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## What is augmented reality marketing? Its definition, complexity, and future

Philipp A. Rauschnabel [a, e, f] ✉, Barry J. Babin [b] ✉, M. Claudia tom Dieck [c] ✉, Nina Krey [d] ✉, Timothy Jung [c] ✉

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# What is augmented reality marketing? Its definition, complexity, and future

## A R T I C L E   I N F O

## A B S T R A C T

Augmented Reality (AR) has received increased attention over the last years, both from managers and scholars alike. Various studies in the marketing discipline have tackled fragmented aspects of AR, such as its impact on sales or brands. Yet, a holistic approach to AR remains scarce. Therefore, the authors define "Augmented Reality Marketing" as a novel, strategic, and potentially disruptive subdiscipline in marketing. In conjunction, they discuss a nuanced customer journey model for AR Marketing strategy and propose the BICK FOUR framework (branding, inspiring, convincing, and keeping) as a tool to organize corresponding goals. Another contribution is the introduction of several fundamental differences between AR Marketing and traditional digital marketing concepts, such as redefining the reality concept (reduced reality, normal reality, and augmented reality in a metaverse context). Insights from 127 managers further enhance the current and future practices of AR Marketing. Finally, a discussion of ethical and legal considerations completes the assessment.

## 1. Introduction

A growing body of research tackles marketing-related issues surrounding Augmented Reality (AR) (e.g., Kumar, 2021; Rauschnabel, 2021a; Smink et al., 2020; Flavián et al., 2019; tom Dieck & Han, 2021). In AR, virtual content is integrated into a user's perception of the real-world. The extant research of AR Marketing has only sparsely outlined the broader umbrella of AR. AR Marketing represents a novel, potentially disruptive, subdiscipline within marketing. More specifically, similar to the advent of the world wide web accompanied by online marketing, search engine optimization, and social media, AR-infused marketing activities can be positioned within AR Marketing.

Here, we synthesize findings from academic research, industry presentations, and discussions during the 5th International AR VR conference with industry observations to present a definition of AR Marketing. Specifically, this special issue reflects a collection of articles enhancing the understanding of AR and its contributions to the marketing discipline. In total, several articles explore new AR Marketing-related concepts and developments, ranging from AR shopping apps (Smink et al., 2020), VR games (van Berlo et al., 2021), AR experiences associated with flow (Barhorst et al., 2021), and customer journeys in AR (Jessen et al., 2021). The various research contexts assess managerial perspectives, luxury products, and web-based versus AR presentations (Javornik et al., 2021; Kowalczuk et al., 2021; Sung, 2021). In light of these findings, we discuss (1) AR Marketing and (2) its unique characteristics. As such, AR represents a strategic element beyond being a promotional tool for sales and being limited to a customer scope (e.g., potential applicants, stakeholders, or publics). We also introduce, as part of AR Marketing, an AR customer journey model and summarize common objectives under the "BICK FOUR" framework – *branding, inspiring,*

*convincing,* and *keeping.* Managerial insights draw from a descriptive study reflecting industry perspectives that provide avenues for future research.

## 2. XR = Augmented and virtual reality

Rauschnabel et al. (2022) conclude that academic definitions about new reality formats remain fragmented and inconsistent, while often contradicting the industry lexicon. Upon examining four different popular definitions with experts, Milgram et al.'s (1995) "reality-virtuality continuum" remains the dominant framework to organize different digital reality formats; yet, this continuum presents some limitations. For instance, it lacks novel terms (e.g., Assisted Reality or XR), uses the term "Mixed Reality" inconsistently from its industry usage, and uses technical rather than user criteria to differentiate between formats. The reality-virtuality continuum typically distinguishes formats based on the proportion of real versus virtual content (rather than the type of content) or whether real content is overlaid with virtual content, or vice versa. However, these elements might not be important or noticeable by consumers. Based on a qualitative expert study, Rauschnabel et al. (2022) propose a new model that specifies XR as an umbrella term for all types of current and new realities where X represents a placeholder for "any" form of new reality (see also Dwivedi et al., 2021; Rauschnabel, 2021b). The term extended reality for XR, which is often used in everyday discussions, might be misleading since the term "extended" excludes VR because VR replaces rather than extends reality. Likewise, AR and VR should not be presented on the same continuum due to fundamental differences as for example discussed in Hilken et al. (2021). Following Rauschnabel et al. (2022), a distinction from VR should be made based simply on whether the physical environment is, at least visually, part of

the user experience (=AR) or not (=VR). More specifically, AR experiences can be described on a local-presence continuum ranging from Assisted to Mixed Reality, while VR experiences can be conceptualized on a telepresence-continuum ranging from atomistic to holistic. Importantly, high levels of local presence create user perceptions of virtual content as "being here" (i.e., within their physical environment due to high levels of realism or high levels of contextual embedding). Low levels of local presence indicate a more "functional" integration of virtual content, such as textual information. In contrast, telepresence in VR describes the degree to which users perceive themselves as being in the virtual world independent from their actual physical location.

## 3. A definition of Augmented Reality Marketing

Previous publications attempted to address "AR Marketing" and provide definitions suitable for specific research purposes at hand (e.g., Chylinski et al., 2020; Rauschnabel et al., 2019; Scholz & Smith, 2016). Based on these definitions and incorporating interdisciplinary insights from the 5th AR VR conference, we propose the following definition of AR Marketing:

AR Marketing is defined as the strategic integration of AR experiences, alone or in combination with other media or brand-related cues, to achieve overarching marketing goals by creating value for the brand, its stakeholders, and societies at large, while considering ethical implications.

The definition positions AR Marketing as a sub-discipline directly in line with an organization's overall marketing strategy rather than an isolated, one-time effort. Thus, it remains broad, goal-oriented, interdisciplinary, and requires a detailed exploration. As such, we will discuss it further in the subsequent sections.

### 3.1. The status quo of AR Marketing

Insights from a descriptive survey among German managers (N = 127) inform the various elements of AR Marketing. These managers have backgrounds in marketing or related fields and work in companies (>10 employees) employing B2C marketing-related positions including public relations (PR), management, and innovation management. Data were collected in Germany during 2020 using an online survey. While acknowledging the limitations that the ad hoc survey results are exploratory and based on a small sample, we find that 22% of the surveyed managers stated to be (very) familiar with AR, 28% already had engaged with AR professionally, and 39% had experiences with AR personally. As depicted in Fig. 1, 15% of managers are planning to use AR Marketing in the foreseeable future ("planners"; n = 19). 17% (n = 21) already use AR Marketing in certain areas, and 8% (n=10) apply it strategically (combined to "users", n = 31). A majority (60%, n = 76) are not currently using AR ("non-users", n = 76; n/a: n = 1). The main reason for not currently using AR Marketing is a lack of established AR Marketing tools within their specific industry (63%). None of the managers sees no future in AR.

### 3.2. Strategic concept

Why is AR Marketing a strategic concept? The term *strategic* implies a multi-faceted, well-planned, resource-based, long-term process. Although what exactly constitutes an AR Marketing strategy will evolve over time, general goals, technological resources, capabilities, and long-term integration with other strategies are likely critical to success.

First, the proposed definition emphasizes *concept* over function. Colloquially, marketing is often associated with the department that runs promotional campaigns. However, many marketing functions are carried out by departments with other names, such as PR, communications, human resources (HR), customer service, or sales. The term function typically implies a "silo" or a specific "marketing department." Thus, like the marketing concept itself, AR Marketing strategy spans multiple business functions.

Second, value-producing AR should be goal-driven rather than technology-driven. Examples of value that AR marketing could provide include, but are not limited to, utilitarian (e.g., improving people's efficiency), hedonic/experiential (e.g., engaging brand stories or games), social (e.g., connecting with other brand fans in multi-user AR or anthropomorphized brand mascots), eudaimonic (e.g., improving well-being or personal growth), inspirational (e.g., fostering imagination or inspiration), or edutainic (e.g., gamified learning experiences or the feeling of being more competent consumers) value. However, these examples do not reflect current AR Marketing use cases yet. That being said, AR Marketing faces a challenge of designing and integrating new touchpoints, or extending existing touchpoints, effectively into (customer) journeys. The deployment of AR itself is not a solution. In
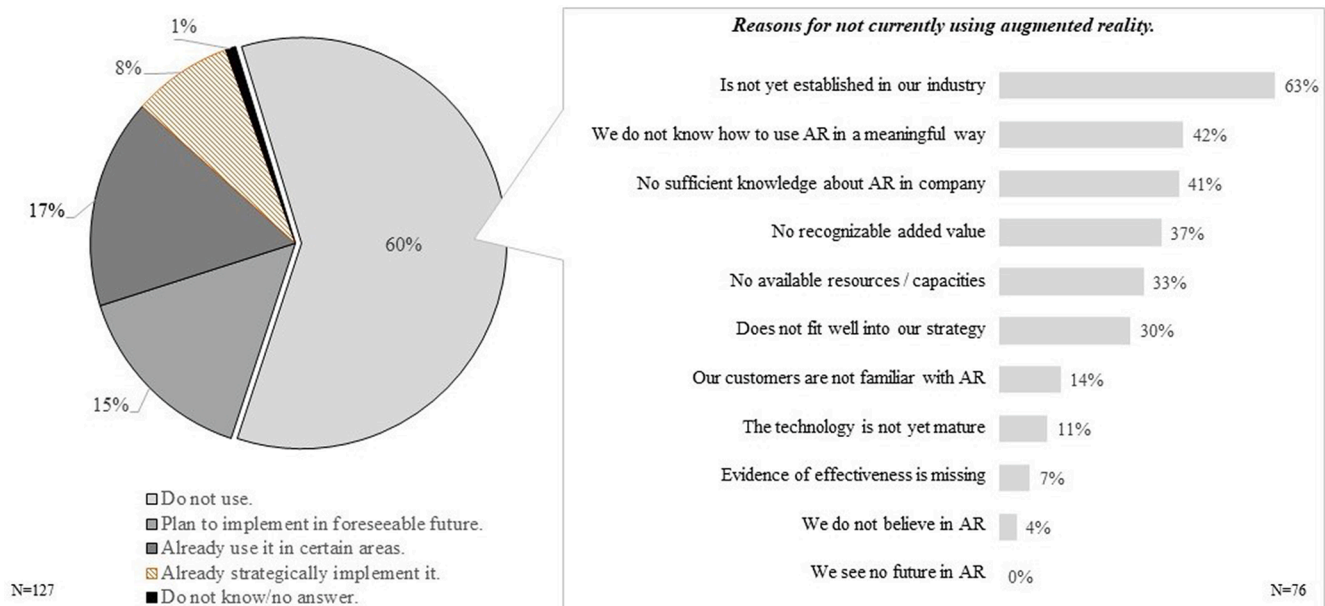


**Fig. 1.** Augmented Reality Marketing usage.

**Table 1**
A customer journey model for Augmented Reality (AR) Marketing with KPIs.

| 6 Phases | Description | Example | Common Objectives (BICK Four) | Example constructs / KPIs |
|---|---|---|---|---|
| 1: Awareness | Consumer gets to know and gets aware of a brand and its offers. | John is reading an article about a recent Porsche model. He downloads the Porsche AR app and further researches the car at home. He is learning more about Porsche and the specific model. | Branding | Brand awareness, brand attitude, brand image, brand relationships |
| 2: Exploration | Consumer explores a brand, its products, and offers without a specific purchase need, but to identify new needs or opportunities. | It is a Friday evening and Sarah is sitting on her couch. Although she does not need more cosmetics, she is exploring new makeup products – including some unusual ones she would never try in a physical store – using the Sephora AR app. | Inspiring | Needs, wants, inspiration (inspired-by) |
| 3: Planning | Consumer is aware of the need to purchase a specific type of product and plans the purchase in detail. | Nina wants to buy a specific couch. She wants to place it in a corner between some plants, but is worried it might look too "crowded" in the available space. So, she has also identified a suitable two-seater alternative. She tries both versions using the IKEA Place app to preview how both couches would look in her apartment. The buys the larger couch. | Inspiring, Convincing | Purchase intention of a specific item/service, willingness to pay inspiration (inspired-to) |
| 4: Purchase | Consumer purchases a product via AR. | Lucy has experienced multiple different pizzas at a Domino's restaurant using their AR app. She is clicking the buy button and orders the pizza she sees as a hologram on her table. | Convincing | Actual purchases (# of items, revenue, etc.) |
| 5: Use | Consumer uses the product<br>Use 1: Setup | Dirk bought Nanoleaf LED lights for his apartment. Before hanging them on the wall, he uses the setup app ("Layout Assistant") that allows him to plan and install the system by trying out various versions in AR. | Keeping | Convenience, service issues |
| | Use 2: Actual use | Tim is playing with his new Lego toys. He uses the Lego AR app to augment additional LEGO characters into his toys. | | Actual usage, evaluations |
| | Use 3: AR substitutes | Mandy's TV broke. Instead of purchasing a new hardware device, she decides to purchase an AR TV app for her Hololens. She can now display a virtual TV screen everywhere. | | Actual substitution, non-usage of physical counterparts |
| 6: Loyalty | Consumer becomes and/or stays loyal to a brand. | Chris has an issue with his car. He contacts the service provider via an AR service app. The representative applies an AR remote service assist to show how to fix the car by drawing in Chris' field of view. | Keeping | Net promoter score, loyalty, word-of-mouth for the AR experiences |

Note: KPI = Key performance indicator; BICK FOUR: Branding, Inspiring, Convincing, Keeping.
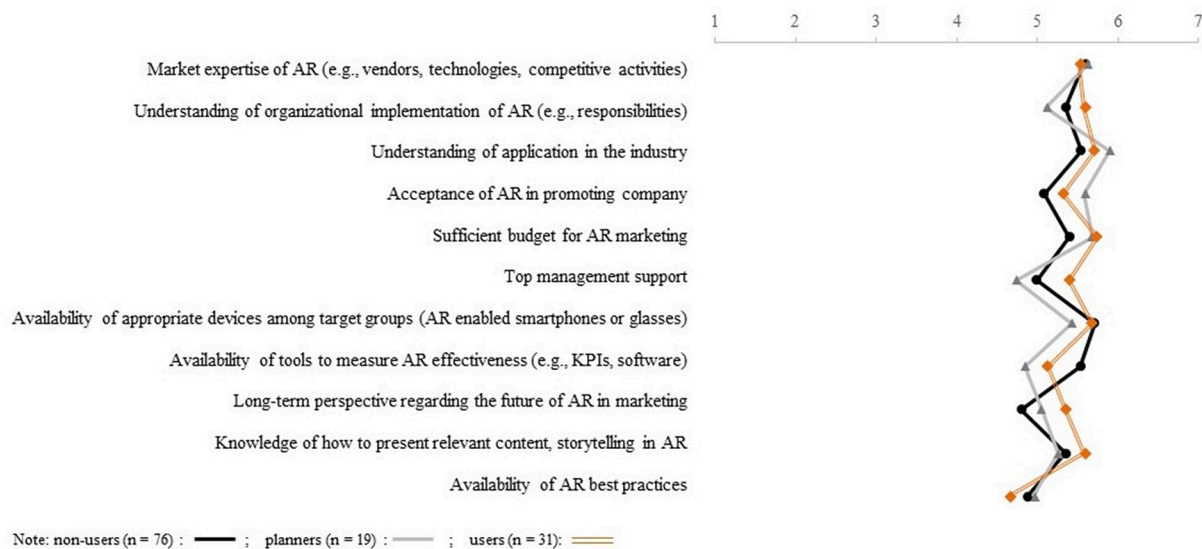
**Fig. 2.** Importance-assessment of Augmented Reality Marketing capabilities.
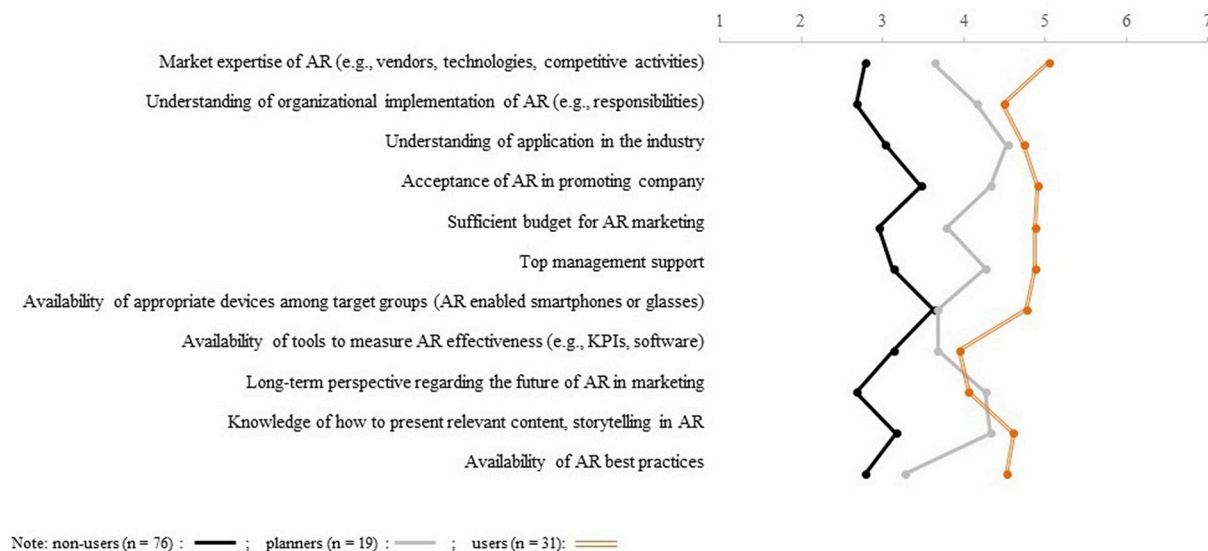


**Fig. 3.** Performance-assessment of Augmented Reality Marketing capabilities.

fact, AR typically interacts with other media and touchpoints. Thus, it must be well integrated with other media and marketing elements (e.g. CRM). As such, existing platforms have started to integrate AR features. For instance, Facebook offers the possibility to add AR elements into ads (e.g., a user's phone deploys the camera to virtually "try on" sunglasses) and Amazon offers an AR-view feature based on 3D models (eMarketer, 2020; Gatter et al., 2022). Likewise, other companies deploy offline ads that allow consumers to interact with virtual AR content via their smartphone (Yaoyuneyong et al., 2016; Sung et al., 2022). Adidas and the German AR company eyecandylab created the AR in-store storytelling experience "For The Oceans". Shop visitors could playfully experience a whale on their smartphones. In this gamified experience, they could learn about sea trash, micro particles, and how Adidas produces shoes from recycled plastic.

In marketing, customer journey maps represent a way to discuss and manage different touchpoint sequences. Prior research typically distinguishes between pre-purchase, purchase, and post-purchase phases, as well as between offline and online touchpoints (Krey et al., 2021; Lemon & Verhoef, 2016). AR Marketing may employ a more nuanced definition

of phases as AR involves a combination of online versus offline touchpoints hybrid AR touchpoints. Table 1 illustrates the B2C context customer journey model for AR use.

Furthermore, AR is relevant throughout the entire marketing mix (4 P's). Many discussions center around the idea of displaying products in AR or making offline promotional materials more interactive through AR elements (e.g., the IKEA Place app). However, AR can also play a role in areas such as the product mix. Lego offers AR features that extend their products virtually (Hinsch et al., 2020). Similar to other ancillary marketing elements (e.g., customer service), AR can provide specific features that enhance product value. Within the tourism management context, destination marketing organizations offer AR tours whereby visitors are able to explore points of interests interactively. AR can also reduce the complexity of tourism service encounters through enhanced visualization and personalization of experiences (Buhalis et al., 2019). Here, AR may be an ideal tool to bring history back to life, allowing tourists to explore the past while in the present (Schein et al., 2022). Research also explores wearable AR devices, like Google Glasses, as a means of enhancing learning experience (tom Dieck et al., 2018) and

**Table 2**

The BICK FOUR framework of AR Marketing objectives.

| Example constructs | Example research |
|---|---|
| *Branding* | |
| Build brand awareness. | Javornik et al. (2021) |
| Strengthen brand image. | Rauschnabel et al. (2019) |
| Increase employer attractiveness. | n/a |
| Reach new target groups with our brand. | Sung et al. (2021) |
| Present our offerings. | n/a |
| *Inspiring* | |
| Inspire customers. | Rauschnabel et al. (2019) |
| Generate customer needs. | Barhorst et al. (2021) |
| *Convincing* | |
| Generate buying interest. | Kowalczuk et al. (2021); Jung et al. (2021) |
| Enforce highewillingness to pay. | Heller et al. (2019a, 2019b) |
| Generate sales. | Tan et al. (2021) |
| Promote cross-selling / upselling. | Heller et al. (2019a, 2019b) |
| *Keeping* | |
| Increase customer loyalty. | Dacko (2017) |
| Improve customer service (after service). | n/a |
| Offer additional services to products. | Hinsch et al. (2020) |
| Offer customers added value through AR content. | Hinsch et al. (2020) |
| Keeping customers in the loop (top of mind). | n/a |

trying to get to over the next 10 years" (Robertson, 2016; online). Likewise, Post-it Notes could disappear if consumers find a more efficient way to attach virtual notes in their physical spaces. In terms of place, AR could offer new distribution channels. In the future, retailers might place entire shelves via AR into living rooms of their customers. Finally, pricing is involved as marketers try to determine how to price AR. Research suggests that AR increases consumers' willingness to pay (e.g., Huang, 2021; Heller et al., 2019a, 2019b), which may help to justify investment in AR. In addition to monetary exchange, consumers might receive AR benefits in return for personal data. AR can potentially generate volumes of rich data about a user and the user's environment, and thus, making AR a promising environment for targeted advertising.

Yet an important question remains: What skills, capabilities, and resources enable firms to leverage AR Marketing successfully? Managers rated eleven factors each identified in discussions at the AR VR conference on a 7-point importance scale (1 = not important at all; 7 = very important). Means were computed for users, planners, and non-users. In general, consensus prevails regarding the importance of different factors (Fig. 2). Perhaps not surprisingly, all factors were rated as highly important. Nevertheless, availability of devices among the target groups appears to be the most important criterion among all surveyed managers. The lack of availability ultimately prevents the dissemination of AR. In contrast, the availability of AR best practices received the lowest ratings of importance.
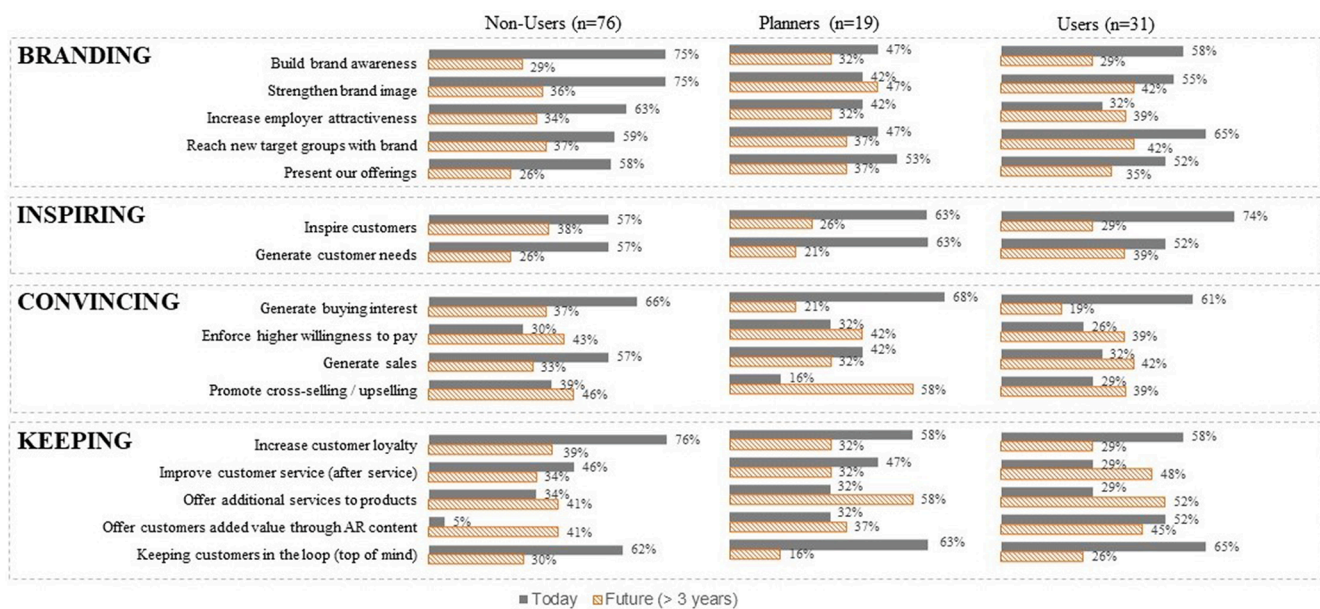


**Fig. 4.** AR Marketing Uses Cases and the BICK FOUR framework.

implementing embodiment in tourism experiences (Tussyadiah et al., 2018).

In the most advanced form, AR can be the product itself. For example, Niantic developed an AR version of their Pokémon characters – the Pokémon Go game. Another trend includes the development of "AR substitutes" of existing products by media companies (Rauschnabel, 2021a, 2021b). Consider, for instance, TV screens that could be replaced by a Netflix AR TV app on AR glasses. While such substitutes might sound futuristic, leading companies strive toward such developments. For example, when presenting Meta's (formerly Facebook) metaverse strategy at the F8 conference, CEO Mark Zuckerberg speculated that "[a] s a matter of fact, when we get to this world, a lot of things that we think about as physical objects today, like a TV for displaying an image, will actually just be $1 apps in an AR app store. So, it's going to take a long time to make this work. But this is the vision, and this is what we're

Differences did emerge related to how well companies perform in these factors (1 = very low/negative; 7 = very high/positive). Specifically, users and planners rate these factors consistently better than non-users (Fig. 3). In general, users report better performance than either planners or non-users. The low ratings of non-users may signal low expectations for the use of AR Marketing. Results also indicate that a lack of knowledge about AR in many companies, or a perception of AR as a toy rather than a powerful tool, might be contribute to low expectations. Users and planners tend to report relatively high acceptance within their companies, higher budgets, and a vision about AR's long-term future.

*3.3. Brands*

AR Marketing's definition intentionally focuses on brand rather than company. The term brand is more encompassing and includes typical

Increase from now to future

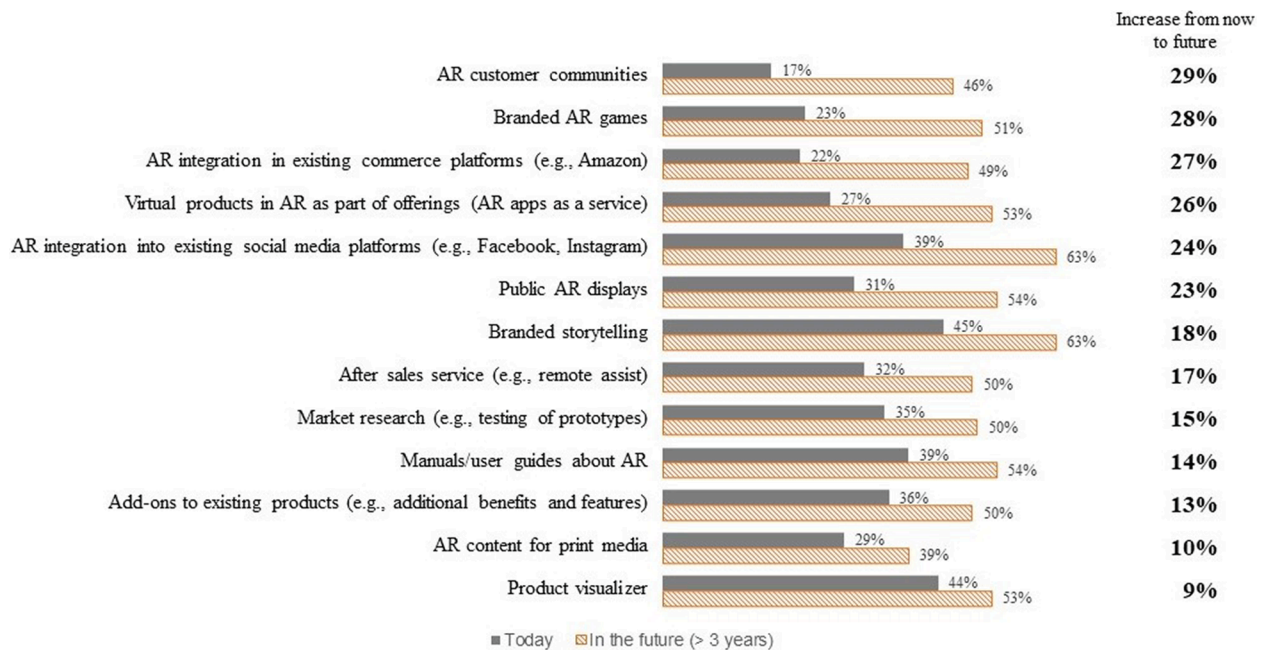| Use case | Today | In the future (> 3 years) | Increase |
|---|---|---|---|
| AR customer communities | 17% | 46% | **29%** |
| Branded AR games | 23% | 51% | **28%** |
| AR integration in existing commerce platforms (e.g., Amazon) | 22% | 49% | **27%** |
| Virtual products in AR as part of offerings (AR apps as a service) | 27% | 53% | **26%** |
| AR integration into existing social media platforms (e.g., Facebook, Instagram) | 39% | 63% | **24%** |
| Public AR displays | 31% | 54% | **23%** |
| Branded storytelling | 45% | 63% | **18%** |
| After sales service (e.g., remote assist) | 32% | 50% | **17%** |
| Market research (e.g., testing of prototypes) | 35% | 50% | **15%** |
| Manuals/user guides about AR | 39% | 54% | **14%** |
| Add-ons to existing products (e.g., additional benefits and features) | 36% | 50% | **13%** |
| AR content for print media | 29% | 39% | **10%** |
| Product visualizer | 44% | 53% | **9%** |

■ Today  ⊠ In the future (> 3 years)

**Fig. 5.** Uses cases in Augmented Reality Marketing.

consumer brands (e.g., Coke and Audi), non-profit organizations (e.g., United Way), media (e.g., New York Times), retailers (e.g., IKEA), people (e.g., celebrities, politicians), destinations (e.g., cities), sports teams (e.g. football clubs), and more. Therefore, many AR research projects from disciplines outside traditional marketing or retailing – such as tourism management – may be reinterpreted through the lens of AR Marketing. For instance, a large stakeholder study of Geevor Tin Mine Museum in Cornwall shows that AR is an effective tool in convincing potential tourists to visit a specific destination (Cranmer et al., 2018). Jung and tom Dieck (2017) suggest that effective use of multiple technologies including AR contributes to the co-creation of value for visitor experience at heritage sites. Further, Moorhouse, Jung, and tom Dieck (2019) show that AR drives tourist's satisfaction. Through the lens of AR Marketing, these and other examples of AR in a tourism context could be considered AR Marketing.

### 3.4. Goals

AR Marketing is not just about generating sales, but can be used to achieve a variety of marketing and eventually organizational goals. Tan et al. (2021) identify four broad uses in retail settings, namely AR can entertain and educate customers, help them evaluate product fit, and enhance the post-purchase consumption experience. From a processual perspective and aligned with the customer journey, marketing goals can be classified under the **BICK FOUR** terminology: *branding* (e.g., building brand awareness, product knowledge, and brand image), *inspiration* (e.g., to trigger new needs and wants), *convincing* (e.g., driving purchases or other decisions), and *keeping* (e.g., loyalty and re-usage intention). Table 2 depicts example goals for each of the four categories. Specific objectives differ based on the type of user and brand (e.g., B2B vs. B2C, customers vs. public, or company vs. destination) and a brand's overall (marketing) strategy. Furthermore, these categories of objectives align with the (AR) customer journey model proposed earlier (e.g., branding objectives might be particularly important in the awareness phase and inspiration in the exploration phase).

As part of the survey, managers rated these goals now and in the future (>3 years). Users evaluated these in terms of whether they currently and will pursue these goals, whereas non-users answered these questions hypothetically. As seen in Fig. 4, managers associate AR Marketing goals differently based on their usage status (i.e., user,

planner, or non-user). Nevertheless, *branding* and *inspiring* are important for today's AR Marketing, whereas objectives in *keeping* seem more relevant in the future. These findings confirm prior insights of a survey among 55 marketing managers by the Boston Consulting Group (Bona et al., 2018). A potential explanation for this finding is that *branding* and *inspiration* – for instance by AR games or product visualizers – can be relatively easy to develop and implement since they do not need to be integrated with existing ERP or CRM systems. Likewise, and maybe most importantly, such AR content runs on almost any consumer device. Differences between the three user groups might result from the previously discussed differences in AR capabilities.

### 3.5. AR marketing use cases

When asked about the relevance of specific AR Marketing use cases now and in the future (>3 years), findings mirror these objectives: Today's standard tools in AR Marketing – product visualizers – are expected to increase only by nine percentage points, whereas novel, more complex use cases such as AR communities or branded AR games will raise substantially more. Branded storytelling in AR (63 %) and AR content integrated in social media (63 %) were rated as common use cases in the future. However, many of these approaches do not exist in today's AR marketing practices or only as demonstrators. Many firms struggle with the development of effective use cases, since success factors known from established digital media (e.g., online advertising) might not be applicable to AR Marketing. Fig. 5 ranks the results of various AR Marketing use cases and approaches in order of increased relevance (differences in percentage points; rounded).

### 3.6. Societies at large

Societies at large is probably the most important element of the AR Marketing definition. AR Marketing, in particular in a non-profit environment, offers great potential to contribute to societies at large. As discussed earlier, AR Marketing can provide a variety of value to its users. For instance, AR Marketing can enrich communities by building AR into exhibits to appeal more visitors (tom Dieck & Jung, 2017) or to explain complicated issues about environmental protection to societies (Cranmer et al., 2018). However, AR presents many challenges as well. First, AR is based on data. Without data about users and their context,

AR will not be able to work; the reliance on data is fundamentally different from other forms of digital marketing (Dwivedi et al., 2021). For example, effective targeting in social media marketing requires information about a customer. The same is true for AR Marketing, but in addition to that AR needs a profound understanding of the user's environment. These technologies can collect, store, analyze, and interpret vast amounts of data about a user's physical surrounding which could be the identification of a consumer's current products but also about other people (e.g., through face recognition). Likewise, AR also includes Diminished Reality; from a consumer perspective, a "negative" form of AR that erases real content from the real-world (Rauschnabel et al., 2022). Erasable objects could be anything deemed unsightly including advertisements, industrial structures, cars, or even people (Kari et al., 2021). Moreover, AR content can distract from real-world threats and put users into danger, and furthermore, the exzessive long-term perception of AR content might also impact users' health in still unknown ways.

## 4. Discussion

### 4.1. How AR Marketing differs from extant marketing practices

How does AR differ from existing media and from existing marketing practices? Given the early stage of AR Marketing as a discipline on its own, these differences might not have fully been explored yet. However, we will discuss some important examples below.

First, reality is typically three-dimensional (3D) and not constrained by unnatural boundaries. Consider a sports fan whose house is decorated with branded memorabilia that can be combined with almost any other physical object (e.g., furniture). As such, "normal reality" encompasses what we experience, and have always experienced, in the physical world. In contrast, traditional (digital) media content is typically non-tangible and in 2D. Although "traditional online marketing" provides numerous advantages compared to "offline marketing," including interactivity, viral effects, or user generated content, it is generally restricted by the type/size of the hardware and independent from a user's physical surrounding. For instance, a branded sports team experience on Instagram can only be portrayed on the device's screen (e.g., photos of players and games). Compared to "normal reality", size restrictions and isolation from physical objects provide restrictions to the experiences itself. In addition, common interface technologies do not match natural behaviors well (e.g., using a mouse to select and to move a virtual object versus moving a physical object with one's hands). Thus, we argue that such experiences constitute "reduced reality."[1] When it comes to ubiquitous AR via technologically embodied AR glasses or AR contact lenses that people wear all day, digital content can be spatially embedded in the real-world ("persistence", as discussed in Rauschnabel et al., 2022). For example, sports fans can attach virtual objects, including 3D holograms of their favorite players or virtual mascots, at places they frequently visit such as their home, their way to work, or their offices. Multi-user AR and AR metaverses can furthermore allow different users to share and experience these hybrid worlds together and thus create community experiences, potentially mirroring these augmented worlds into VR spaces to reach physically separated people. With the exception of the AR glasses' field of view, the size of a display no longer presents a limitation. Advancements in interface technology (e.g., gesture control and haptic gloves) allow users to interact with AR content as if dealing with a physical object. These new functions also increase the perceived control users have about their (augmented) environment over the "normal reality." For example, a sports fan could rarely have a living mascot in the room. Yet, with an anthropomorphized hologram in AR ("desired enhancement of reality", see Rauschnabel, 2018), it's possible. In short, AR can combine benefits of the "reduced reality" (e.g. interactivity or accessibility) with benefits of the "normal reality" (e.g. unlimited space, 3D, or natural interaction with objects). Although we recognize that such AR scenarios are not yet common, recent advancements in technology, such as effective tracking hardware and algorithms with object recognition as well as precise satellite navigation, indicate such potential.

Second, AR is about embedding virtual information in a specific situation and consumption context. For example, a makeup brand's customers can virtually try out new makeup on their faces through AR once they are curious about how it (and they) will look. Traditional marketing typically cannot target content as user- and context-specific. For instance, the same cosmetic brand can target consumers through social media based on estimated consumer needs that vary in salience across situations. However, traditional promotional materials in print or social media may include photos of how their makeup looks on models rather than on an individual customer. Although many digital channels provide multiple ways of engagement (e.g., discussion functions or likes), AR's potential engagement is substantially greater, for instance, by allowing consumers to playfully experience a brand (e.g. makeup on one's face). In addition, the physical context where the AR experience happens might be more relevant in AR than in many other marketing approaches. Rather than imagining in a physical store how a specific product fits into one's house, AR allows consumers to virtually explore different styles. The integration of AR features into social media is promising and on the strategic agenda of many social networks. This development deserves research that addresses measuring and explaining the keeping of customers through increased engagement and loyalty (see Hennig-Thurau et al., 2004; Obilo et al., 2021; de Oliveira Santini et al., 2020; Schumann, Wunderlich, and Wangenheim, 2012).

Third, most marketers create content to promote existing products or services. For instance, promotional videos, advertisements, or product information represent common content in online shops, and competitors are typically companies that offer similar products or services. The role of content can change drastically in AR Marketing. Media producers can create AR versions of physical products that serve as virtual alternatives to physical products (e.g., an AR TV app substitutes a TV device) and consumers seem to be fairly open to such substitutes (Rauschnabel, 2021a). Therefore, marketers should treat AR content as a new category of products (Carrozzi et al., 2019). We propose various challenges about the ownership of virtual and real objects. With the advancement of sensor technology (e.g., 3D scanner), people can scan physical objects (e.g., sculptures in a museum) and place a holographic version in AR at home, potentially altered. Likewise, ownership of virtual products in shared spaces might be challenging. May brands place branded content on other people's physical property without permission? Can other users copy virtual objects? How should these elements be protected? Non-fungible Tokens (NFTs) could provide a potential solution. AR extensions, such as those offered by Lego (Hinsch et al., 2020), can provide value to customers during usage by adding additional features to the products. These AR features are digital and not part of the physical product, so new revenue models might emerge (e.g., pay per use, cross-promotions, external banner advertisements).

Fourth, contemporary marketing approaches use a lot of data stemming from consumers' online activities which companies use to estimate product preferences. In AR Marketing, the amount of data can be substantially larger, if not restricted legally. More specifically, AR technology works by deploying numerous sensors (e.g., cameras, LIDAR, GPS) that track not only a user, but also the user's environment. By doing so, AR enables the gathering of context data about a user's physical and social environment (e.g. owned products, activities or interactions with other people). This might even work in situations where cameras reach their limits for example due to darkness. Fabbri et al. (2018) demonstrate the possibility to estimate RGB photos of human faces from data obtained through standard depth sensors. Since our

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[1] This discussion is inspired by Dirk Schart's (RE'FLEKT) talk at the 2017 AWE (Augmented World Expo), Santa Clara, California May 31- June 2, 2017; https://www.youtube.com/watch?v=LTtNUIyV4bQ (retrieved 11/05/2021).

definition of AR Marketing highlights ethical implications, marketers must also consider other people's privacy (Rauschnabel, 2018).

*4.2. A call to contribute to the reality revolution in marketing!*

Our proposed definition of Augmented Reality Marketing encompasses a highly strategic and interdisciplinary concept. Insights from surveyed managers further reveal a certain degree of caution and a lack of knowledge, yet, these same managers express an implicit "belief" in AR Marketing. This practical motivation to advance AR knowledge is complemented by various theoretical gaps discussed in multiple academic publications. As such, we introduce the following foundational premises to assist in furthering the theory of AR Marketing and suggest avenues for future research:

**Foundational Premise 1:** *Successful AR Marketing depends on understanding the user experience and unique characteristics within the AR customer journey.*

A growing body of research addresses how consumers perceive and react to AR in different marketing contexts. This research stream has identified drivers of AR experiences, such as hedonic and utilitarian benefits (Gatter et al., in press, Kowalczuk et al., 2021; Hilken et al., 2017), perceived augmentation quality (Rauschnabel et al., 2019; Smink et al., 2020), personalization (Smink et al., 2020), flow experiences (Barhorst et al., 2021), perception of AR on purchase intention (Jung et al., 2021), among others. Few studies examine risk factors (Cowan et al., 2021; Schein & Rauschnabel, 2021) and specific consumer variables (Gatter et al., in press). However, much more needs to be explored concerning how AR can enhance value propositions and provide value through the customer journey (tom Dieck & Han, 2021).

**Foundational Premise 2:** *The "invisible part" of AR Marketing enhances knowledge about the business perspective and business applicability within an AR context.*

While academic research contributes to the user perspective, studies that look at the "invisible" decisions in AR Marketing remain scarce. For instance, how should AR Marketing be managed? Which department or function in a firm should be managing AR related elements (e.g., marketing department vs. AR department)? Do brands need a CARO – a Chief Augmented Reality Officer – who is responsible for all AR activities, such as in production, training, facility management, and marketing? How should AR Marketing activities be measured – in particular, what are effective KPIs and tools? Some studies, such as Javornik et al. (2021), offer a starting point to address these fundamental questions of the mechanisms for AR Marketing.

**Foundational Premise 3:** *Macro-level opportunities and consequences within AR Marketing affect society at large.*

If AR Marketing becomes a mainstream discipline and consumers augment their environment consistently, society at large could face tremendous consequences. As discussed in Rauschnabel (2021a), certain industries might lose relevance (e.g., those whose products are rendered obsolete) whereas others will advance (e.g., technology companies, and specialized agencies). Consumers can scan objects in the real-world and use virtual copies of them. Copying and pasting the real-world might become a standard, with yet unknown legal, ethical, economic, social, cultural, and personal consequences. Stakeholder analyses to study different actors' roles and their interplay can contribute to a better understanding of potential future challenges and benefits (tom Dieck & Han, 2021). Such research from a macro perspective might guide these developments and inform policy makers.

**Foundational Premise 4:** *AR in marketing requires a design thinking mentality.*

Marketing research has a strong focus on explaining phenomena, while other disciplines – such as engineering and MIS – also focus on designing them (e.g., Hevner et al., 2004). Design science research could be an impactful approach for AR Marketing scholars. That is, rather than explaining existing phenomena, research could also contribute to the development of new AR Marketing topics and applications. We call for more interdisciplinary approaches to tackle AR Marketing's future such as with legal, ethics, human–computer interactions, and MIS perspectives. Of similar importance are (informal) discussions and established collaborations between academics and the business community. For instance, insights from the manager survey show that branded communities and storytelling in AR Marketing are expected to gain importance. However, we do not really know yet what such communities or AR storytelling practices should look like. By combining marketing knowledge with design science, while incorporating legal and ethical aspects, interdisciplinary research can support marketers with evaluated prototypes and specific design recommendations. The BICK FOUR framework and the proposed customer journey can guide the research, design, and evaluation processes.

**Foundational Premise 5:** *The future of AR Marketing depends on disseminating knowledge and training the next generation to be successful in this new environment.*

Some digital marketing textbooks and classes dedicate one or few sections to AR. Most of this content merely triggers a wow-effect without truly increasing students' knowledge about this unique area and accompanying characteristics of AR. We believe that AR Marketing classes (or programs) will become a standard in the future and new teaching approaches and specific knowledge will be required. For instance, educators will need a basic understanding of tracking and mapping technology, optics, 3D visualizations and so forth, which, so far, are not part of common business programs. This article can serve as a starting point to introduce students to the concept of AR Marketing. The concepts presented here, such as the BICK FOUR or the AR customer journey, can serve as tools to analyze, structure, and develop real-life AR marketing activities.

**Foundational Premise 6:** *The altering of one's reality presents significant challenges to the moral application of AR Marketing.*

Ethical implications present themselves in each of the above AR foundational premises (Finnegan et al., 2021). However, the importance of the proper and moral use of marketing tools is a key and thus requires specific attention. Robin (1970) insightfully argued that the adoption of ever-increasing technology in scientific marketing would, if it had not already, reach a point beyond optimal for consumers and would produce detrimental consequences to consumers and society in general. AR Marketing involves data technologies that accentuate the question of when marketing has gone too far (Finnegan et al., 2021). The drastic data demands required for AR Marketing to be effectively implemented present even further emphasis on the need to understand and protect consumer privacy (Rauschnabel et al., 2022; Cowan et al., 2021; Harborth, & Pape, 2021). Further, other technologies, such as motion pictures or videos, presented some ability for consumers to escape reality. However, AR's intention is to alter reality. To what extent, and under what conditions, is it just to alter an an individual's reality? Physical harm can result if a user loses all sense of reality. However, AR presents the real possibility of emotional and psychological harm as well. Static advertising has often been considered ever powerful in altering consumer choices and behavior. Given the increased power to alter one's being, AR Marketing needs to be implemented using a great degree of moral caution.

## 5. Articles in this special issue

The articles in this special issue do much to further theory and practice relevant to AR Marketing. Each contributes an additional element to the holistic understanding of this new discipline (and VR). Beyond the integrated contributions noted above, each article offers insights contributing to the proposed foundational premises. All articles explore new marketing concepts and developments:

- Anne Smink, Eva van Reijmersdal, Guda van Noort, and Peter C. Neijens (2020) study persuasive responses in AR shopping apps. A particularly interesting finding of Smink et al. (2020) is that AR can also trigger intrusiveness, which might decrease purchase intentions.
- Pascal Kowalczuk, Carolin Siepmann, and Jost Adler (2021) explore cognitive and affective responses in AR, and particularly their role in driving behavioral responses. Kowalczuk et al. (2021) show that AR can, compared to web-based product presentations, cause higher affective but lower cognitive responses.
- Jennifer Barhorst, Graeme McLean, Esta Shah, and Rhonda Mack (2021) study the role of flow in AR experiences. They show that AR characteristics, such as interactivity, vividness, and novelty can trigger flow experiences. Flow then leads to an increase in satisfaction with the AR experiences, because consumers' perceived levels of information utility, learning, and enjoyment increase (Barhorst et al., 2021).
- Alexander Jessen, Tim Hilken, Mathew Chylinski, Dominik Mahr, Jonas Heller, Debbie Isobel Keeling, and Ko de Ruyter (2020) propose the "playground effect" and show that AR enables new forms of customer creativity throughout the customer journey. This in turn drives various positive outcomes (Jessen et al., 2020).
- Ana Javornik, Katherine Duffy, Joonas Rokka, Joachim Scholz, Karinna Nobbs, Anisa Motala, and Adriana Goldenberg (2021) conduct qualitative research with managers from luxury marketing firms (Javornik et al., 2021). They find that luxury brands deploy AR to improve certain luxury attributes, such as authenticity and premium prices (Javornik et al., 2021).
- Eunyoung (Christine) Sung (2021) applies the experience economy framework (Pine & Gilmore, 1998) to study the underlying mechanisms and effectiveness of mobile AR advertisements. She shows the potentials to trigger purchases and to generate WOM for the AR materials.
- Zeph van Berlo, Eva van Reijmersdal, Edith Smit and Nynke van der Laan (2021) discuss the concept of VR Marketing, in particular, in branded VR games. They explore the role of emotional responses in shaping brand responses. Van Berlo et al. (2021) show that VR can lead to increases in brand attitude, especially if consumers perceive the displayed products as appealing.
- Anouk de Regt, Kirk Plangger, and Stuart Barnes (2021) use semi-structured focus groups to present a framework breaking down VR branded experiences into narrative and social interactions. The authors present ideas for future VR marketing research (De Regt et al., 2021).

## CRediT authorship contribution statement

**Philipp A. Rauschnabel:** Conceptualization, Formal analysis, Writing – review & editing. **Barry J. Babin:** Conceptualization, Writing – review & editing. **M. Claudia tom Dieck:** Writing – review & editing. **Nina Krey:** Formal analysis, Visualization, Writing – review & editing. **Timothy Jung:** Writing – review & editing.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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**Philipp A. Rauschnabel** is Professor of Digital Marketing and Media Innovation at the Universität der Bundeswehr München (Munich, Germany), Associate Researcher at the Otto-Friedrich-Universität Bamberg, and teaches XR Marketing courses at MCI Innsbruck. Philipp was the conference chair of the 5th intl. AR VR Conference (2019). His research focuses on the disruptive potentials of XR - especially AR - for consumers, businesses and society in general. He is currently founding xrealitylab.com. Philipp holds a PhD and a post-doctoral degree (Habilitation) in Business / Marketing and is author of the first studies on consumers' adoption of AR technologies. He has been teaching AR Marketing courses in the US, Germany, and Austria since 2017 in various levels. His AR research appeared in Journals such as *Journal of Business Research*, *Psychology & Marketing*, *Computers in Human Behavior*, *IEEE Transactions on Engineering Management*, *Journal of Retailing & Consumer Services*, among others. Website: philipprauschnabel.com

**Barry J. Babin,** Ph.D. (LSU), is Morris Lewis Professor and Chair of Marketing at the Ole Miss Business School and Executive Director of the Academy of Marketing Science® (www.ams-web.org). He has authored many professional publications with research appearing in the *International Journal of Wine Business Research, Journal of the Academy of Marketing Science, Journal of Marketing, Journal of Retailing, Journal of Business Research (JBR), Journal of Consumer Research, International Journal of Research in Marketing*, and many others. His research emphasis areas include wine marketing, marketing analytics, and designing effective retail experiences. He served as Marketing Section Editor for *JBR* for over 15 years and has won outstanding reviewer awards from multiple journals. He is coauthor of several leading books including *CB: A Consumer Value Framework, Multivariate Data Analysis,* and *Exploring Marketing Research*.

**M. Claudia tom Dieck** is a research fellow at the Creative Augmented and Virtual Reality Hub at Manchester Metropolitan University. She is the Program Chair of the annual International Augmented and Virtual Reality Conference. Her research interests include immersive technologies in the creative industries. She has published in journals such as *Journal of Travel Research, Tourism Management, Information & Management,* and *Journal of Business Research*.

**Nina Krey** is an Assistant Professor of Marketing at the Rohrer College of Business at Rowan University. Her research interests include contemporary issues related to immersive technologies, value-added consumption experiences, and consumers' perceptual versus cognitive responses to sensory stimulation across different environments. Her work primarily incorporates multi-method research approaches. Her work has been published in *Journal of Business Research, Journal of Advertising, Journal of Travel Research, Computers in Human Behavior, Internet Research, and Journal of Product & Brand Management,* among others.

**Timothy Jung** is Professor of XR and Founder and Director of the Creative AR & VR Hub and Knowledge Platform Lead for Digital Transformation at Manchester Metropolitan University. His research interests include AI, Big Data, IoT and 5G powered immersive technology innovation for well-being and quality of life. He is conference chair of the annual International Augmented and Virtual Reality Conference and president of the International Association of Immersive Technology Innovation (IAITI).

Philipp A. Rauschnabel[a,e,f,*], Barry J. Babin[b], M. Claudia tom Dieck[c], Nina Krey[d], Timothy Jung[c]

[a] *Universität der Bundeswehr München, College of Business Administration, Department of Digital Marketing and Media Innovation, Werner-Heisenberg-Weg 39, 85577 Neubiberg, Germany*

[b] *University of Mississippi, Department of Marketing, Morris Lewis Professor Marketing and Chair, University, MS 38655, USA*

[c] *Manchester Metropolitan University, Faculty of Business and Law, Department of Operations, Technology, Events and Hospitality Management, All Saints Campus, Manchester M15 6BH, United Kingdom*

[d] *Rowan University, Rohrer College of Business, Department of Marketing and Business Information Systems, 201 Mullica Hill Road, Glassboro, NJ 08028, USA*

[e] *MCI - Management Center Innsbruck, Universitätsstraße 15, 6020 Innsbruck, Austria*

[f] *Otto-Friedrich-Universität Bamberg, Social Sciences, Economics, and Business Administration, Kapuzinerstraße 16 96047 Bamberg, Germany*

[*] Corresponding author.

*E-mail addresses:* philipp.rauschnabel@gmail.com (P.A. Rauschnabel), bbabin@bus.olemiss.edu (B.J. Babin), c.tom-dieck@mmu.ac.uk (M.C. tom Dieck), krey@rowan.edu (N. Krey), t.jung@mmu.ac.uk (T. Jung).