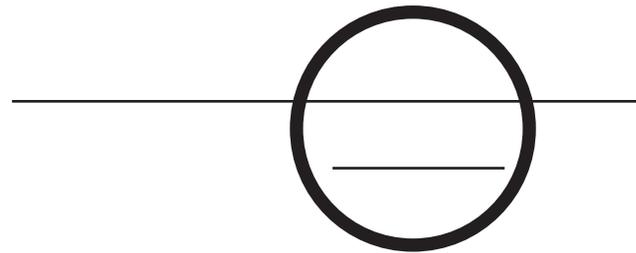




Case Study 1

Augmented Reality in Retail



Augmented Reality Experts

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1. Aim

This case study discusses augmented reality (AR) and its application in the retail industry. After briefly exploring the concept of AR itself, the case study focuses on its use in retail including its key benefits, applications and findings from industry research. Lastly the document focuses on key considerations for those seeking to use AR in their retail businesses and how ARE can help you realise your AR objectives.

2. Introducing Augmented Reality

What is Augmented Reality?

“With augmented reality we harness the affordances of technology to provide users with an enhanced experience by adding a layer of digital information to our experience of the world around us. This experience can be delivered in many ways using different technologies across different locations for various purposes and industries”

(Alec, Augmented Reality Experts)

With the advancement of technology and changing demands of an increasingly digitally native a population [1], augmented reality (AR) has been entering into more and more facets of our lives. One of the earliest widespread examples has been in sports coverage where additional information such as touch-down lines or 3 point markers have been superimposed over the live playing area – augmenting the viewer’s experience. Similarly, in gaming users engage in an AR experience as they look through a screen or lens containing supplementary information about health, targeting systems, location, weapons etc. that responds to their surrounds as they play and interact. AR is defined by this bringing together of the real and the virtual to enhance our knowledge and understanding and help us do things better and more efficiently [2].

AR can be conceptualised as part of a continuum ranging from virtual reality (completely synthetic) to telepresence (completely real)[3], with AR located closer to the real world end but somewhere between the two extremes [4, 5]. Unlike virtual reality which takes the user to a new world, AR does not seek to replace the real world, but rather uses it as a background [6]. AR is not limited to certain tools or technologies, and has been understood by some as a technique comprising three key characteristics; that it combines real and virtual, is interactive in real time and registers in 3D (although 2D options are possible) [7]. Regardless of how one defines AR, when we use it we are no longer a “detached observer”, but rather enter the digital environment and interact with it [2].

Why Augmented Reality?

It is the blending of the real and digital that grants AR such widespread potential yet simultaneously poses technological challenges. For AR to function well objects need to be tracked in space and time so that the virtual and real visually align and coincide in real time. This requires serious resourcing and although this may have previously held the industry back, digital natives are demanding more innovative and interactive opportunities and the widespread adoption of smartphones and other personal devices have driven interest from developers and companies in recent times [8]. As a result, AR is becoming more widely known and better understood, especially since the successful release of PokemonGo in July 2016 which bough AR into the lives of millions across the globe [9].

Beyond its interactivity, ability to provide additional information and immersive nature, AR is able to assist with learning and memory processes. The key principle being that we tend to “remember things better when they are spatially associated with locations in 3D spaces rather than as abstract ideas” [2]. This process of remembering things by relating them to spatial locations can be used effectively to recall information by walking back through certain places or ‘loki’ [10]. These characteristics of AR make possible countless applications across industries ranging education and training, property, gaming, retail, personal use and the public sector in order to achieve tangible and meaningful outcomes.



3. Augmented Reality and the Retail Industry

Applicability of Augmented Reality in Retail

The fundamental principle underpinning AR, that being to augment the user's experience of reality by adding new images, text, video and graphics, is what makes this technology perfectly suited to the retail industry. While e-commerce has been threatening some brick-and-mortar establishments, AR offers another level of engagement with consumers that is more customised, interactive and informative. In fact the areas of interactive marketing, advertising and sales have been cited as the "largest application opportunity for AR" [11]. AR also has the advantage of being able to be used in-store to improve the customer experience at point of sale [12] as well as out-of-store in a variety of contexts including at home, at work or study, in transit and at social gatherings including at venues such as restaurants and cafes [13, 14]. Increasing technology development and adoption (especially mobile devices) has seen the consumer market start to realise this potential at they adopt AR technologies [15].

"I'm excited about Augmented Reality because unlike Virtual Reality which closes the world out, AR allows individuals to be present in the world but hopefully allows an improvement on what's happening presently... That has resonance." Tim Cook, CEO, Apple [9]

What the research says

While studies into the use of AR in the retail sector are still limited, the number has been steadily increasing in recent years. Studies tend to focus on the use of mobile augmented reality (MAR) applications both to enhance the in-store customer experience and to facilitate online purchases. The use of smart mirror technologies to enable consumers to virtually try-on different items is also explored with most research evaluating customer expectations and or reactions to the use of AR techniques. Research suggests that while only a small percentage of consumers currently have experience with MAR shopping applications [14], AR can capture their attention and influence their purchasing decisions [5, 16].



Research also suggests that AR enriched retail experiences can result in:

- Higher user and purchase satisfaction [14, 17]
- A greater willingness to buy [14, 17]
- Consumers being more likely to make store visits [14]
- The promotion of social interactivity and fun learning among users [18]

• Users being able to feel the realness of objects [18]

AR enriched retail experiences should:

- Be “practical, easy to use, easy to learn, organized, symmetric, attractive, and pleasant if it is to provide effective and relevant information to users” [17]

- Consider the emotional aspects of the retail user experience [17]

- Be “playful” and “entertaining” momentary experiences [19]

- Focus on the interaction between consumer and technology being an enjoyable experience and prioritise “aesthetic quality, interactivity, response time and the quality of information” [5]

Consumers like:

- AR’s ability to virtually trial (try on and try out) products [12, 14, 18]

- AR’s ability to provide access to additional and complete product information [12, 14, 18]

- The way AR facilitates access to a greater range of inventory [14]

- The personalisation benefits afforded by AR [14]

- The ability to be more certain about what you are buying what you want [14]

Uses of Augmented Reality in Retail

The application of AR in retail may still not be widespread, but examples can be found across the fields of furniture, automotive, print media, jewellery, eyewear, consumer electronics, fashion, footwear, toys, art, music, food and general retail [12]. The first major retail applications were seen in 2010 with the introduction of the Converse Shoe Sampler Application which enabled users to simply point your phone’s camera at your leg and virtually try on the range of styles available, share them and make direct purchases if satisfied with the look. Since this time the number and types of AR uses in retail have increased greatly and can be broadly categorised into three key functions; 1) virtual trial and product education; 2) in-store customer experience enhancement 3) and, brand recognition enhancement [12].

Based on these three categories, several real world examples of the application of AR in retail are provided below. In recognising the limitations of these three categories ‘other’ applications are also briefly discussed.

Virtual trial and product education

One of the most common types of AR applications in retail has been in improving the consumer experience through enabling consumers to virtually try out products and access more product information. Smart or virtual mirror technology has had great application for this purpose and this technology has come a long way and been modified for other product types including make-up and eyewear (both for in-store and online use). Now there is even the technology to measure your facial features and virtually ‘fit’ your next pair of prescription glasses.



AR has also been used in-store to enhance the consumer experience and help retailers compete with online options (or leverage their own) by giving customers something they are unable to experience elsewhere. For example, in 2010 Lego introduced AR in their in-store kiosks which would project a 3D image of the assembled toy on top of the box the consumers were holding, also enabling them to view it from all angles.

It is clear that AR captures the attention of consumers and you need only watch the Unbelievable Bus Shelter Pepsi Max developed as part of their #LiveForNowPepsi campaign to see how engaging AR technologies can be. Pepsi took over a busy bus shelters in London and sought to give commuters an unbelievable moment in their day by using a camera and a screen to overlay a range of crazy scenarios onto what they were actually seeing around them. This type of application supports brand recognition and the nature of AR increases the likelihood of brand recall.

4. Future of AR in retail

Despite this increasing interest in AR in retail, it is still an emerging market ready to be capitalized on [2]. As technology and hardware develop further, the scope for AR will increase dramatically. We already see researchers at Stanford University's Human Interaction Lab exploring ways to add smell and touch to virtual reality experiences which has implications across the virtual continuum. In particular such advancements have great potential for e-commerce and in particular for high involvement products including clothes where the lack of ability to touch, feel, smell and try on an item makes evaluation difficult and can negatively influence purchase decisions [20-22]. Moreover, given the early stage of AR use in retail, there is scope for increased integration between the use of AR technologies and shopping options [14], revolutionising the shopping experience both in-store and out-of store, and for internal applications. It also has great potential for reducing costs, gathering data and securing future sales.



5. Key Considerations for AR

in Retail

1. Have a clear plan and set of objectives for your web or mobile AR application

- Increase in-store visits
- Improve point-of-sale experience and in-store sales
- Improve customer satisfaction and value recognition
- Increase online sales
- Increase brand awareness and engage with customers
- Improve in-house training
- Maximise use of in-store space

2. Understand the affordances of AR and which ones you intend to leverage

- Provide additional product information
- Provide 3D virtual product visualisations
- Offer customisation techniques
- Offer the ability to virtually try-on or try-out products
- Offer a fun and engaging experience
- Offer innovative training and learning programs

3. Define what functionality you expect and focus on the customer interface and experience

- Ease of use, practicality
- Enjoyment of experience
- Interactive game
- Viewing experience
- Smart or virtual mirror technology
- Examples of functionality in similar applications

4. Make sure the content, messages and design are relevant

- Particular storyline, themes
- Specific characters, products, animals or objects
- Specific colour palette and images or graphics
- Key phrases or messages
- Intended duration of consumer use / experience?
- Examples of themes or storylines from other applications

5. Understand how you intend your AR experience to be used practically

- Types of device to be used on/with? Web? Mobile? Tablet? Smart glasses? Other?
- Intended timeframe for application availability?
- Do you want it for public use or for a specified audience?
- Which platforms do you want it supported on?
- Where do you want the application to be used?



6. How ARE aims to work with the industry

The use of AR in the retail industry in Australia is an exciting and developing opportunity for businesses of all sizes to capitalise on as they mix the boundaries between mobile, online and the real world. At ARE we are a team of specialised individuals that combine skills across business, architecture and engineering, software development, animation and 3D rendering to create applications that integrate AR with practical and creative innovations. We are passionate about AR and work closely with our clients to find new and creative ways to leverage the affordances of AR to meet your business objectives. We are based in Melbourne with representation in Sydney and Adelaide and look forward to realising your AR ideas with you.

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