business-to-business (B2B) context that narrative stories positively affect the decision maker’s trust in the supplier, the ability to form personal connections with the supplier and the tendency to advocate for the supplier ([Anaza et al., 2020](#)), which confirms the effectiveness of narrative stories not only in business-to-consumer (B2C) but also in B2B relationships.

3.1.1 *Explicit and implicit processing of stories.* To provide a holistic picture of contemporary consumer behavior and HCI, it must be considered that the perception and processing of everyday information and the sense making of the surrounding world, such as that created by stories, occur through two routes. Therefore, despite the importance of efficiently communicating with consumers to promote products and brands, it is important to keep in mind that consumers are hardly aware of their thoughts and beliefs during the consensual decision-making process ([Nisbett and Wilson, 1977a, b](#); [Zajonc, 1980](#)). Reactions to any kind of stimulus, as well as reasoning and decision-making, underlie two types of

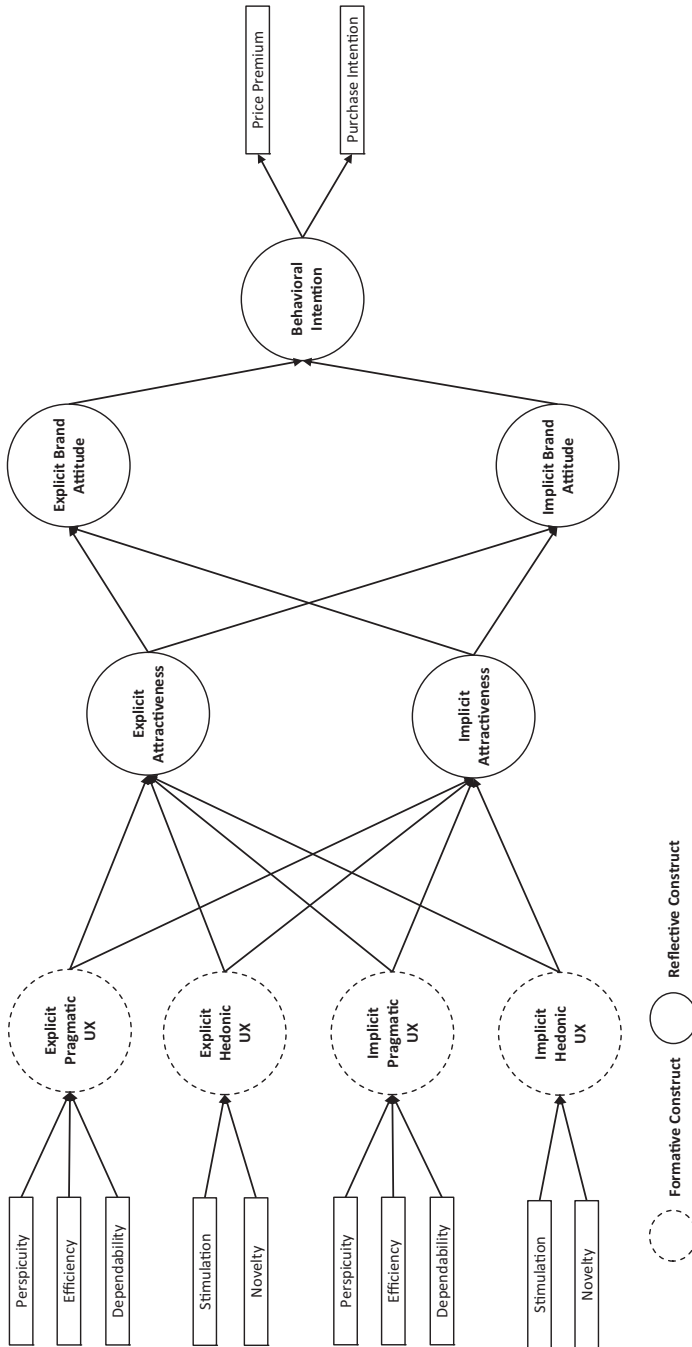


Figure 1.
Conceptual model

processing. According to the dual-process theory of higher cognition, type 1 processes are broadly intuitive, automatic, fast and nonconscious and are often based on past experience and encompass “[...] (general) processes of implicit learning and conditioning” (Evans and Stanovich, 2013, p. 236). Information that is primarily processed through this route results in evaluations that can be accessed spontaneously and represents “[...] introspectively unidentified (or inaccurately identified) traces of past experience that mediate favorable or unfavorable feeling, thought, or action toward social objects” (Greenwald and Banaji, 1995, p. 8). Type 2 processes encompass more explicit and reflective processes, which require higher working memory capacity due to sequential processing and are therefore slow, controlled and rule-based (Sloman, 1996; Barbey and Sloman, 2007; Wilson, 2002; Kahneman, 2011; Evans and Stanovich, 2013). Evaluations in system 2 are formed by a more systematic and conscious consideration of the weaknesses and benefits of specific objects (Fazio and Olson, 2003). Although type 1 processes continuously generate responses unless intervened in more distinctive type 2 processes (Kahneman and Frederick, 2002; Evans and Stanovich, 2013), both processes affect perceptual and behavioral measures. During interaction with a story, brand-related information and knowledge are processed and stored through verbal and nonverbal (e.g. objects, images, smells and feelings) representations that can function on both the conscious and unconscious levels (Paivio, 1990; Wilson, 2002). To successfully target consumers and efficiently communicate with them, both processes must be considered. Thus, online shop visitors who are exposed to the contents provided by companies consciously or subconsciously use both paths to process information and form an overall association and evaluation. Therefore, the consideration of both information processing paths is required for a more holistic view of consumers’ responses. Based on the statements mentioned above, it is assumed that storytelling in online shop design allows favorable brand-related associations and brand attitudes on explicit and implicit information processing levels.

- H1a.* Parallax storytelling in online shop design has a significantly positive effect on explicit brand-related associations.
- H1b.* Parallax storytelling in online shop design has a significantly positive effect on implicit brand-related associations.
- H2a.* Parallax storytelling in online shop design has a significantly positive effect on explicit brand attitudes.
- H2b.* Parallax storytelling in online shop design has a significantly positive effect on implicit brand attitudes.

Furthermore, brand-related information that is retrieved throughout a story leads to a strong acceptance of beliefs that are consistent with the story, which, in turn, influences listeners’ behavior (Green and Brock, 2000). Therefore, the following hypotheses are proposed.

- H3.* Parallax storytelling in online shop design has a significantly positive effect on brand-related behavioral intention.
- H3a.* Parallax storytelling in online shop design has a significantly positive effect on the willingness to pay a higher price for a brand.
- H3b.* Parallax storytelling in online shop design has a significantly positive effect on consumers’ intention to buy a brand.

3.2 Effects of parallax storytelling on UX and online shop attractiveness

Brands offer their products in a very competitive online environment, where potential users can choose among many existing products, solutions and providers in a couple of seconds. Too many details on a brand’s or a product’s presentation site might make it too difficult for

potential customers to become involved and easily informed through the online setting. Hence, the information about a brand, product or company provided in an online shop is not the only driving force in capturing the interest of potential customers; instead, a combination of content and UX aspects determines the success of a website as a channel of corporate communication (García García *et al.*, 2017). As stated in the theoretical background section, considering the pragmatic aspects and hedonic characteristics of the online setting is highly necessary. Interface design contributes to the enhancement of consumers' affective states, which, in turn, creates positive brand experiences and consumer loyalty for the website (Yang *et al.*, 2020). According to Mileski *et al.* (2015), customers who are exposed to stories in an online environment are more emotionally intrigued by a product's presentation and more likely to take a deeper look into the product details. Furthermore, storytelling "has the advantage of describing the problem, narrating the process, implying emotions and value in user experience design" (Peng and Matterns, 2016, p. 117). Therefore, UX designers and brands should do their best to leverage storytelling techniques when designing their digital contact points. A possible and favorable way to leverage storytelling in the online environment is the parallax technique, which is very well-received by consumers (Shepherd, 2011). Parallax creates illusory 3D effects through the combination of different online interaction techniques, such as clicking, scrolling, sliding, dragging and zooming (Wang and Shyu, 2014; Wang and Sundar, 2018; Sundar *et al.*, 2014). Thus, the objects and different contents of the webpage move at different speeds. The different modalities of interaction (modality interactivity) not only provide an illusion of depth and a feeling of presence (Oh *et al.*, 2013) but also influence consumers' perceptual bandwidth; thus, the modalities involve a higher number of sensory channels throughout the interaction between a medium and its users (Reeves and Nass, 2000). Visitors of parallax scrolling websites report more engaging experiences during the interaction (Yamin and Jaafar, 2013), an improved perception of coolness, vividness, ease of use and user engagement (Wang and Sundar, 2018) and a higher overall attractiveness of the website (Frederick *et al.*, 2015; Yamin and Jaafar, 2013; Wang and Sundar, 2018). Increased user engagement is, in turn, associated with positive attitudes and behavioral intentions toward both the website and the product (Wang and Sundar, 2018). Accordingly, storytelling implemented by parallax motion is positively associated with the overall attractiveness of a website and both the hedonic and pragmatic aspects of UX. Considering explicit and implicit information processing, the following hypotheses are proposed.

- H4. Parallax storytelling in online shop design has a significantly positive effect on explicit and implicit UX.
- H4a. Parallax storytelling in online shop design has a significantly positive effect on explicit hedonic aspects of UX.
- H4b. Parallax storytelling in online shop design has a significantly positive effect on explicit pragmatic aspects of UX.
- H4c. Parallax storytelling in online shop design has a significantly positive effect on implicit hedonic aspects of UX.
- H4d. Parallax storytelling in online shop design has a significantly positive effect on implicit pragmatic aspects of UX.
- H5. Parallax storytelling in online shop design has a significantly positive effect on the explicit and implicit attractiveness of online shops.
- H5a. Parallax storytelling in online shop design has a significantly positive effect on the explicit attractiveness of online shops.

H5b. Parallax storytelling in online shop design has a significantly positive effect on the implicit attractiveness of online shops.

3.3 Effects of pragmatic and hedonic UX indicators on the overall attractiveness of online shops

Experiences create memorable events (Pine and Gilmore, 1998) that can result in favorable attitudes. These attitudes are easily and rapidly accessible from memory, are held with confidence and are predictive of subsequent behavior (Berger and Mitchell, 1989). Furthermore, an enhanced UX affects numerous psychological outcomes, such as visitors' information processing and memory, brand attitudes and brand relations (Fransen and Lodder, 2010) and induces behavioral intentions (Oh *et al.*, 2013; Liu and Shrum, 2009; Sundar *et al.*, 2014; Sands *et al.*, 2008; Xu and Sundar, 2014). In addition to the presentation of the content (text-based vs parallax storytelling), it is thus essential to understand the exact interaction mechanisms between the influencing factors of UX and the brand-related variables. As previously mentioned and shown in research, the quality and performance of a website are classified into hedonic and pragmatic/utilitarian characteristics (Huang, 2003) that have the ability to mirror users' subjective experience with a website (Ongsakul *et al.*, 2021). The UX is composed of all factors that can influence users' interaction with and experience of a system (Partala and Saari, 2015). UX summarizes criteria such as efficiency, effectiveness or simplicity with additional criteria including fun, novelty, stimulation and aesthetics, which have proven in the existing literature to be relevant quality drivers in e-commerce (Ilmberger *et al.*, 2008; Laugwitz *et al.*, 2008; Bernardo *et al.*, 2012; Hausman and Siekpe, 2009). Therefore, users' perception of and performance on a website depend on the extent to which the site develops favorable expectations (Choi *et al.*, 2015) that are classified into utilitarian and hedonic performance aspects (Huang, 2003; Wang *et al.*, 2007). Hedonic (nongoal directed) and pragmatic (goal directed) aspects of users' experience with the online setting form the overall impression of the online shop. Existing studies in different evaluation scenarios have indicated that the overall attractiveness of a system is seen as a crucial element of the concept of UX, which is a pure valence dimension and is determined by hedonic and pragmatic quality aspects (Santoso *et al.*, 2016; Schrepp *et al.*, 2014; Rauschenberger *et al.*, 2013). Hence, enabling the visitor to fulfill her or his tasks efficiently and simultaneously by providing originality and beauty in the design of an online shop enhances its overall attractiveness. Following Laugwitz *et al.* (2008) and Mahardika *et al.* (2018), we propose that the overall attractiveness of an online shop is a result of an averaging process from the perceived pragmatic and hedonic aspects of the online shop, while all three components form the holistic UX.

H6a-b. Explicit hedonic UX has a positive effect on the (a) explicit and (b) implicit attractiveness of online shops.

H6c-d. Implicit hedonic UX has a positive effect on the (c) explicit and (d) implicit attractiveness of online shops.

H7a-b. Explicit pragmatic UX has a positive effect on the (a) explicit and (b) implicit attractiveness of online shops.

H7c-d. Implicit pragmatic UX has a positive effect on the (c) explicit and (d) implicit attractiveness of online shops.

3.4 Effects of UX on brand-related KPIs

Throughout visitors' interaction with the communication channel (here, the online shop), brands/companies can build a relationship with the user, which is often determined by the UX provided (Bilgihan, 2016). Furthermore, practitioners need to communicate their brand

identity online in an engaging, unique and memorable way (Roto *et al.*, 2018), which makes website UX an even more relevant and central success factor. Prior research shows that a positive UX increases customer loyalty (Bilgihan and Bujisic, 2015) and that the aesthetics and communicability of a website affect brand perception (Garzotto *et al.*, 2010). Furthermore, the perceived interactivity of a website is positively related to attitudes toward the company (Wu, 1999), and the overall website quality influences affective outcomes such as attitudes toward ads and brands (Shehu *et al.*, 2021). It becomes apparent that the connection to the digital world relies on brands (Yang and Bolchini, 2014), and that a user's individual experience with a website affects the perception of not only the system's quality but also the entity behind it. Surprisingly, pragmatic attributes related to the fulfillment of visitors' operational goals have been shown to not significantly affect the perceived values of a brand but can be effectively transmitted throughout hedonic attributes (Garzotto *et al.*, 2010). The results illustrate the relevance and interplay between pragmatic and hedonic benefits, which mean that both dimensions should be addressed. Moreover, the quality of online experiences is positively related to brand-related outcomes such as trust and loyalty (Chang, 2014; Mishra *et al.*, 2014), while functional and esthetic website design attributes are essential for interaction with the brand website and consumer engagement (Yang *et al.*, 2020). According to Morgan-Thomas and Veloutsou (2013), online brand experiences are positively affected by the ease of use, usefulness and trust of the experience with a search engine and can equally strengthen the relationship to the brand (Morgan-Thomas and Veloutsou, 2013). Although this research focused on a few aspects and effects of search engines rather than the website itself, this approach also confirms the relationship between the user's online experience and brand-related KPIs. It is assumed that UX translates into a positive attitude toward the brand itself (Yoo *et al.*, 2000) that is understood as the "[...]gamut of feelings, beliefs, or judgments that users associate to the brand" (Garzotto *et al.*, 2010, p. 188). Thus, the website and the user's experience with it constitute important aspects in forming and sustaining a positive brand attitude (Chaffey, 2006; Angeli *et al.*, 2009) that consequently fosters brand choice (Lee *et al.*, 2004). Given the aforementioned research results, a causal chain between the identified factors of explicit and implicit overall online shop attractiveness (determined by hedonic and pragmatic characteristics) and brand attitudes is expected, while brand attitudes consequently influence brand-related behavior. Therefore, the following causal relationships are expected, which are represented in Figure 1.

- H8a-b. The explicit attractiveness of online shops has a positive effect on (a) explicit and (b) implicit brand attitudes.
- H8c-d. The implicit attractiveness of online shops has a positive effect on (c) explicit and (d) implicit brand attitudes.
- H9. (a) Explicit and (b) implicit brand attitudes have a positive effect on brand-related behavioral intentions in terms of purchase intention and the willingness to pay a higher price for the brand.

4. Method

4.1 Study design

To investigate the effects of storytelling in an online shop context, an experimental study was conducted. The design of the online shop and, thus, the storytelling design vs text-based design varied with two different conditions (see Figure 2). An existing operational online shop for coffee and coffee-related products (e.g. machines and filters) was used for this purpose. The brand, Coffee Circle, uses a text-based page that describes the brand's vision and mission and focuses specifically on environmental and social aspects of sustainable coffee production and distribution. In addition to the text-based page, Coffee Circle created a parallax page with

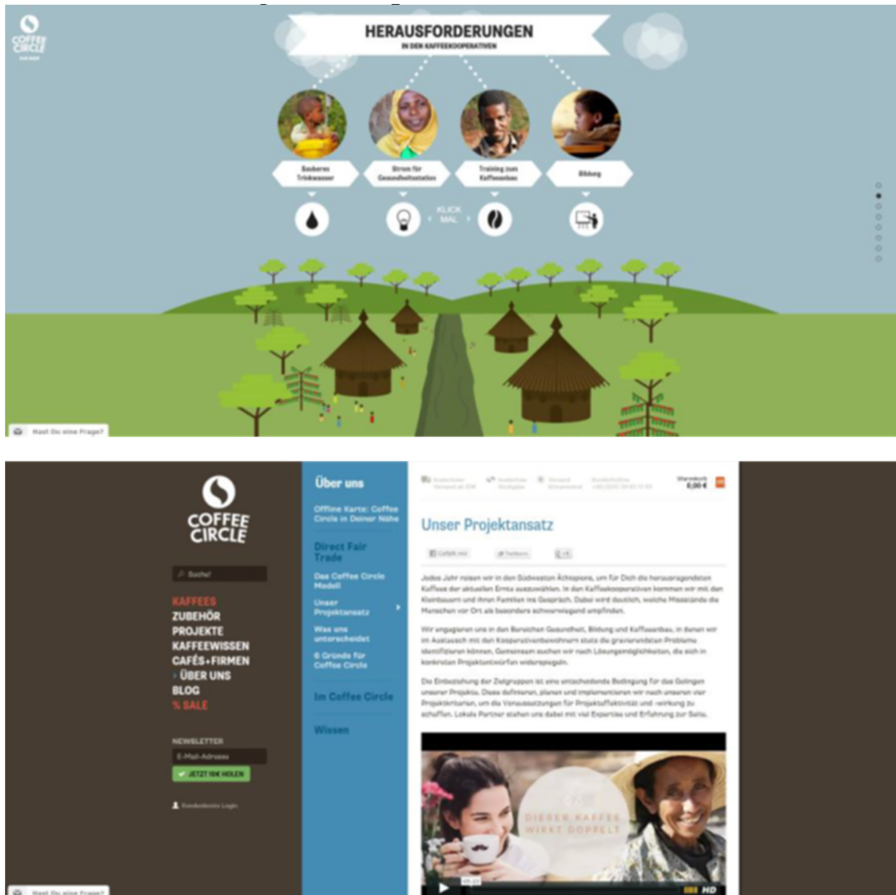


Figure 2.
Experimental
conditions

interactive and entertaining elements to implement the storytelling technique (also called scrolltelling) in their online shop. By scrolling down the page, visitors of the online shop are informed about the brand's vision and mission through interactive elements that describe Coffee Circle's quality requirements, the need for transparency throughout the entire production process, the company's strong relationship with the farmers and their families, fair payment conditions, etc. In addition, the company provides information about its philanthropic projects in coffee-growing regions; these projects support access to clean water, electricity, education and hygiene education. Therefore, the same information is provided under both conditions (the text-based page about the company's vision and mission and the storytelling (parallax) page), and Coffee Circle uses both pages to elicit sustainability-related associations with and perceptions of its brand.

4.2 Measurement instrument

Well-established and validated scales were used to examine the effects of storytelling in an online shopping context. To measure UX, we relied on the *User Experience Questionnaire* (UEQ) by [Laugwitz et al. \(2008\)](#); this scale is available in German and English languages, and its scientific validity has been confirmed on several occasions. Specifically, we used an

empirically tested adaptation developed by Schmidt *et al.* (2017a) that measures the dimensions at the explicit and implicit levels. This measure combines hedonic and pragmatic aspects of UX with digital products. The pragmatic characteristics of UX consist of efficiency, dependability and perspicuity dimensions, while the hedonic characteristics of UX are aesthetics and stimulation. Furthermore, the UEQ is used to measure the overall attractiveness of online shops. For the measurement of brand-related associations, we focused on brand sustainability, which fits the present context since Coffee Circle aims to foster a sustainability-oriented image and has defined social and environmental aspects as its core brand values. Brand sustainability perception, as a result of the experimental setting, was measured with a measurement instrument by Schmidt *et al.* (2017b) and an extension of this scale by Karampournioti *et al.* (2018b); the extension captures the social (items: social, fair, equitable, helpful, caring and charitable), ecological (items: close to nature, environmentally friendly, ecological, environmentally conscious, nature conscious and environmentally protective) and economic (items: economical, viable, profitable, beneficial, lucrative and fertile) aspects of sustainability and offers a holistic approach to measuring brand sustainability perception without ignoring any of the three dimensions. Brand attitude was assessed with six items (nice, good, kindly, great, smart and lovely) that have been used in different research approaches (Aaker, 2000; Karpinski and Hilton, 2001; Spruyt *et al.*, 2007; Karampournioti *et al.*, 2018a). To assess *brand-related behavior*, well-established reflective scales were used. Specifically, we created an analog factor by measuring purchase intention and the willingness to pay a higher price for the brand (Wiedmann *et al.*, 2011). All the explicit items named above were rated on a five-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*).

For the implicit evaluation of UX, overall online shop attractiveness, brand sustainability perception and brand attitude, the same items as in the explicit evaluation were used to ensure the direct comparability of explicit and implicit information processing. Explicit evaluation was measured by a five-point Likert scale, whereas implicit evaluation was assessed based on a reaction time measurement by using the latency-based tool i^2 BrandREACT (eye square, 2014), which resembles a single category implicit association test (Karpinski and Steinman, 2006). This procedure was chosen to capture implicit attitudes based on a relatively automatic and spontaneous assessment.

4.3 Data collection and sample

The respondents were recruited in January 2017 through a snowball sampling method. A web-based survey was distributed via email messages and links on selected web pages (e.g. Facebook and forums). Participants were randomly assigned and redirected to one of the two conditions (text-based page vs storytelling page) of Coffee Circle's online shop. They then read the story about the brand's vision and mission and clicked through the page to become familiar with the brand. To ensure that participants concentrated on their task and carefully read the content on the pages, questions about Coffee Circle's activities in development projects and one specific question about its most popular coffee product were asked. Participants who did not give correct answers to these questions were eliminated from the dataset.

In total, 343 subjects responded to the questionnaire. According to several studies, perceptions and preferences are not only transmitted through language but are shaped by it (Ogunmaike *et al.*, 2010). To avoid biases in the implicit measures due to the participants' language, the data of all respondents who were not native German speakers were deleted from the dataset. Because of the task and language check, a total of 77 cases were deleted, which resulted in 266 valid questionnaires ($n_{\text{text-based}} = 129$; $n_{\text{parallax storytelling}} = 137$). The respondents' average age was approximately 37 years. The sample included a well-balanced distribution between females (49%) and males (51%) and an overrepresentation of single

individuals (52%). Of the respondents, 21.1% had a monthly household net income of more than 4,000 euros, while 34.6% earned more than 2,500 euros monthly. Since sustainable products tend to be more expensive, the intention to buy or to prefer sustainable alternatives is strongly related to one's income. According to the data provided, our respondents had the financial ability to buy sustainable alternatives in the German market. Nevertheless, 65.2% of the respondents mentioned that they preferred conventional coffee, while 28% preferred fair-trade coffee. In addition, none of the respondents was familiar with the brand, which gave us the opportunity to avoid bias due to brand awareness.

5. Analysis and results

5.1 Effects of storytelling on brand-related KPIs (H1-H5)

To test the hypotheses and to determine whether storytelling affects UX, online shop attractiveness, the efficient transmission of brand-related associations (here, brand sustainability), brand attitude on explicit and implicit information processing paths, the price premium and purchase intention and significant differences between the two conditions were analyzed in the first step. A one-way analysis of variance (ANOVA) was conducted to test H1 – H5. Before doing so, to ensure clarity and better comparability, all explicit and implicit attitude scores were rescaled from zero to 100, with a greater (lower) score indicating a higher positive (negative) association. We compared the two online shop design groups (text-based vs parallax storytelling) regarding 22 dependent variables since some of these dimensions were checked twice on the explicit and implicit levels. An overview of the results can be seen in Table 1.

H1a and H1b refer to explicit and implicit brand-related associations in terms of ecological, social and economic brand sustainability. H2a and H2b refer to explicit and implicit brand attitudes. H3a and H3b refer to explicit brand-related behavior in terms of purchase intention and the price premium. Finally, H4a–H4d and H5a–H5b refer to the explicit and implicit hedonic and pragmatic aspects of UX and the overall attractiveness. The ANOVA results

	Means (standard deviations)		F	p
	Text-based (n = 129)	Parallax storytelling (n = 137)		
Explicit social sustainability	74.690 (21.403)	80.000 (15.858)	5.327	0.022
Implicit social sustainability	72.890 (18.841)	75.425 (12.566)	1.684	0.196
Explicit ecological sustainability	76.389 (20.127)	80.900 (13.972)	4.553	0.034
Implicit ecological sustainability	74.548 (17.137)	79.286 (9.730)	7.802	0.006
Explicit economic sustainability	52.326 (20.995)	55.231 (20.287)	1.318	0.252
Implicit economic sustainability	53.315 (18.960)	56.865 (19.008)	2.324	0.129
Explicit brand attitude	61.305 (23.783)	66.363 (19.871)	3.558	0.060
Implicit brand attitude	65.454 (22.063)	73.090 (16.928)	10.098	0.002
Explicit perspicuity	51.066 (23.812)	66.362 (20.665)	31.412	0.000
Implicit perspicuity	52.268 (17.589)	62.744 (16.310)	25.406	0.000
Explicit efficiency	65.019 (23.806)	73.266 (20.320)	9.270	0.003
Implicit efficiency	63.407 (18.632)	69.150 (14.780)	7.805	0.006
Explicit dependability	54.302 (25.386)	70.183 (21.527)	30.399	0.000
Implicit dependability	52.844 (18.868)	64.837 (17.818)	28.435	0.000
Explicit stimulation	56.202 (22.242)	69.936 (18.008)	30.801	0.000
Implicit stimulation	55.272 (19.243)	64.333 (15.784)	17.718	0.000
Explicit novelty	58.592 (23.661)	71.168 (19.931)	22.072	0.000
Implicit novelty	57.457 (19.399)	65.718 (17.396)	13.401	0.000
Explicit attractiveness	71.667 (20.920)	80.475 (18.239)	13.438	0.000
Implicit attractiveness	67.266 (16.929)	72.473 (13.897)	7.553	0.006
Price premium	56.008 (27.292)	61.496 (22.942)	3.165	0.076
Purchase intention	48.450 (27.064)	51.460 (25.186)	0.883	0.348

Table 1.
Results of the one-way ANOVA testing the effects of text-based vs parallax storytelling conditions

partly support [H1a](#) and [H1b](#). Storytelling via parallax has a significant impact on the transmission of brand associations in terms of implicit and explicit brand sustainability perception. This accounts for explicit social sustainability ($\Delta M_{\text{exp}} = 5.31, F_{1,266} = 5.327, p = 0.022, \eta^2 = 0.020$) and explicit and implicit ecological sustainability ($\Delta M_{\text{exp}} = 4.51, F_{1,266} = 4.553, p = 0.034, \eta^2 = 0.0170$; $\Delta M_{\text{imp}} = 4.74, F_{1,266} = 7.801, p = 0.006, \eta^2 = 0.029$). For implicit social sustainability ($\Delta M_{\text{imp}} = 2.5342, F_{1,266} = 1.684, p = 0.196, \eta^2 = 0.006$) and both explicit and implicit economic sustainability ($\Delta M_{\text{exp}} = 2.9056, F_{1,266} = 1.318, p = 0.252, \eta^2 = 0.005$; $\Delta M_{\text{imp}} = 3.5508, F_{1,266} = 2.234, p = 0.129, \eta^2 = 0.009$), no differences between the text-based and parallax storytelling conditions are observed. [H2a](#) and [H2b](#) address the effect of the two conditions on implicit and explicit brand attitudes. Empirical evidence of a significant impact on implicit brand attitude ($\Delta M_{\text{imp}} = 7.6360, F_{1,266} = 10.098, p = 0.002, \eta^2 = 0.037$) and explicit brand attitude ($\Delta M_{\text{exp}} = 5.0576, F_{1,266} = 3.558, p = 0.060, \eta^2 = 0.013$) emerges. Thus, the parallax storytelling condition significantly enhances the overall implicit and explicit brand attitudes relative to the text-based condition. Accordingly, the empirical results support [H2a](#) and [H2b](#).

[H3a](#) is supported by providing evidence for the assumption that parallax storytelling positively affects the willingness to pay a higher price for the brand ($\Delta M = 4.8886; F_{1,266} = 3.165, p = 0.076, \eta^2 = 0.012$). Furthermore, empirical evidence for a significant difference between the two conditions is not found for purchase intention ($\Delta M = 3.0102; F_{1,266} = 0.883, p = 0.348, \eta^2 = 0.003$). Thus, [H3b](#) is not supported.

[H4a–H4d](#) address the differences in UX between the text-based and parallax storytelling conditions. The results show that the participants significantly differ in their perception of pragmatic UX on explicit and implicit information processing levels. Significant differences in perspicuity ($\Delta M_{\text{exp}} = 15.2966, F_{1,266} = 31.412, p = 0.000, \eta^2 = 0.106$; $\Delta M_{\text{imp}} = 10.4766, F_{1,266} = 25.406, p = 0.000, \eta^2 = 0.088$), dependability ($\Delta M_{\text{exp}} = 15.8802, F_{1,266} = 30.399, p = 0.000, \eta^2 = 0.103$; $\Delta M_{\text{imp}} = 11.9932, F_{1,266} = 28.435, p = 0.000, \eta^2 = 0.097$) and efficiency ($\Delta M_{\text{exp}} = 8.2470, F_{1,266} = 9.270, p = 0.003, \eta^2 = 0.034$; $\Delta M_{\text{imp}} = 5.7438, F_{1,266} = 7.805, p = 0.006, \eta^2 = 0.029$) are observed, with the parallax storytelling condition obtaining better evaluations for pragmatic qualities. The same empirical evidence is observed for hedonic UX on both the novelty ($\Delta M_{\text{exp}} = 12.5762, F_{1,266} = 22.072, p = 0.000, \eta^2 = 0.077$; $\Delta M_{\text{imp}} = 8.2612, F_{1,266} = 13.401, p = 0.000, \eta^2 = 0.048$) and the stimulation ($\Delta M_{\text{exp}} = 13.7346, F_{1,266} = 30.801, p = 0.000, \eta^2 = 0.104$; $\Delta M_{\text{imp}} = 9.0611, F_{1,266} = 17.718, p = 0.000, \eta^2 = 0.063$) dimensions. Thus, [H4a–H4d](#) are supported.

Finally, the overall explicit and implicit attractiveness of the website obtains higher evaluations under the parallax storytelling condition ($\Delta M_{\text{exp}} = 8.8078; F_{1,266} = 13.438, p = 0.000, \eta^2 = 0.048$; $\Delta M_{\text{imp}} = 5.2064, F_{1,266} = 7.553, p = 0.006, \eta^2 = 0.028$), which supports [H5a](#) and [H5b](#).

5.2 Testing the causal relationships between the factors ([H6–H9](#))

To empirically test the assumed model and the hypotheses related to the causal relationships between the factors, structural path modeling that uses PLS-SEM is employed. This approach allows the simultaneous assessment of the measurement and structural models and is an appropriate and applicable method for testing both the formative and reflective measurements in one model ([Chin et al., 2003](#); [Hair et al., 2013](#)). In more detail, a recommended two-step approach for PLS analysis was conducted ([Henseler et al., 2009](#); [Hair et al., 2012](#)) that uses SmartPLS 3.0. Thus, the measurement model (outer model) was evaluated first before the structural model (inner model) was assessed.

To assess the common method variance ([Podsakoff et al., 2003](#)), we conduct a [Harman's \(1976\)](#) one-factor test. This test determines whether a single factor accounts for most of the covariance in the relationships between the independent and dependent variables. The resulting principal component factor analysis reveals that common method bias presents no

problems in our study. The result of the first factor accounts for 35.73% of the variance, which shows that no single factor accounts for a majority of the covariance in the variables.

5.2.1 *Evaluation of the measurement model.* For a reliable and valid measurement of the latent variables, we followed the suggestions of [Chin \(1998\)](#) and his catalog of criteria for assessing partial model structures. Only if the measurement models exhibit a satisfactory degree of validity and reliability, the assessment of the structural model's properties be worthwhile and deliver meaningful/conclusive results ([Henseler et al., 2009](#)).

5.2.2 *Formative constructs.* Regarding the evaluation of the formative measurement models and the explicit and implicit dimensions of pragmatic and hedonic UX (see [Table 2](#)), [Table 3](#) represents the results of the reliability and validity assessments of these manifested variables. Given that formative measures cannot be assessed by using conventional statistical evaluation criteria for reflective measures ([Hair et al., 2011](#)), we follow the recommendations of [Diamantopoulos et al. \(2011\)](#). Understood as the indicators' relative importance with respect to forming the summed scale that represents the latent variable, the outer weights explain the latent variables with a small to high impact. As shown in [Table 3](#), nearly all formative indicator weights are significant and higher than 0.1. Only the indicators for explicit and implicit dependability do not meet the requirements. Since all factors are necessary to cover all relevant facets of UX from a theory-driven perspective ([Cenfetelli and Bassellier, 2009](#)), and the central components of a construct can be lost if items are deleted ([Bollen and Lennox, 1991](#)), the indicators for explicit and implicit dependability were not omitted.

With reference to the measurement challenge of avoiding multicollinearity (indicator collinearity), the maximum variance inflation factor (VIF) for the formative measures is 1.585 for explicit perspicuity, as shown in [Table 3](#). These findings indicate that multicollinearity is unlikely to negatively affect the results against the background of the widely recommended and accepted cutoff value criteria of 10 (e.g. [Kleinbaum et al., 1988](#); [Diamantopoulos and Winklhofer, 2001](#)).

5.2.3 *Reflective constructs.* [Table 4](#) reports the manifest variables of the corresponding reflective constructs. With 0.717 being the lowest factor loading, the results reveal sufficient

Explicit and implicit hedonic and pragmatic user experiences

Table 2.
Variables of the
formative
measurement models

UX_Perspicuity	<i>"The online shop is very clear"</i>
UX_Efficiency	<i>"The online shop is very useful/efficient"</i>
UX_Dependability	<i>"The online shop is very predictable"</i>
UX_Stimulation	<i>"The online shop is very inspiring"</i>
UX_Novelty	<i>"The online shop is very inventive"</i>

Table 3.
Assessing the
formative
measurement models

Formative indicator → latent variable	Original sample	Sample mean	SD	T-statistics	p-value	VIF
UX_Explicit Perspicuity → Explicit pragmatic UX	0.226	0.225	0.089	2.533	0.011	1.585
UX_Explicit Efficiency → Explicit pragmatic UX	0.850	0.848	0.064	13.274	0.000	1.488
UX_Explicit Dependability → Explicit pragmatic UX	0.019	0.015	0.065	0.289	0.773	1.084
UX_Explicit Stimulation → Explicit hedonic UX	0.650	0.648	0.079	8.266	0.000	1.533
UX_Explicit Novelty → Explicit hedonic UX	0.468	0.467	0.084	5.559	0.000	1.533
UX_Implicit Perspicuity → Implicit pragmatic UX	0.388	0.386	0.110	3.542	0.000	1.208
UX_Implicit Efficiency → Implicit pragmatic UX	0.770	0.762	0.082	9.399	0.000	1.194
UX_Implicit Dependability → Implicit pragmatic UX	0.059	0.060	0.090	0.653	0.514	1.018
UX_Implicit Stimulation → Implicit hedonic UX	0.701	0.698	0.081	8.666	0.000	1.158
UX_Implicit Novelty → Implicit hedonic UX	0.500	0.497	0.092	5.420	0.000	1.158

Explicit and implicit online shop attractiveness

“The online shop is . . .

*Appealing”
Pleasant”
Attractive”*

Explicit and implicit brand attitude

“The brand is . . .

*Nice”
Good”
Kindly”
Great”
Smart”
Lovely”*

Behavioral intention

Price premium “I am willing to pay a higher price for products of this brand compared to average products”
Purchase intention “I plan to buy products of this brand in the future”

Table 4.
Manifest variables of
the reflective
measurement models

indicator reliability for all six constructs. In addition, the PLS model estimation presented in Table 5 exhibits satisfactory results in terms of internal consistency (Bagozzi and Yi, 1988). The estimated average variance extracted ranges from 57% to 88%, the Cronbach’s alphas range from 0.850 to 0.950 and the composite reliability values range from 0.889 to 0.960. Furthermore, all tested latent variables satisfy the Fornell-Larcker criterion requirements (Fornell and Larcker, 1981) and thus indicate discriminant validity.

5.2.4 Evaluation of the structural model. The inner model was assessed with respect to the variance accounted for regarding the predictive relevance of the exogenous latent variables. As shown in Table 6, the calculated coefficients of determination of the endogenous latent variables (R^2) range from 0.318 (explicit brand attitude) to 0.710 (explicit attractiveness). According to Chin (1998), these values range from moderate to satisfactory. In addition, all Stone-Geisser’s Q^2 values (Geisser, 1974; Stone, 1974) are higher than zero for all endogenous latent variables, with 0.184 being the minimum Q^2 value, which indicates adequate predictive power for the introduced conceptual model.

Finally, a nonparametric bootstrapping procedure (5,000 resamples) was run to test the proposed hypotheses between the latent variables of our model. The estimated path coefficients are provided in Table 7. The data analysis and the corresponding results reveal the following insights regarding our initial hypotheses.

Referring to the effect of UX on the overall attractiveness of the online shop, our results verify that explicit hedonic UX performances are significantly positively related to the overall

	Factor loadings	Average variance extracted	Cronbach’s alpha	Composite reliability	Fornell-Larcker criterion
Explicit brand attitude	0.852–0.908	0.799	0.950	0.960	0.894 > 0.677
Implicit brand attitude	0.717–0.810	0.572	0.850	0.889	0.756 > 0.677
Explicit attractiveness	0.852–0.902	0.784	0.862	0.916	0.885 > 0.678
Implicit attractiveness	0.784–0.828	0.646	0.727	0.846	0.804 > 0.622
Behavioral intention	0.937–0.947	0.888	0.874	0.940	0.942 > 0.589

Table 5.
Assessing the
reflective measurement
models

explicit ($\beta = 0.475, p < 0.001$) and implicit ($\beta = 0.299, p < 0.001$) online shop attractiveness. Moreover, implicit hedonic UX has a positive and significant effect on the overall explicit ($\beta = 0.103, p < 0.05$) and implicit ($\beta = 0.311; p < 0.001$) online shop attractiveness as well, which provides full support for H6a, H6b, H6c and H6d.

In focusing on the pragmatic qualities of online shops, the results reveal that explicit pragmatic UX significantly affects the explicit ($\beta = 0.374, p < 0.001$) and implicit attractiveness ($\beta = 0.141, p < 0.05$) of these shops. While the implicit pragmatic UX has a positive and significant effect on implicit online shop attractiveness ($\beta = 0.149; p < 0.01$), no significant effect on explicit online shop attractiveness ($\beta = 0.042, p < 0.350$) can be confirmed. Thus, H7a, H7b and H7d are confirmed, and H7c is rejected.

The next set of hypotheses focuses on the transfer of online shop characteristics to brand-related measures, which is represented by the effects of explicit and implicit online shop attractiveness on explicit and implicit brand attitudes. The results support H8a, H8b and H8d, which represent the effects of explicit attractiveness on explicit ($\beta = 0.581, p < 0.001$) and implicit ($\beta = 0.281, p < 0.001$) brand attitudes and the effect of implicit attractiveness on implicit brand attitude ($\beta = 0.357, p < 0.001$). The effect of implicit attractiveness on explicit ($\beta = -0.024, p < 0.800$) brand attitude is not supported, which leads to the rejection of H8c.

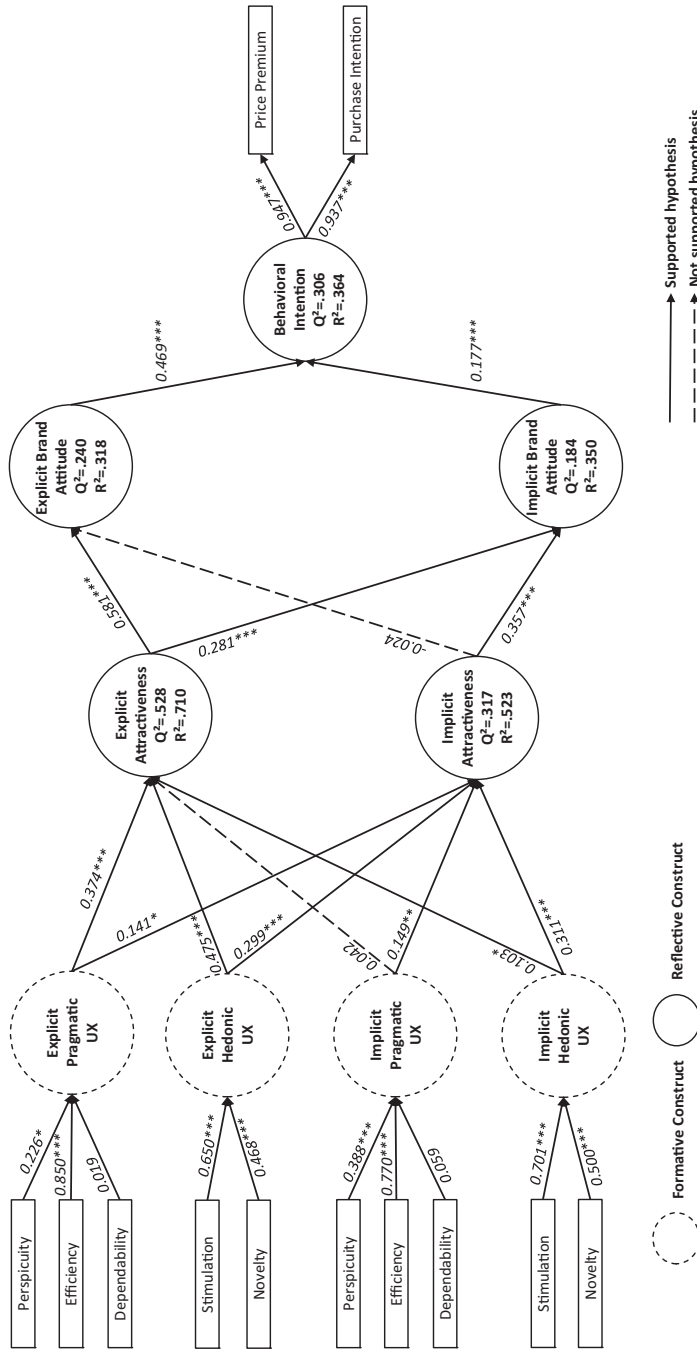
H9a and H9b argue that explicit and implicit brand attitudes influence brand-related behavior in terms of purchase intention and the willingness to pay a higher price. Empirical evidence of a significant impact of explicit ($\beta = 0.469, p < 0.001$) and implicit ($\beta = 0.177, p < 0.001$) brand attitudes on brand-related behavior is provided. Accordingly, the empirical results support H9a and H9b. Overall, the results reveal that twelve out of fourteen hypotheses receive full empirical support; therefore, a causal chain of direct and indirect effects from UX to behavioral intention is detected (see Figure 3).

Table 6.
Coefficient of
determination

Endogenous latent variables	R^2	Q^2
Explicit brand attitude	0.318	0.240
Implicit brand attitude	0.350	0.184
Explicit attractiveness	0.710	0.528
Implicit attractiveness	0.523	0.317
Behavioral intention	0.364	0.306

Table 7.
Bootstrapping results
for the structural
relations

Exogenous LV → endogenous LV	Original sample	Sample mean	Standard deviation	T-statistics	p-value
Explicit pragmatic UX → Explicit attractiveness	0.374	0.374	0.047	8.011	0.000
Explicit pragmatic UX → Implicit attractiveness	0.141	0.142	0.056	2.526	0.012
Explicit hedonic UX → Explicit attractiveness	0.475	0.476	0.050	9.443	0.000
Explicit hedonic UX → Implicit attractiveness	0.299	0.298	0.058	5.161	0.000
Implicit pragmatic UX → Explicit attractiveness	0.042	0.042	0.044	0.948	0.343
Implicit pragmatic UX → Implicit attractiveness	0.149	0.153	0.055	2.698	0.007
Implicit hedonic UX → Explicit attractiveness	0.103	0.102	0.043	2.396	0.017
Implicit hedonic UX → Implicit attractiveness	0.311	0.310	0.062	5.050	0.000
Explicit attractiveness → Explicit brand attitude	0.581	0.580	0.077	7.556	0.000
Explicit attractiveness → Implicit brand attitude	0.281	0.280	0.082	3.421	0.001
Implicit attractiveness → Explicit brand attitude	-0.024	-0.021	0.075	0.314	0.754
Implicit attractiveness → Implicit brand attitude	0.357	0.359	0.086	4.157	0.000
Explicit brand attitude → Behavioral intention	0.469	0.473	0.073	6.422	0.000
Implicit brand attitude → Behavioral intention	0.177	0.175	0.073	2.436	0.015



Note(s): †p < .10, *p < 0.05, **p < 0.01, ***p < 0.001

Figure 3. Empirical model

6. Discussion and implications

6.1 Discussion of the results

Numerous studies on topics such as UX, online shopping and storytelling have created a backdrop of an ever-growing research stream on consumer behavior in an online context. Some studies determine the impact of different usability or UX dimensions on users' website evaluation and/or on their attitudes toward it. Only a few of them investigate the relationship between a website's performance characteristics and brand-related aspects. However, the brand represents an important entity behind the system. Furthermore, there is less empirical evidence in a combined setting on how the performance of a website can be enhanced through storytelling by applying the parallax scrolling technique. Appealing storytelling is reported to have tremendous effects on consumers' perceptions, particularly in the branding context. In this study, we extended previous research approaches and explored how the design of an online shop and the presentation of relevant content influence visitors' UX, brand perceptions, brand attitudes and behavioral intentions. In general, the main contribution of the present manuscript is that it provides a deeper understanding of the efficiency of parallax storytelling in influencing consumers' UX with online shops. Moreover, we examined its ability to transmit relevant brand-related associations (here, brand sustainability) in forming brand attitudes and triggering related behavior, such as purchase intention and the willingness to pay a higher price. Since the UX itself and its multifaceted dimensions are known to affect brand measures as well (Garzotto *et al.*, 2010; van de Sand *et al.*, 2020; Lee *et al.*, 2018), the work reported here expands the analysis from stimulus-oriented effects to a causal relationship analysis in order to provide a deeper understanding of the interrelations between platform UX and brand-related KPIs. Accordingly, structural equation modeling was used to detect the interaction mechanism between the and brand-related variables. This procedure enables us to gain deep insights into which dimensions strongly drive success in online shops by simultaneously considering the role played by consumers' explicit and implicit information processing.

First, we hypothesized that using parallax scrolling, as a more interactive and appealing technique to apply storytelling to online shops, will positively influence platform- and brand-related measures. The results indicate that the parallax storytelling technique enhanced the website's performance in terms of hedonic and pragmatic UX and overall attractiveness. This applies to both the explicit and implicit information processing paths. Remarkably, despite the rather playful and interactive technique being noted, the pragmatic qualities of the online store were also improved, which is contrary to the existing results, where the efficiency of parallax websites was reduced (Mahardika *et al.*, 2018). However, since the present case concerns an online shop, and the participants were also supposed to search for products and corresponding information, it can be confirmed that the use of parallax storytelling also improves utilitarian performance indicators. Moreover, explicit and implicit hedonic performance indicators and the explicit and implicit overall attractiveness of the online shop were increased through parallax storytelling. Previous results, which state that parallax scrolling does not increase usability (in terms of pragmatic aspects) but affects hedonistic features or that users encounter usability problems when interacting with parallax scrolling websites (Yamin and Jaafar, 2013; Frederick *et al.*, 2015; Wang and Sundar, 2018), are not supported by our underlying findings. Instead, parallax storytelling affects pragmatic and hedonic UX as well as overall attractiveness, explicitly and implicitly, which clarifies that parallax storytelling represents an efficient means to improve the quality of the overall UX.

Second, the effects on brand-related and behavioral measures were examined, showing that, again, parallax storytelling positively affects most of the brand-related KPIs. Explicit and implicit brand attitude reached higher scores under the parallax storytelling condition as well as explicit and implicit ecological sustainability, explicit social sustainability and the behavioral variable of the willingness to pay a higher price for the products of the brand. This

could be because the interactivity of modality provided by the parallax scrolling technique not only can increase overall UX but also leads to several psychological outcomes, such as attitudes, beliefs and information processing (Oh *et al.*, 2013; Wang and Sundar, 2018). One reason that needs further research could be the perception of natural mapping and the feeling of presence, which have been shown to influence website-related features (Oh *et al.*, 2013) and could now affect brand-related aspects. Nevertheless, no significant differences between the text-based and parallax storytelling conditions were found for some indicators, such as the implicit social brand sustainability, explicit and implicit economic sustainability dimensions, as well as purchase intention. As the study included an unknown brand and offered no information about the economic performance/sustainability of the brand, this could explain the indifferent assessment of economic sustainability as there is no transfer of information and, thus, no knowledge about it. For social brand sustainability, one reason could be the unmistakable intensity with which the social orientation of the brand was promoted, which could be perceived in the flow of website navigation so that effortless unconscious/automatic information processing was able to lead to a similar increase in implicit knowledge (Dietrich, 2004) under both conditions.

Despite some exceptions that are justifiable by the underlying context, parallax storytelling enables an efficient transmission of brand-related associations in consumers' minds, enhances their explicit and implicit brand attitudes and increases the monetary value of the brand by enhancing consumers' willingness to pay a higher price. Significant differences in the purchase intention between the text-based and parallax storytelling conditions were not observed in the present study, meaning that the presentation technique itself does not solely exert any remarkable difference. Since brand awareness is known to have a strong impact on purchase intention (Chi *et al.*, 2009), and an unknown brand was (intentionally) used, the presentation technique alone might not cause an ad hoc reaction to overcome barriers to buying a completely new and unknown brand. Especially regarding coffee, brands enjoy a high level of loyalty (Tam *et al.*, 2009); thus, consumers might be hesitant to purchase new brands just by the influence of brief exposure to an online shop. Nevertheless, the ANOVA results serve only to analyze the direct effect of the design (text-based vs parallax storytelling) on the platform- and brand-related indicators. However, the UX also affects the perceptions and actions of consumers; therefore, the causal analysis provides more detailed insights into the interrelations between the constructs. For this purpose, a model was investigated that examines a generalized UX-attitude-behavior relation, including the explicit and implicit dimensions. A closer look at the weightings of the formative UX dimensions shows that the pragmatic UX is driven particularly by the efficiency of the website, which means that a seamless flow and the solving of tasks without unnecessary effort are therefore the strongest drivers for users' utilitarian UX on both an explicit and an implicit level. Surprisingly, in the underlying research, dependability does not significantly contribute to the creation of pragmatic UX. According to Hinderks *et al.* (2019), the importance of dependability could be higher for digital products such as business software, whose usage is more goal-oriented, than for non-task-related purposes. Furthermore, slight inaccuracies in the predictability might not cause essential trouble for the UX as long as the objectives of efficiency and perspicuity (being clear and understandable) are met. Stimulation and novelty show significant and meaningful importance with respect to forming explicit and implicit hedonic UX, which means that both factors significantly contribute to the creation of pleasurable experiences throughout the online shopping experience.

Both explicit and implicit UX have a significant impact on the overall perceived attractiveness of the online shop. When observing the explicit and implicit pragmatic and hedonic UX dimensions separately, the tendency becomes apparent that for both information processing paths, hedonic attributes (which are characterized by the uniqueness and

stimulation of an online shop) exert a slightly stronger influence than pragmatic characteristics (dependability, efficiency and perspicuity) on the overall attractiveness of the online shop. Nevertheless, both the pragmatic and hedonic UX aspects significantly affect the overall attractiveness; accordingly, both dimensions should be considered during the creation of branded platforms. Subsequently, explicit and implicit online shop attractiveness positively influences explicit and implicit brand attitudes, which, in turn, positively trigger users' purchase intention and willingness to pay a higher price. The results show that implicit pragmatic UX does not exert a significant effect on explicit attractiveness. The same holds for the effect of implicit attractiveness on explicit brand attitude. In addition, it can be observed that in the specific application context, the implicit path coefficients are lower than those of the explicit effect relationships. As mentioned earlier (cf. chapter 3.1), type 1 processes continuously generate responses unless they intervene in more distinctive type 2 processes (Kahneman and Frederick, 2002; Evans and Stanovich, 2013). Moreover, the implicit system encompasses processes of implicit learning and conditioning that are often based on past experiences (Evans and Stanovich, 2013). Since an unknown brand was used in the underlying study, no prior experiences were available that could have been automatically and implicitly processed; therefore, the reflective and explicit processes were more strongly activated. Furthermore, consumers' allocation of attention and processing resources is needed to comprehend and elaborate on new brand information (MacInnis *et al.*, 1991) and form associations in consumers' minds (Limbach *et al.*, 2019). In the long term, however, information can be learned and is no longer questioned by system 2. Nevertheless, in most of the causal relationships, an implicit and significant effect is observed, including an effect on the behavioral variable, which shows that both processes affect perceptual and behavioral measures and enhance the explanatory power of the model. Thus, to successfully target consumers and efficiently communicate with them, both processes must be considered and addressed, either in market research or in the implementation of new communication measures. Overall, this study reveals a causal chain of meaningful effects – from UX and online shop attractiveness to brand attitude and finally to consumers' behavioral intentions.

6.2 Theoretical implications

As digital content continues to proliferate and the number of online shops rapidly increases, researchers have become increasingly interested in understanding how to enhance UX and how UX affects brand-related attributes and behavioral intentions. The first contribution of this manuscript is that it provides a deeper understanding of the efficiency of parallax storytelling in improving platform-related performance in terms of UX and brand-related measures – namely, perceptual and behavioral measures. This study further examines the causal relationships among UX, brand attitudes and brand-related behavioral intentions in terms of purchase intention and price premiums. Explicit and implicit paths of human information processing are considered. Traditional studies related to online consumer behavior often rely on the theory of planned behavior (TPB), the theory of reasoned action (TRA) or the technology acceptance model (TAM) as the underlying mechanisms and methods to influence behavior. These approaches do not allow conclusions about the particular aspects of stimuli that are responsible for outcomes. For example, the results cannot tell us which aspects of a technology or an online shop are responsible for enhancing perceived ease of use. Through the multimethod approach used (experiment, explicit and implicit measures and SEM), the current study addresses this theoretical limitation and allows accurate statements on how parallax storytelling affects the most important aspects of the causal chain, and how it is a factor of success in communication in an online shop context.

Furthermore, this study provides an important contribution to the research stream of storytelling in an online shopping context. Further research approaches have focused on the effects of storytelling on entertainment potential and immersion/transportation – e.g. in a

video game context (Lugrin *et al.*, 2010), for educational uses (Robin, 2008) and for social movements (Dimond *et al.*, 2013). Some studies have analyzed the importance of story plots, archetypes, the narrative structure and consumer identity as structured by narratives and their effects on brands (Elliott and Wattanasuwan, 1998; Escalas and Bettman, 2000; Fournier, 1998; Schembri *et al.*, 2010; Murray, 2002; Thompson and Haytko, 1997; Woodside *et al.*, 2008; Megehee and Woodside, 2010). Moreover, research on storytelling and online UX has focused solely on product-related outcomes (Mahardika *et al.*, 2018) or on website UX *per se* (Frederick *et al.*, 2015; Wang and Sundar, 2018) and has overlooked the transfer to brand-related KPIs and behavioral intentions. Hence, the present results add significant empirical insights to the literature on the underlying mechanisms of storytelling in an online shopping context, which is related to UX, brand-related outcomes and the interrelation between these variables.

In addition, this research approach that combines implicit and explicit associations is unique in this context and shows how the influences appear through both information processing paths (systems 1 and 2). By drawing on theories and methods of psychology, marketing, consumer behavior, brand research and consumer neuroscience, this study further provides a more holistic understanding of human perception and behavior in online contexts. This refers to both the perception of an online shop's UX and brand-related measures.

6.3 Practical implications

Major practical implications can be derived from the findings of the present study. Because both implicit and explicit UX and online shop attractiveness are found to be strongly relevant, marketing managers must perform well on both information processing paths. Neglecting this influence on the explicit or implicit levels can result in a negative impact on an online shop's attractiveness and adversely affect brand-related and behavior-relevant variables. Referring to the formative constructs of UX, hedonism, in addition to goal-oriented drivers, represents a relevant influencing factor that can be driven by stimulation in and uniqueness of an online shop. An efficient way to enhance these aspects is to implement storytelling by using the parallax technique. As a result, the pragmatic qualities of an online shop can be explicitly and implicitly increased in terms of efficiency, dependability and perspicuity and online shops can simultaneously perform better on hedonic qualities such as stimulation and uniqueness. Furthermore, telling stories and implementing this communication technique in online shops helps companies and brands transport the desired brand associations to visitors and anchor these associations in consumers' minds in explicit (conscious) and implicit (unconscious) ways to thus form the core of the brand. Accordingly, visitors must be able not only to enjoy their visit to online shops but also to easily gather information from the shop to have the chance to anchor relevant associations in their mind. Overall, the quality of the experience influences the perception of brand-related KPIs. The UX, in turn, as the driver of brand-related KPIs, can be positively influenced by the use of parallax storytelling in the present context. Thus, devoting attention to the design of an online shop by properly implementing and managing its content, pictures and modality interactivity positively affects brands.

To ensure that the website is attractive to the target group and that the goals of the company are achieved, marketing practitioners are advised to carry out marketing research and to test the explicit and implicit attributes of their online shop by using appropriate methods. This can ensure the long-term success of their online presence and represent a competitive advantage in the saturated online shopping market.

7. Limitations and further research

This study faces several limitations that provide future research opportunities. The research has shown that brand associations can be transmitted effectively through storytelling, but

this finding applies to the sustainability-related associations that were triggered in this study. Therefore, future research should examine whether digital storytelling in online shops is also an efficient means of communication to trigger associations related to functional brand characteristics such as the selection of materials for products, technical production processes, functional characteristics, the performance of products or the overall perceived value of the brand and its products. Some researchers argue that parallax scrolling is more suitable to improve the efficiency of a website with a hedonic nature (Ku, 2015), and some studies have shown that this technique enhances the ease of use (Wang and Sundar, 2018) and reduces cognitive effort (Mahardika et al., 2018) during online shopping; therefore, the effects on UX and especially brand-related measures in different hedonic and nonhedonic contexts should also be investigated in the future. Another important limitation is that the present study covered a single coffee brand from the category of fast-moving consumer goods (FMCG). Therefore, investigations of other brands and products from FMCG and from other branches are needed. We further assume that the results might be different for well-known brands, which should be investigated in the future. Furthermore, our study used a combination of explicit and implicit research methods and therefore assessed individual perception and reactions on a holistic level. Nevertheless, other methods can be used to provide deeper insights; for example, through attention tracking, it would be possible to measure visitors' visual attention during online shop exposure (Bednarik and Tukiainen, 2007; Jansen et al., 2003). The application of additional neuroscientific methods (e.g. electroencephalography and facial recognition) could also extend the knowledge in this field and increase the insights into consumer behavior in an online context.

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Corresponding author

Evmorfia Karampournioti can be contacted at: Karampournioti@m2.uni-hannover.de

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