

Finken, David; Scheurer, Thomas

Article

Rethinking Value Creation in Brick-and-Mortar Retailing

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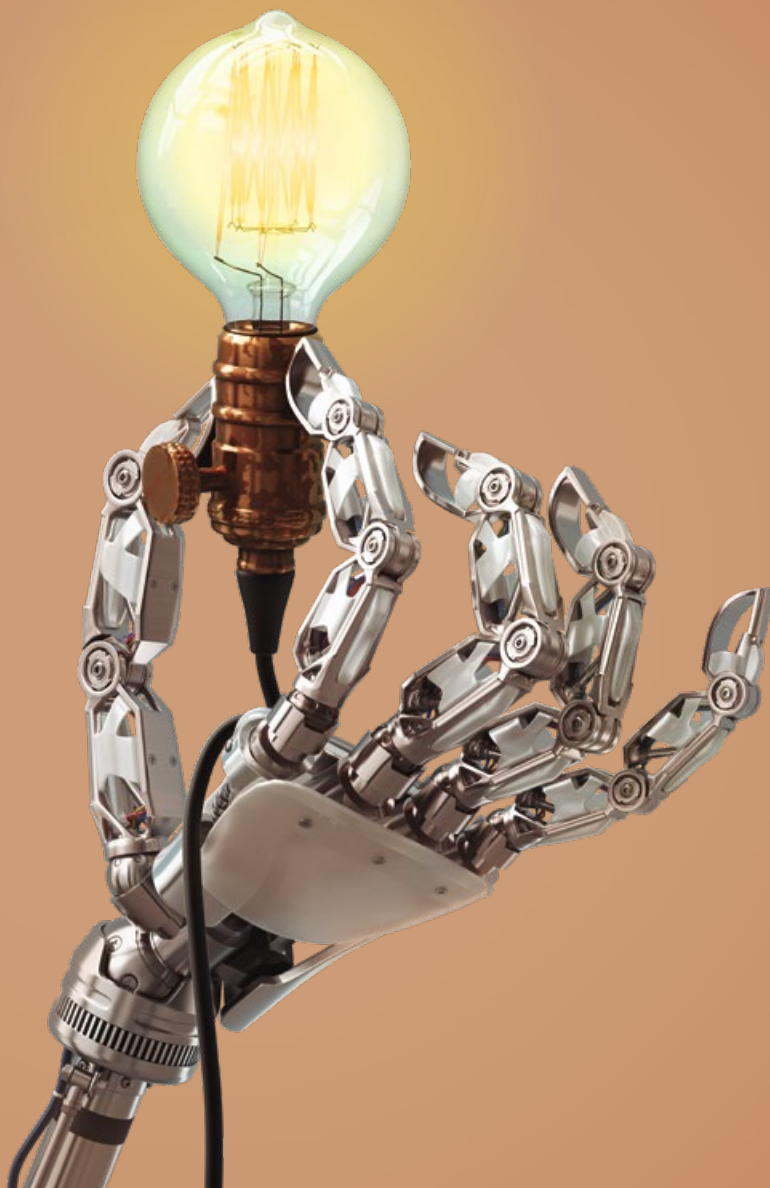
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Marketing Review

St.Gallen

Open Innovation & Crowdsourcing



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Rethinking Value Creation
in Brick-and-Mortar Retailing

Believe the Hype?
Herausforderungen und
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an das «Metaverse»

Rethinking Value Creation

in Brick-and-Mortar Retailing

Augmented reality (AR) is coming of age. Yet it remains unclear how AR will provide value to brick-and-mortar customers and firms. Based on 12 expert interviews, this article outlines how AR can facilitate value creation for brick-and-mortar customer journeys. Managers should be aware of such potentials but also anticipate related obstacles.

David Finken, M.Sc., Thomas Scheurer, M.Sc.

Mixed realities (MR) have evolved from a nascent technology – with initially inflated expectations – to a mature tool ready for mass market adoption (see Gartner Hype Cycle 2021 – Nguyen et al., 2021). In this decade, MR applications are expected to expand across industries, and leading business journals such as Forbes are motivating Chief Marketing Officers to consider experimenting with them (Evans, 2021). Augmented reality (AR), a fluent dimension on the virtuality continuum (see Milgram & Kishino, 1994; [see the online Appendix B](#)), projects virtual content onto a user’s physical environment in real time (Azuma et al., 2001). It differs from its more virtual brother, virtual reality (VR), where specific goggles create an immersive, fully computer-generated environment in which a user experiences a feeling of telepresence (Rauschnabel et al., 2022).

Porter and Heppelmann (2017) pointed out several aspects of how mixed reality, specifically AR, can create value for users in ways that have substantial managerial implications. In retail, AR is projected to grow at a compound annual growth rate of 20% during 2022–2028, resulting in a market size of USD 6.736,2 million by 2028 (Bloomberg, 2022; [see the online Appendix C](#) for an industry split). However, many retailers remain wary when it comes to implementing AR experiences. Among other aspects, the lack of existing use cases, uncertainty regarding development and maintenance expenses, and an unclear understanding of how AR may add value are some of the reasons for their concern (Chandukala et al., 2022).

This article outlines how the integration of AR can add value in the retail market. Specifically, we unveil value creation potentials for brick-and-mortar retail (B&M) and beyond. We categorize related potentials along the customer journey, present an updated customer journey framework (adapted from Court et al., 2009), and identify obstacles to the proliferation of AR in B&M.

Overall, and assuming the technology can overcome several structural obstacles, our framework identifies and validates four customer journey stages: capturing initial attention; assisting consumer decision-making before or during a purchase; establishing trust and generating conversions; and providing location-independent after-sales services (figure 1).

Proliferation of Augmented Reality Applications

In some countries, more than 50% of consumers have already engaged with mixed reality applications enabled by AR technology, predominantly for entertainment (e.g., Pokémon Go), brand engagement (e.g., Snapchat’s face filters), information retrieval (e.g., Peak Finder or AR navigation), and 15% of



David Finken, M.Sc.

Research Assistant, PhD Candidate and Lead Swiss Consumer Studies at the University of Lucerne, Switzerland and Visiting Scholar at the University of Michigan, Ann Arbor, MI, USA
david.finken@unilu.ch

Thomas Scheurer, M.Sc.

Research Assistant and PhD Candidate at the University of Lucerne, Switzerland
thomas.scheurer@unilu.ch

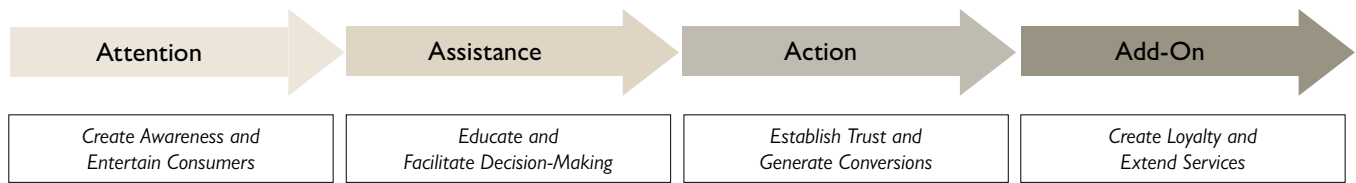
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consumers have used AR in shopping experiences (Finken et al., 2021). In the United States, 61% of consumers prefer to shop with retailers (online and B&M) that offer AR experiences (Nielsen, 2019). Popular examples include AR applications in which consumers can virtually wear different sunglasses models (e.g., Ray-Ban), try make-up filters (e.g., Sephora), or position furniture within their homes (e.g., IKEA Place App). Augmented reality has also been used in recent advertisement campaigns, for example, to generate leads (e.g., Spar’s Easter egg search) or to promote new product launches with shareable and memorable user experiences (e.g., Jurassic World AR App). Consumers seem to value AR’s ability to reduce uncertainty, facilitate decision-making, or simply entertain them during shopping (Chandukala et al., 2022).

Yet, little is known about AR’s potential in B&M customer journeys (Dekimpe et al., 2020), such as AR technology that can enable in- and out-of-store navigation (e.g., Marks and Spencer), display additional information for products or services offered at B&M stores (e.g., H&M’s smart mirrors), or enable virtual menu inspections in restaurants (e.g., Le Petit Chef) (figure 2).

Figure 1: Simplified Illustration of the Value Creation Framework for Brick-and-Mortar Retail



Source: Own illustration.

Figure 2: Augmented Reality Applications for Marketing and Sales



Source: Own illustration.

Academic Research Provides Insights for Value Creation

Existing research has primarily focused on how AR can affect marketing outcomes in online retailing (e.g., conversion rate, word of mouth, intentions, attitudes, and willingness to pay; Kumar, 2021). Corresponding research has compared AR to more traditional presentation formats (e.g., static or 360-degree rotating product depictions) leading to insights on how AR can create value from three angles: *experiential, informational, and/or transactional*.

Experiential Value

Augmented reality allows for joyful product or brand engagement, affecting purchase intentions (Smink et al., 2019). In some

cases, AR experiences can even create flow moments (i.e., a cognitive state of control and concentration during an activity), which might explain positive consumer reactions (Csikszentmihalyi, 1975; Javornik et al., 2016). Enjoyment and flow may explain why consumers tend to engage 20% longer on websites that offer AR experiences and view 1.3 times more products in AR. Further, in B&M stores, consumers spend approximately 50% more time at the AR sampling fixtures for lipstick try-ons and sample 7.5 times more products (Tan et al., 2022).

In addition, AR facilitates connections between consumers and products. Research found that AR can affect psychological ownership (i.e., consumers' feeling that something is *theirs* in a psychological sense, without legally owning it) (Pierce et al., 2003; Peck and Shu, 2009). Some studies attribute this effect to specific AR configurations (e.g., level of customization or degree of interactivity; Carrozzini et al., 2019; Fritz et al., 2019),

whereas others report that AR makes consumers feel psychologically closer to products, since it makes products appear more real, thus increasing perceived ownership (Finken et al., 2021). Consequently, a large body of consumer research is dedicated to the consequences of this feeling of ownership, such as increased willingness to pay, or improved intentions and attitudes, which all make it a desirable outcome for marketers (e.g., Atasoy & Morewedge, 2018; Shu & Peck, 2011).

Informational Value

Augmented reality product placement helps consumers imagine what a product looks like and generates mental images of using the product, thus reducing consumer cognitive effort (and uncertainty) in product evaluation (Heller et al., 2019). Such mental images increase consumer desire and purchase intentions (Fritz et al., 2019; Hilken et al., 2022). For example, Fritz et al. (2019) showed that consumers are twice as likely to order a dessert at a restaurant if they encounter an AR menu versus a traditional menu.

Despite promising results, it is critical to design consumer-centric AR. For example, a field study by Hoffmann et al. (2022) revealed that the provision of product information at the point of sales can backfire if product information is too detailed, i.e., focused too little on consumer needs. Additionally, AR is less effective if product information is too intense (i.e., invasive). Thus, firms should find a good balance between AR engagement and product information intensity (Schweiger et al., 2022).

Transactional Value

As retailers increasingly maintain offline and online presences, they are confronted with the challenging task of providing seamless omnichannel experiences. Gauri et al. (2021) proposed that retailers either enhance consumer experiences or reduce friction in shopping processes to engage efficiently with consumers in an omnichannel setting. Augmented reality can reduce friction – and create transactional value for retailers – in several ways: it can create a natural link between offline and online shopping environments, enable one-click purchases (e.g., ApplePay and GooglePay), and it proves to be an efficient tool for reducing costs associated with product returns, both for online and physical retail (Wedel et al., 2020). Recent academic insights show that virtual try-ons in retail (e.g., for cosmetics) increase product sales by 19.8%. Importantly, research found that AR's impact on sales is lower for inexpensive products and popular brands (Tan et al., 2022).

Augmented reality's transactional value can depend on where the consumer inspects a product (i.e., whether this matches

the physical environment in which the product is used). For example, Finken et al. (2022) showed that AR specifically helps products when they are placed in a more fitting environment, such as inspecting a Thermomix in a kitchen (vs. a train, for example).

Value Creation Framework for Brick-and-Mortar Retail

Based on academic insights and expert interviews, the present article conceptualizes the *4-A Value Creation Framework* for B&M (figure 3). This framework showcases managerial potential for value creation at various stages of the customer journey. It conceptualizes potentials in four partly interconnected stages: capturing attention, assisting in decision-making, motivating to act, and adding value beyond the moment of purchase.

We validated and extended this framework with 12 expert interviews involving neutral external perspectives, managers from retail cooperations, and technology suppliers (see Appendix A below at the end of this article) for an anonymized overview of the experts). Experts were identified through purposive and snowball sampling methods (Adams, 2015; Marshall, 1996). The interviews followed a laddering method (Reynolds & Gutman, 1988) with semi-structured questions allowing for flexibility during the interview process (i.e., exploration of new areas; Gill et al., 2008). We used an inductive qualitative approach to generalize four phenomena from specific responses in the interviews (Mayring, 2012).

Attracting Attention

Retailers can implement out-of-store AR experiences that increase awareness for specific promotions by actively engaging

Management Summary

Augmented reality can create experiential, informational, and transactional value for consumers along the various stages of the customer journey. Summarizing insights from 12 expert interviews and prior research, this article presents the 4-A Value Creation Framework for brick-and-mortar retail. This framework implies that AR-based value creation comes with various potentials exceeding pure sales. Managers need to start experimenting with AR and anticipate obstacles to implementing AR.

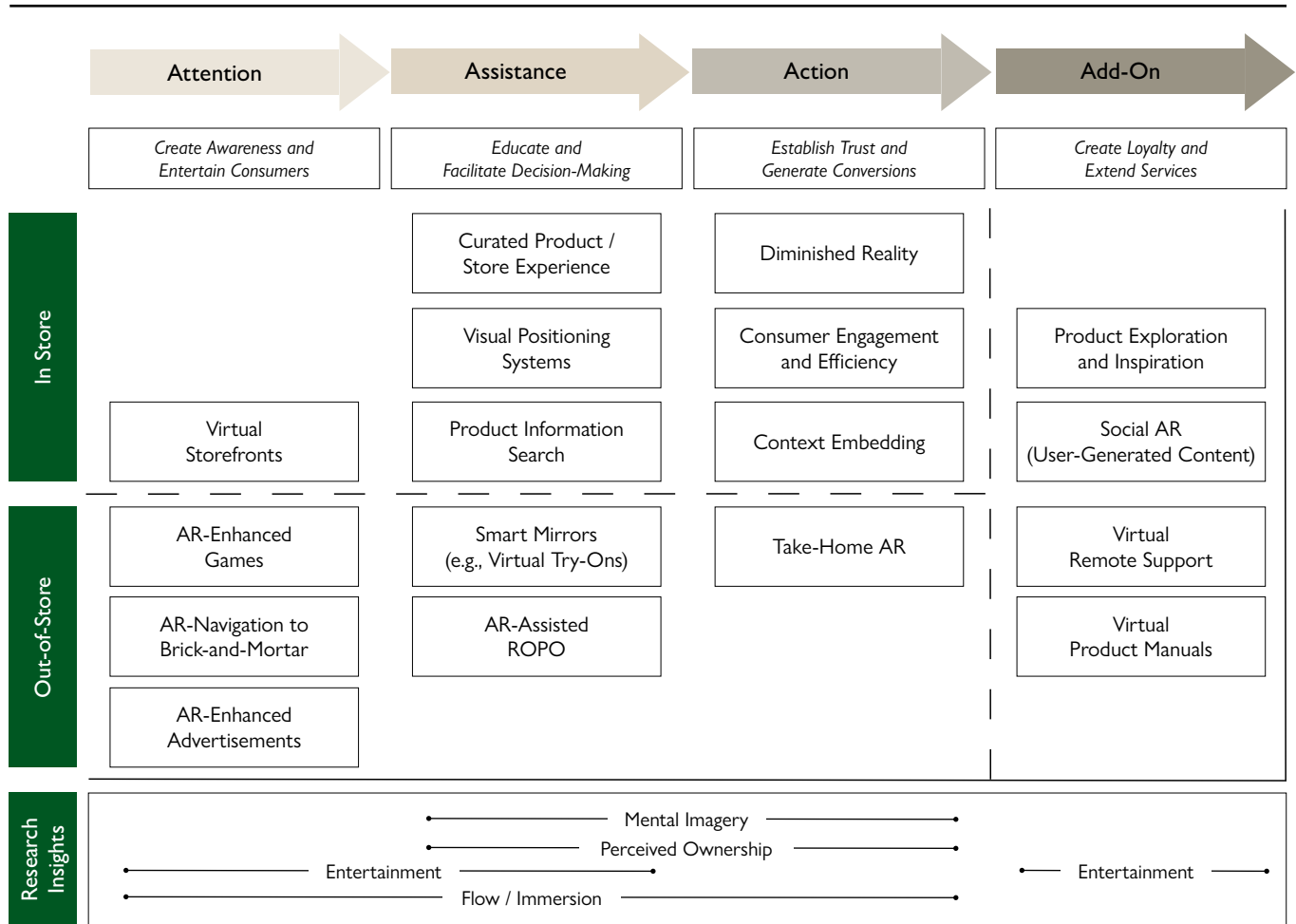
with consumers and guiding them in a joyful but active way to visit a B&M store. For example, retailers can use «augmented» advertisements with location-based services (e.g., Spar's Easter egg search) or AR-assisted global localization tools (e.g., Zurich Airport). Specific location-based AR services can facilitate convenience and guide consumers to B&M retail storefronts, increasing engagement and adoption while being cost-efficient and relatively easy to implement. Consumers indicated that brands are perceived as more exciting, fun, and innovative, and managers emphasize that AR's value also relates to being perceived as a first mover.

Augmented reality can also increase awareness of product portfolios in retailers' stores. For example, virtual storefronts (e.g., H&M's interactive mirrors) offer retailers maximum control over

Main Propositions

- 1 AR displays virtual objects onto people's real physical environment, creating informational, experiential, and transactional value for consumers
- 2 AR can affect the customer journey at various stages with both short-term and long-term potentials.
- 3 AR's proliferation requires a better understanding of various obstacles to its adoption.
- 4 AR implementation and testing require an open culture and willingness to experiment.

Fig. 3. 4-A Value Creation Framework for Brick-and-Mortar Retail



Please note: Additional information on terminologies is available upon request. Source: Own illustration (customer journey sequence adapted from Court et al., 2009).

what consumers see and perceive of a brand inside B&M stores. Customizable and tailored content can be displayed, creating interactive experiences that leverage the physical environment of the consumer and offer initial product information. First insights indicate that such AR interactions increase consumer engagement and sales (Business Wire, 2017). However, managers point out that such virtual storefronts need a clear purpose beyond entertainment to attract consumers effectively.

Assisting in Decision-Making

Augmented reality can provide information about brands, products, and services in B&M stores, similar to but distinct from existing use cases in retailing. Augmented reality's value in B&M retail depends on the type of information that consumers are looking for during product or service evaluation.

Augmented reality can help consumers navigate their in-store shopping with visual positioning systems. Such AR-based in-store (and out-of-store) navigation gives consumers an efficient and time-saving way to access the product or service of interest. According to research reports, 60% of consumers indicated that such a use of AR would be important to them and they could imagine using such tools (Ducommun et al., 2021; Finken et al., 2021). Meanwhile, businesses can leverage visual positioning systems to create up- and cross-selling opportunities. For example, Marks & Spencer experimented with a real-time display of loyalty points and bundled deals for product purchases tied to its in-store navigation app.

In-store AR cannot yet replace a physical product experience, but it can complement such experiences and overcome a key disadvantage of B&M: space constraints. Augmented reality can provide additional, overlaid information that facilitates decision-making and enhances a self-brand/product connection (Zimmermann et al., 2022). Today, 59% of consumers use their

smartphones to access more product information or compare prices in B&M stores (Google/Ipsos, 2019).

At the same time, managers believe AR can improve the overall customer store experience and support the efficiency of store inventory management, especially for products available in several variations. Retailers can display their most prominent products and focus on curated multisensory product experiences while giving consumers more AR-enabled alternatives, such as alternative product colors or individualized options, without an additional physical inventory.

Invitation to Take Action

Store visits or e-commerce alone can seldom provide all the information consumers need to make the best possible purchase decision. Augmented reality allows access to the «inner parts» of products without disassembling them (i.e., diminishing reality as opposed to AR). For example, AR-related technology enables the real-time inspection of engines during a motor show.

In-store AR cannot yet replace a physical product experience, but it can overcome a key disadvantage of B&M: space constraints.

Augmented reality can bridge the gap between informational and experiential retail encounters, leading to seamless interactions and, ultimately, higher purchase likelihood (Hilken et al., 2020). Specifically, products often need context to be evaluated appropriately, and AR can virtually overlay appropriate use contexts for products, helping consumers imagine what a product would look like in its proper environment (e.g., a

Lessons Learned

- 1 Bottom-up AR implementation, with minimal upper management involvement, provides small financial risks, enables departments to experiment, and may provide information about KPIs.
- 2 AR may reduce friction along various points in the customer journey by serving as a natural link between offline and online consumer touchpoints, which allows for seamless omnichannel experiences.
- 3 Successful AR implementations address concrete (i.e., informational, experiential, and transactional) user needs and depend on continuous employee training as well as a technology-embracing firm culture.
- 4 A major impediment to adopting AR in business strategies is a limited understanding of how to effectively track KPIs, which requires managers to think of AR as a tool creating transactional value.

Thermomix in one’s kitchen). Third, managers predict that AR’s value may exceed a single store visit. With high-involvement goods, consumers can take virtual products to their homes while getting more comfortable with their decision (i.e., take-home AR; research offline – purchase online). Alternatively, some consumers prefer out-of-store product experiences (e.g., virtual try-ons) before making an in-store purchase (research online – purchase offline). An international sunglasses retailer predicts that half of all consumers who inspect complex products with AR online will subsequently visit a physical store.

Managers indicated in our interviews that AR could facilitate a more seamless omnichannel experience and increase convenience by enabling direct in-store purchases through connected services (e.g., Apple Pay in ARKit). In turn, the vast number of data points (i.e., biometric and individual-level data) gathered through AR shopping assistants offers potentials for retailers for personalized or geo-specific product recommendations (under strict considerations of GDPR).

Add-on Value

Customer service quality and perceived value after purchases are two additional drivers of customer satisfaction and loyalty (Kuo et al., 2009). The interviewed experts stated that AR has the potential to create value that exceeds the value of actual sales. For example, AR can assist consumers in assembling products (e.g., IKEA’s <AssembleAR>) and offer real-time troubleshooting with virtual instruction manuals or remote customer support

(e.g., <V-Zug Docs> or <feey.ch>). Consequently, AR may reduce consumer complaints and returns. Regarding remote support, AR can enable consumers to become part of the creation process by being guided by a professional, with positive implications for marketing (see Ranjan & Read, 2016). It may also contribute to extending a product’s lifecycle by making repairs more convenient.

AR can also help consumers explore different uses of their products. For example, Heinz implemented an AR recipe recommender to inspire consumers to try unknown products or ingredients. Consumer awareness of such complementary products during and after a product purchase may increase short-term up- and cross-selling potentials for retailers and long-term brand engagement on social media.

Similarly, facilitating brand interactions on social media (e.g., Tiktok, Snapchat, or Instagram) by allowing consumers to share AR-generated content with peers (i.e., social AR) is likely to enhance self-brand connections and recognition (especially when consumers are depicted on brand selfies; Hofstetter et al., 2020).

Obstacles to the Proliferation of AR

Proliferation of AR comes with challenges: managers highlight various obstacles that are both internally and externally routed. In this context, technical, managerial, cultural, and ethical obstacles should be anticipated and addressed before AR implementation (figure 4). Managers believe that the proliferation of AR largely depends on consumer readiness to embrace AR.

Technological Obstacles

Seamless AR experiences require technological advancements to be available to consumers and businesses (see [online Appendix D](#)). While some consumer devices are well-equipped to display AR content, businesses need to be aware that realistic and smooth AR experiences may require technologies that not all consumers are equipped with (e.g., Apple LiDAR sensors). In addition, firms must keep in-store hardware and software as well as AR infrastructure up to date and train employees for AR usage and maintenance.

However, developing an AR app from scratch can be expensive. While relying on open-source infrastructure may ease such large investments, it increases a firm’s dependency on tech giants (e.g., Apple’s ARKit or Google’s ARCore), and some managers fear that relying on the tech giants’ infrastructure could make them vulnerable in the long term. However, compared to the obstacles explained below, managers perceive technical ones as least critical when implementing AR experiences.

Figure 4: Obstacles to Augmented Reality Proliferation

Technological	<ul style="list-style-type: none"> • Dependency on Large Tech-Companies • Fitting Infrastructure for Implementation • Hardware Availability and Compatibility
Managerial & Cultural	<ul style="list-style-type: none"> • Uncertain Financial Involvement • Undefined Key Performance Indicators (KPI) • Organizational Culture and Employees’ Digital Literacy
Ethical	<ul style="list-style-type: none"> • General Data Protection Regulations (e.g., Biometric and Individual-Level Data) • Reality Distortion • Biased Decision-Making
Consumer-Adoption	<ul style="list-style-type: none"> • Explicit User Permissions (e.g., Camera, Audio, Location) • Technological Proliferation and Literacy • Loss of Interpersonal Contact

Source: Own illustration.



Source: © iStockphoto.

Managerial and Cultural Obstacles

Augmented reality poses several managerial challenges related to costs, measurement of key performance indicators, and employee resistance to adoption. Firms often do not know what kind of resources an AR undertaking requires. Generally, large investments, including profitable business cases, require management involvement. Calculating the AR business case is a difficult undertaking due to unclear or partly missing AR-specific KPIs and short- and long-term financial involvement (e.g., AR maintenance costs). Bottom-up AR implementation requires less financial involvement, making it accessible for small businesses. Typical examples are AR marketing campaigns on Snapchat.

Firms need to establish a progressive and open culture willing to experiment with new technologies. Most importantly, the implementation of AR in B&M retail should not generate fear amongst sales assistants of being replaced by technology

but instead offer promising opportunities. This is essential since consumers value personal interactions with sales assistants (Beatty et al., 1996). Consequently, proper training and a culture that embraces digital literacy are needed for AR opportunities to unfold.

Ethical Obstacles

AR yields a large amount of sensitive consumer data. For virtual try-ons in particular, businesses need to measure consumer biometrics and gather additional individual data. Since consumers regularly have to consent to data collection in online retailing, it is imperative for businesses to follow GDPR protocols in B&M retailing and be transparent about data usage and storage.

As AR applications grow increasingly more complex and sophisticated, retailers face the risk of misleading customers and distorting their reality (Mhaidli & Schaub, 2021). In such

cases, AR has the potential to exploit consumer psychology to increase sales. For example, recent research suggests that AR can increase perceived ownership and attachment to products, which in turn leads to more favorable product preferences and sales (Finken et al., 2022). This may boost sales in the short time but might lead to image problems and other repercussions in the long run.

Consumer Adoption

Although a variety of consumers have already engaged with mixed reality applications such as AR, its proliferation for marketing and sales is still in its infancy. Experts emphasize that AR's success depends on clear communication of its value potential to satisfy context-specific consumer needs. Since AR applications need access to a mobile device's camera, often the current location of the consumer, and/or audio output features, a primary obstacle to consumer adoption is related to privacy concerns. An additional concern is related to the consumers' fear of losing interpersonal contact in B&M retail, which is essential for in-store shopping.

Conclusions and Outlook

Taken together, mixed reality applications enabled by AR may come with a variety of experiential, informational, and transactional benefits, not only for online retailing but specifically for B&M shops. Brick-and-mortar retailing's implementation of AR should be aligned with its overall short- and long-term omnichannel strategy. To unlock AR's full potential, firms need to build close connections between online and B&M channels and eventually purely virtual experiences in the metaverse. ■

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Appendix A: Overview of Conducted Expert Interviews

Overview – Interview partners for in-depth interviews

Interview Group	No. of experts	Explanation	Positions
External perspective	3	Business consultants or university professors	Partner or professors
Retailer's perspective	7	Brick-and-mortar or omnichannel retailers	Head of marketing / head of e-commerce / product manager
Supplier's perspective	2	Technology suppliers responsible for developing AR technology	Founder or CEO
Total	12		

We conducted 12 semi-structured in-depth interviews according to recent scientific standards (Mayring, 2012). Interviews were conducted in May and June 2022. Interview partners had direct budget responsibility for setting up AR for their company or worked as an external knowledge provider informing stakeholders.

Note. We interviewed 2 female and 10 male managers. Brick-and-mortar or omnichannel interview partners from FMCG (brands and retailers), sport retailing, and more general retailing including household products. Source: Own illustration.