UNLOCKING THE FUTURE OF RETAIL: EXTENDED REALITY AS A CATALYST FOR INNOVATION

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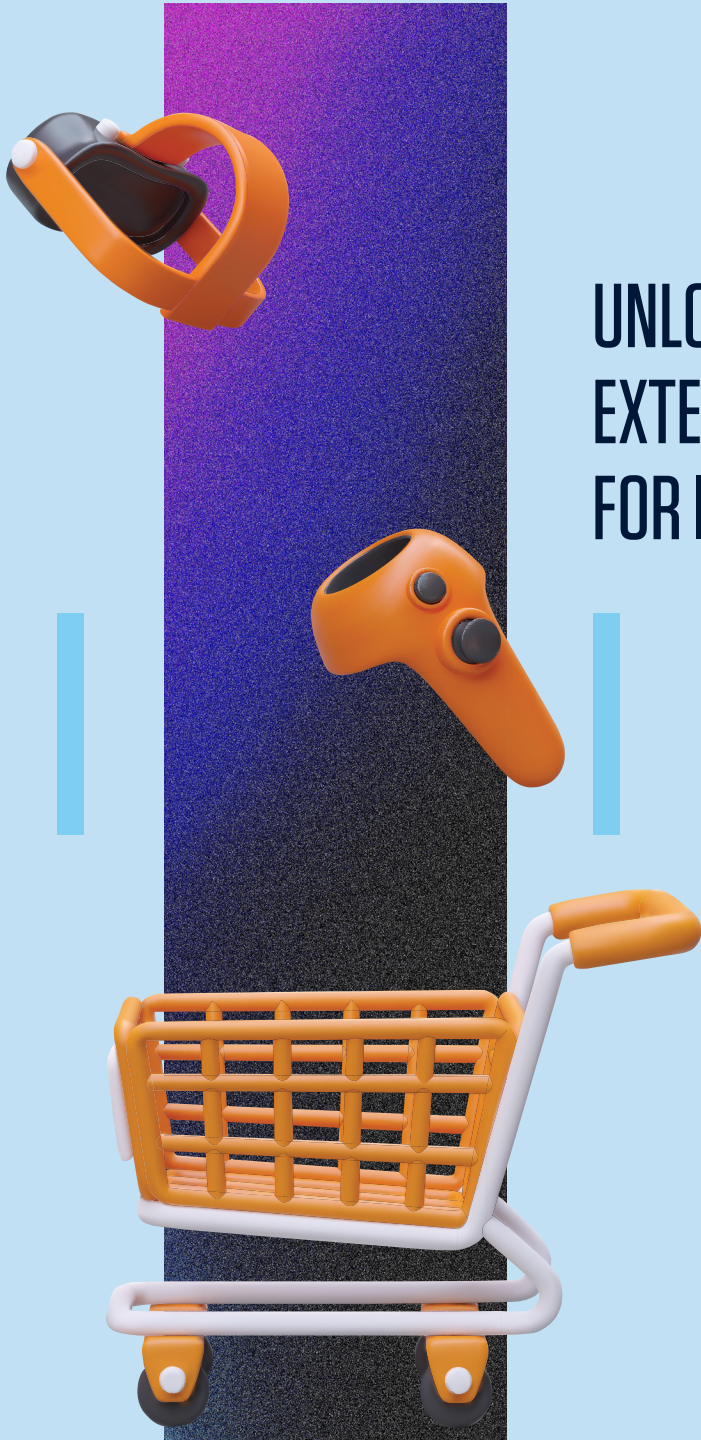
Introduction

Today when we want to purchase a new sofa, instead of visiting multiple stores, we use an app on our phone that lets us place a 3D model of the sofa in our living room, adjusting the size, color, and fabric until it ideally fits our taste. We can walk around it, see how it matches our decor, and even sit down to experience its comfort—all by being in our own space. This all is becoming the new normal, thanks to Extended Reality (XR), which embraces virtual, augmented, and mixed reality to deliver such immersive experiences.

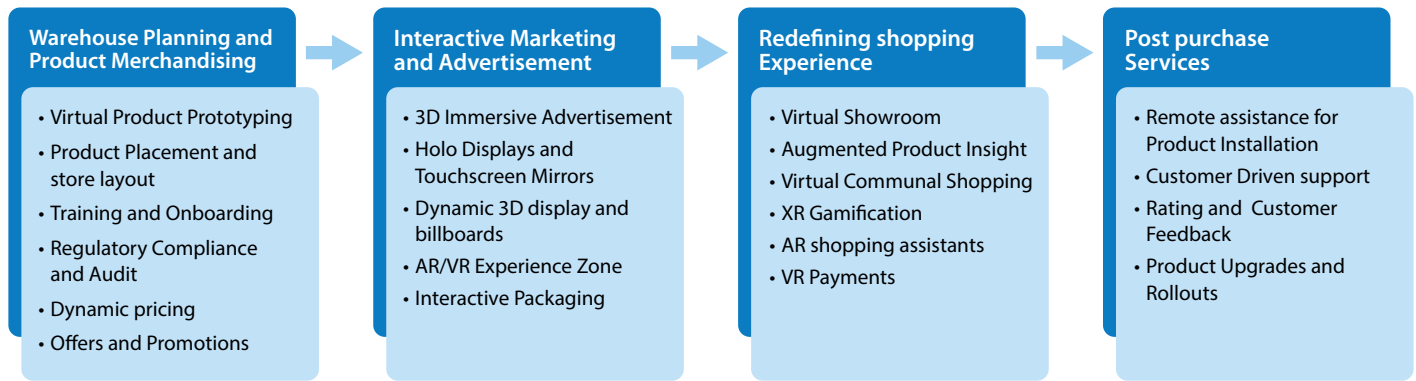In the evolving online shopping landscape, extended reality (XR) is primed to reshape how consumers connect with brands and experience products. Businesses are exploring unique approaches to deliver immersive experiences that resonate with modern consumers, helping them confront interactive experiences, stories, and memories that elevate their shopping experience thus leaving a lasting impression and faster brand recall.

Relevance to the Retail Industry

The impact of XR on the retail industry is profound. As e-commerce sales continue to grow and consumers seek more personalized and immersive experiences, XR technology presents a valuable chance for brands to remain distinct and stay ahead in a competitive market. Some of the significant benefits of extended reality experienced across the retail industry are cited below-

- **Boosting customer engagement** through immersive, interactive shopping experiences.

- **Reducing product return rates** by allowing virtual try-ons and product visualization.

- **Personalizing the shopping journey** with Smart Assistant and tailored recommendations

- **Improving product visualization** through 3D interactive displays, demos, and campaigns

- **Bridging online and offline shopping** with Virtual Store Experience, Zero Store concept

- **Enhancing customer education** on complex products through interactive product insights and social collaboration initiatives.

- **Streamlining staff training** with immersive workshops and seminars

Impact of XR in Retail Value Chain: Opportunities and Use-cases

Warehouse Planning and Product Merchandising	Interactive Marketing and Advertisement	Redefining shopping Experience	Post purchase Services
• Virtual Product Prototyping • Product Placement and store layout • Training and Onboarding • Regulatory Compliance and Audit • Dynamic pricing • Offers and Promotions	• 3D Immersive Advertisement • Holo Displays and Touchscreen Mirrors • Dynamic 3D display and billboards • AR/VR Experience Zone • Interactive Packaging	• Virtual Showroom • Augmented Product Insight • Virtual Communal Shopping • XR Gamification • AR shopping assistants • VR Payments	• Remote assistance for Product Installation • Customer Driven support • Rating and Customer Feedback • Product Upgrades and Rollouts

Warehouse Planning and Product Merchandising: Retailers frequently experiment with store and shelf layouts to enhance the in-store experience and improve customer engagement, increasing the chances of purchase and enhancing brand visibility. By leveraging XR applications, brands can gain valuable insights through real-time data analytics and emerging consumer behavior trends. This data-driven strategy empowers teams to make informed choices about product preferences, pricing strategies, and promotional initiatives.

• **Virtual Product Prototyping:** Extended Reality (XR) is revolutionizing virtual prototyping in retail by allowing brands to create and test digital versions of products, such as clothing or furniture, enabling faster design iterations without physical samples. Customers can also interact with these virtual prototypes, visualizing how products will look or fit in real-world environments before making purchases. This reduces time-to-market, lowers costs, and enhances customization, enabling better alignment with consumer preferences

through early visualization and feedback. For example, **Nike** uses XR to create and test virtual shoe designs, speeding up development and reducing the need for physical samples.

• **Product Placement and store layout:** Extended Reality (XR) is transforming product placement and store layout by enabling retailers to create and test virtual store layouts, product arrangements, and merchandising strategies in a realistic, immersive setting. By refining layouts virtually, retailers can save time and resources while ensuring their store designs effectively engage customers and drive sales. For example, **Target** uses AR to optimize store layouts by allowing designers and managers to visualize product placement and shelf arrangements in a virtual environment before implementing changes in physical stores.

• **Employee Training and Onboarding:** Extended Reality (XR) is transforming the training of retail staff and onboarding of new hires by offering immersive, interactive simulations that replicate real-world scenarios. Through these

realistic simulations, new hires can quickly learn protocols, become familiar with products, and refine their skills, leading to greater confidence and competence in their roles. For example, **Walmart** uses VR to train employees on store procedures and customer service, enhancing onboarding efficiency and effectiveness.

• **Regulatory Compliance and Audit:** Extended Reality (XR) is streamlining compliance checks and audits in the retail sector by creating immersive, virtual environments where inspectors can simulate and evaluate store operations without the need for physical presence. XR enables thorough assessments of safety protocols, inventory management, and regulatory adherence, allowing for real-time identification of potential issues. By leveraging XR, retailers can conduct frequent and detailed compliance checks, enhancing overall operational integrity. For example, **Walmart** uses AR to ensure safety compliance by providing real-time visual instructions for staff during audits and safety checks in stores.

- **Responsive pricing:** With Extended Reality (XR) Retailers can simulate different pricing scenarios, assess customer reactions, and observe how price changes impact purchasing behavior. XR allows teams to experiment with various discounting strategies, promotional offers, and price placements in a controlled, virtual setting before implementing them in physical stores. This approach not only enhances decision-making but also helps optimize pricing for maximum profitability, ensuring that

retailers can respond swiftly to market trends and customer preferences. For example, Retailers like **Amazon** utilize XR in augmented shopping experiences where prices adjust based on real-time data like inventory and demand.

- **Offers and Promotions:** Through XR, retailers can simulate various promotional setups, such as virtual storefronts with different discount offers or interactive in-store displays, to gauge customer responses and

optimize effectiveness. This allows for real-time adjustments and evaluations, enabling more engaging and targeted promotions that can drive sales and improve customer engagement. By leveraging XR, retailers can ensure that their offers are visually compelling and strategically positioned to maximize impact. For example, **Sephora**'s AR application allows customers to try makeup in a virtual setup and explore customized promotions, improving offline and online sales.

Interactive Marketing and Advertisement: XR in marketing and advertising for retail transforms consumer engagement by blending digital and physical experiences. Augmented Reality (AR) enables customers to interact with virtual product displays, try clothing items virtually, or envision items in their own home space, enhancing the shopping experience and making it more interactive. Virtual Reality (VR) can offer immersive brand experiences or virtual store tours, allowing consumers to explore products

and promotions in a fully interactive environment. These XR technologies not only capture attention and boost engagement but also provide personalized and memorable interactions, leading to increased brand affinity and higher conversion rates.

- **3D Immersive Advertisement:** Extended Reality (XR) in in-app advertisements offers a dynamic and engaging way to connect with consumers by merging digital content with the physical world. This immersive

approach not only enhances user engagement but also allows for personalized and memorable brand interactions, driving higher conversion rates and fostering a deeper connection between consumers and products. For example, **Burberry** uses AR in its app, allowing users to visualize products like bags and accessories in their own environment through interactive advertisements.

- **Holo Displays and touchscreen Mirrors:** Holographic displays project 3D

images and product information into physical spaces, allowing customers to engage with virtual products and visualizations without physical samples. Smart or touchscreen mirrors use Augmented Reality (AR) to enable virtual try-ons and personalized recommendations, transforming fitting rooms into interactive experiences where customers can see how different products look on them without the need for physical changes. For example, **H&M** is testing smart mirrors on its store floors for virtual try-ons and styling.

- **Dynamic 3D display and billboards:** 3D signboards, powered by Augmented Reality (AR) and holographic technology, bring static advertisements to life with immersive, animated content that can be viewed through mobile devices or AR glasses. Engaging billboards leverage XR to offer interactive experiences, such as virtual product demos, gamified promotions, or real-time updates

that respond to viewer interactions. This integration of XR technologies not only makes advertisements more eye-catching and memorable but also encourages active engagement, driving higher brand recall and customer interaction. For example, **Pepsi** created engaging 3D AR billboards where passersby experienced virtual scenarios, like UFOs or wild animals, interacting with the real-world environment.

- **AR/VR Experience Zone:** AR/VR Experience Zone or hotspots in retail are strategically designed areas within stores or shopping environments that leverage AR and VR to improve customer experience. AR hotspots use mobile devices or AR glasses to overlay digital information, interactive elements, or virtual product demonstrations onto physical products and displays. VR hotspots create fully immersive environments where customers can experience virtual store layouts, try on products virtually, or explore brand narratives in a 360-degree space. For

example, **L'Oreal** uses AR/VR hotspots in stores, enabling customers to try virtual makeup looks in real time through interactive beauty stations.

- **Interactive Packaging:** AR packaging in retail transforms traditional product packaging into an interactive experience by incorporating Augmented Reality (AR) elements that come to life through smartphones or AR glasses. When customers scan the packaging with an AR app, they can access additional digital content such as product information, interactive demos, virtual try-ons, or promotional offers. This not only enhances customer engagement and provides valuable information but also adds an element of surprise and delight, making the shopping experience more memorable and informative while bridging the gap between physical and digital retail. For example, **Coca-Cola** introduced AR-enabled packaging that comes to life through a smartphone app, providing interactive content and brand storytelling to engage consumers.

Redefining Shopping Experience:
Extended Reality (XR) is transforming both online and offline shopping by blending digital and physical worlds for enhanced experiences. In online shopping, XR enables virtual try-ons, where customers can visualize products—like clothing or furniture—in real time, creating immersive, personalized interactions. This technology reduces uncertainty, leading to higher purchase confidence and fewer returns. Offline, XR enhances the in-store experience by providing interactive displays, navigation aids, and product information through augmented reality (AR) interfaces, merging convenience with engagement. These innovations are redefining retail by offering seamless, interactive, and immersive shopping experiences.

- **Virtual Showroom:** XR allows customers to try on clothing, accessories, or makeup virtually, using their device's camera to visualize how products will look in real life. This "try-before-you-buy" feature allows shoppers to assess fit, style, and color, helping them make confident purchase decisions without needing to physically test the items. For example, **Sephora** uses AR through its Virtual Artist app, allowing customers to try on makeup virtually before purchasing.

- **Augmented Product Insights:** Augmented Product Insights leverage augmented reality (AR) to enhance the shopping experience by providing customers with detailed, interactive information about products. Shoppers can use their smartphones or AR-enabled devices to scan items in-store or online, instantly accessing product specifications, reviews, pricing, and even usage tutorials. This real-time information enriches decision-making, offering a deeper understanding of the product's features and benefits, while also reducing the need for sales staff or extensive research. For example, **IKEA Place** uses AR to provide detailed product insights by letting customers view furniture in their own space and explore product details with interactive visuals.

- **Virtual Communal Shopping:** Virtual Communal Shopping in retail allows customers to shop together in a shared, immersive digital environment, even when physically apart. Through extended reality (XR) platforms, users can invite friends or family to explore virtual stores, browse products, and make purchases in real-time. They can communicate via voice or chat, sharing opinions and recommendations as if shopping together in a physical

location. This social aspect of shopping enhances engagement, replicating the collaborative nature of in-person experiences while adding the convenience and accessibility of online retail. For example, **Alibaba** offers a VR shopping platform where users can shop together in virtual malls, simulating a communal shopping experience.

- **XR Gamification:** XR gamification in retail combines extended reality (XR) with game-like elements to create highly engaging experiences for customers. Using AR and VR, retailers can design interactive challenges, rewards, or virtual environments that turn shopping into a playful, rewarding journey. For instance, customers might participate in an AR-based treasure hunt within a store, unlock discounts or exclusive offers, or engage in VR-enabled games that promote new products. For example, **Nike** uses AR-based gamification in their SNKRS app, allowing users to unlock limited edition shoes by completing virtual challenges.

- **AR shopping assistants:** AR shopping assistants in retail utilize augmented reality to provide customers with personalized, real-time guidance during their shopping experience.

By using a smartphone or AR-enabled device, shoppers can access virtual assistants that help them navigate stores, recommend products based on preferences, and offer detailed information such as pricing, reviews, or availability. These virtual assistants can also suggest complementary products and promotions, enhancing the overall shopping journey. For example, **Lowe's** uses an AR assistant to guide customers through stores, helping them locate products and providing information about items in real time.

- **VR Payments:** VR payments in retail allow customers to complete transactions seamlessly within virtual reality environments, enhancing the immersive shopping experience. As shoppers explore virtual stores or try products in VR, they can securely make payments without leaving the digital space. Payment options, such as virtual wallets or biometric authentication, enable fast and secure checkout processes, integrating familiar e-commerce functionality into the VR world. For example, **Walmart** has experimented with VR payments by integrating secure, in-app purchases in its virtual reality shopping experiences, allowing customers to browse and buy products directly within the VR environment.

Post-purchase Services: Extended Reality (XR) is transforming after-sales service in retail by enabling immersive, interactive, and efficient customer support. AR-based troubleshooting allows customers to receive real-time visual guides for product maintenance, reducing the need for on-site visits. It enhances customer education with virtual tutorials and post-purchase AR guides for tasks like setup and installation. XR also helps reduce returns by ensuring correct product use and offers personalized after-sales recommendations based on customer data.

- **Remote Assistance for Product Installation:** XR, particularly AR, is making remote product assistance and installation easier by providing customers with interactive, step-by-step visual guides overlaid directly onto the physical products. Using AR-enabled apps, customers can point their devices at the product, and the system will highlight where parts should go and how to assemble them. This reduces errors, speeds up the installation process, and eliminates the need for lengthy instruction manuals, leading to a smoother post-purchase experience. For example, **Lowe's** uses AR to provide step-by-step instructions for customers during DIY installation and assembly of home improvement products.

- **Customer-driven troubleshooting support:** AR apps are empowering customers with self-service capabilities by overlaying virtual instructions directly onto products, guiding them step-by-step through troubleshooting processes. This makes post-purchase support more accessible and reduces the need for in-person technical help. It enhances the customer experience by offering instant solutions to common issues and ensures products are used correctly, minimizing misuse and returns. For example, **Bosch** offers AR-enabled troubleshooting guides that help customers diagnose

and resolve issues with household appliances using their smartphones.

- **Ratings and Customer Feedback:** XR is transforming how customers provide feedback by offering immersive platforms for submitting ratings and reviews. In virtual showrooms or AR apps, customers can interact with products and leave feedback directly within the experience. VR can also simulate real-world product usage scenarios for more detailed and context-rich reviews. This enhanced feedback

loop helps retailers understand customer preferences better and improve after-sales services. For example, **Warby Parker** allows customers to leave AR-based reviews and feedback by trying on virtual glasses and sharing their experiences directly through the app.

- **Product Update and Rollouts:** AR and MR are revolutionizing product maintenance by allowing customers to visualize the inner workings of their products through AR overlays, which highlight parts that require attention.

XR-based notifications can alert customers to upcoming maintenance needs while offering interactive guides for minor repairs. In some cases, retailers can use XR to offer virtual demonstrations of product upgrades or new features, further driving sales and product engagement after the purchase. For example, **IKEA** uses AR through its app to assist customers with product maintenance and upgrades, offering visual step-by-step guides for assembling and maintaining their furniture.

Challenges while adopting Extended Reality across the retail value chain

Adopting Extended Reality (XR) across the retail value chain faces several key challenges. Implementing XR for Warehouse Planning and Product Merchandising requires significant investment in hardware, software, and system integration while scaling XR for large, multi-location warehouses strains

infrastructure and resource challenges, especially when managing real-time data. In Interactive Marketing and advertising, limited device penetration hampers the reach of XR-driven campaigns, and ethical concerns around data collection and privacy must be carefully managed. Redefining the Shopping Experience

demands a consistent omnichannel presence and secure, seamless checkout processes to maintain customer trust. Finally, Post-Purchase Services are limited by XR device lifecycle management and modest consumer access to AR/VR hardware, impacting virtual after-sales assistance effectiveness.

Infosys XR: Pioneering Immersive Solutions in Retail

Infosys has long been at the forefront of emerging technologies, making significant investments in immersive experiences through its dedicated Center of Excellence (CoE). The CoE focuses on the entire reality spectrum, including Captured, Assisted, Augmented, Mixed, and Virtual Reality (VR), along with Spatial Computing. As part of this evolving journey, we have been actively engaged with our customers via FOIK projects, workshops, design thinking sessions, and building relevant solutions for clients across industries.

Infosys has a growing presence in extended reality (XR), particularly retail, and has been developing several innovative solutions which include a 3D Holographic Display with Gesture Control and Haptic Feedback, allowing users to engage with products in a 3D holographic setting. Another breakthrough is the Virtual Try-On solution, which creates 3D avatars from images to simulate apparel fitting. Infosys has also created a Web-Based Virtual Store using its VR studio, enabling immersive retail experiences with no-code functionality. Additionally, the VR-based Mobile App offers customers a virtual shopping experience where they can explore and interact with products in VR before making a purchase. By harnessing XR, Infosys is helping retailers enhance operational efficiency, improve customer engagement, and offer innovative shopping experiences tailored to modern consumer demands.

What's Next with Extended Reality in Retail

As we look ahead, the next phase of extended reality in retail promises to be a game-changer, driving innovation across every touchpoint of the customer journey. With advances in AI-powered personalization, seamless integration across digital and physical spaces, and enhanced accessibility through everyday devices, XR is poised to redefine how consumers interact with brands, products, and services. Retailers who embrace this immersive technology will not only create unforgettable shopping experiences but also unlock new levels of efficiency, engagement, and customer loyalty, positioning themselves at the forefront of a rapidly evolving market. The future of retail is immersive, and XR will be its catalyst.

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