DIGIER

Digital Transborder
Entrepreneurship Readiness

Chapter 3: AR for eCommerce

Guide on Digital transborder Entrepreneurship strategies in business environment

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Chapter 3: AR for eCommerce

Introduction

Augmented reality, commonly abbreviated as AR, is all about enriching the real environment with computer-generated content, which is largely supplemented with graphic content. AR can be identified as a system that **combines the real and virtual worlds**, interactive reality in real-time, allowing freedom of movement in three dimensions. Thus, augmented reality does not create a new, fully virtual three-dimensional world, but **"complements" the real world** (which does not change) **with new images or information**, i.e., virtual shell. This can be a supplement in the form of simple information - such as street names, navigation information - or an extension based on complex photorealistic objects that blend into the real world and form a whole with it.

AR extends reality but does not replace it. Virtual reality (VR) on the other hand completely replaces your surroundings with a virtual environment. Therefore, **any equipment that combines digital content related to your real environment is an AR device. Equipment that works regardless of your location and embraces your vision is a VR device.**

Augmented reality does not have to be limited only to the image. The real world can be enriched by devices also with sound, and even a smell. AR computing equipment comes in many forms, including handheld displays, and devices that you wear, such as headsets and glasses.

Woman in augmented reality glasses on running machine; source:

The greatest demand for AR technologies currently comes from the **creative economy industries** - in particular, games, live events, industries as diverse as healthcare, education, the military and real estate. Common applications of AR technology include video games, television, and personal navigation, although there are many other applications as well. Augmented reality is also used on television, especially in sports. For example, golf broadcasts sometimes display a line on the screen that tracks the flight of the ball. Major league baseball games often display dynamically generated advertisements behind the motherboard.

Most recently popular is **augmented reality navigation**, used to display location information in real-time format. This is usually done via a HUD (heads-up display) that projects the images in front of you like a hologram. For example, the HUD in a car can display speed, engine RPM, and other useful data. Google Glass, a head-mounted display, can overlay directions from Google Maps and identify locations with its built-in camera.

However, we still face the problem of data transmission. With all real-time remote services, internet connection quality is critical. Providing good quality transmission is one of the points of the remote start-up procedure, hence the obvious hopes for 5G mobile technology. Entrepreneurs interested in the AR technology should be pleased with the information that the number of 5G connections will increase significantly in the next 5 years. The recent CCS Insight forecast predicts that by 2025 there will be as many as 3.6 billion of them worldwide. For comparison, in 2020 it was only 0.25 billion.

Many digital solutions will definitely stay with us, such as virtual training or remote diagnostics. No one is surprised anymore when, when entering the office, they see a person wearing virtual reality glasses, making seemingly strange gestures in the air. Businesses are currently investing in virtual reality systems, and it is nothing extraordinary anymore. Ever since the reality of **AR** appeared, it has made a small revolution in the area of e-commerce. Over time, it has also **changed the way you shop online.** It made online stores gain an advantage over brick-and-mortar stores. Consumers who so far were attracted only by the possibility of trying on, measuring, and physically checking the product, thanks to AR, began to transfer their habits to the Internet. Online shopping is faster, more convenient and often cheaper, and the consumer does not have to leave his room to buy a new pair of shoes. AR reduces the physical limitations of online trading. It allows you to check a product or service without leaving your home, e.g., using **3D visualization, QR codes, filters, virtual fitting rooms or virtual sellers**. AR can also successfully support a

company's new product development activities - it ensures that development processes are carried out in a digital environment, which generally **speeds up the moment when new products appear on the market**.

Theoretical part – POLAND

Polish companies recognise the potential of AR, both in terms of improving processes within the company and at the interface with the customer. AR technology is becoming one of the catalysts for change that will enable businesses across industries to reshape themselves in the post-digital era.

At the moment, however, Polish traders are mostly not yet fully aware of the role they play when it comes to serving business customers with AR solutions. And they are not sufficiently interested in it either. As a result, there is usually a lack of ideas for the use of smart glasses - a product designed for entertainment or to support drone operators. Indeed, viewing a painting or other exhibit in an exhibition in a museum, gallery or educational institution can be made more interesting by offering visitors smart glasses that display additional content in augmented reality. It is even easier with smartphones, where the potential for introducing modern technologies is increasing.

Industry is a sector that has always been very innovative, and the virtual world is no different. It is noted that it is the manufacturing sector that will drive the growth of VR /AR spending over the forecast period 2019-2024. This technology works particularly well in the area of remote training and collaboration between remote locations. And the industry has not stopped with the outbreak of the pandemic in Poland. According to experts, this has contributed to such a dynamic development of the above-mentioned industry IT. By and large, the pandemic had a huge impact on the economy, as stopping or delaying investments could have ended tragically for many companies. In Poland, an international company ABB has been developing a system for several decades that digitises the working environment in the service area and helps to carry out standard activities in the plant strictly according to the procedures in force, without omitting a step that could lead to dangerous situations. With the help of industrial tablets or HoloLens glasses, the operator gets access to data about resources, processes and procedures in real time (he does not have to use his hands for this). This minimises the risk of human error while increasing safety and process control.

In the Medical University of Warsaw, augmented reality was used during the procedure of implantation of the patient, namely virtual visualisation of

anatomical structures of the operated person, the prosthesis, the scope of tissue removal and correct placement of the implant. This was all thanks to the doctors' collaboration with MedApp engineers, who created the necessary applications for the operation. The visualisation was available during the surgery thanks to Microsoft HoloLens glasses. With simple gestures, the surgeon was able to view virtual models and compare them with the real state.

Not only the activity of MedApp proves that there are companies on the Polish market that already have an offer of AR solutions for clients from various industries. The second example could be the Transition Technologies PSC and its cooperation with Fiat Chrysler Automotive. The manufacturer, interested in implementing the idea of Industry 4.0 in the Polish plant, decided to invest in augmented reality systems and the Internet of Things, and thus to help the integrator implement them. The project started with the support of service and maintenance employees - e.g., in such a way that instead of paper instructions they were given tablets and augmented reality glasses as a user interface, as well as appropriate software enabling the superimposition of digital modules on real objects.

Therefore, the main directions of the development of augmented reality in Poland seem to be, among others, replacement of computer screens by devices displaying images in real space, which can be controlled by means of gestures or eyesight; creating virtual devices and applications, control panels - the production of which would not be possible using the existing solutions; virtual conferences; using holograms as virtual screens, interactive whiteboards that would allow computer-generated images to interact with real audiences; virtual industrial plants or virtual instrumentation - such as a wall clock, planner and calendar above the bed.

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Theoretical part – GREECE

Augmented Reality (AR) for e-commerce in Greece, is still at an early stage, but the plan implemented by the Greek chapter of the VR/AR Association, seems quite promising. By 2023, the global virtual and augmented reality market is expected to reach $ 124.4 billion (Business Daily, 2021).

Source: Spyridakis, A., 2018

E-Commerce services are one of the key industries that has benefited from Augmented Reality. AR deservedly takes its place in the "toolbox" used by companies in order to increase sales by enhancing the value of the brand. Companies are turning to Augmented Reality using technology, among other things, to entertain, educate, attract new customers, or develop personalized shopping assistants. Let's look at some examples of successful use of Augmented Reality in marketing and consequently in e-commerce in general:

- Augmented Shopping Experience, where customers try before they buy.
- Cards, flyers, and branding material enhanced with videos, information, and various other ways in which potential customers get in touch with the company and the brand.
- Create a "buzz" around the brand.
- Augmented touring, where customers scan a digital component that provides an AR experience tailored to provide additional information.

Some Greek AR companies have already successfully created applications for business marketing services. For example, "The brochure that comes to life" was very popular. It contains an entire directory in a single booklet, thus, reducing the huge cost of creating a directory to a minimum. The example can be explored through the following link: https://www.youtube.com/watch?v=zHAzRQM_0Qk. Companies whose natural products occupy a large volume, such as orthopedics, furniture and even the automotive industry are increasingly using Augmented Reality (Bitar, 2020).

Now with the AR technology it is enough to go out on the street and whatever information we want will be displayed on the screen of our tablet

offering us a complete bouquet of digital real-time information for everything we are looking for; in many cases we can also see offers that "run" that day or time. This is how the market in the developed markets is now moving, and so now Greece is starting to enter augmented reality market rates (ThinkAR, 2018).

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Theoretical part – UNITED KINGDOM

Augmented reality technology has completely changed the world of markets and the consumer experience, and the same is true in the UK. It bridges the gap between physical shops and online shopping experiences. With augmented reality, the future of e-commerce is one where we move beyond the website and the mobile app

Online shopping has increased significantly, especially during the pandemic. According to a global survey of 20,000 consumers commissioned by Snap and conducted by Foresight Factory, it has shown that customers are better able to visualize the product and/or see it in the right place. According to another survey conducted in 2021, only 34% of respondents in the UK indicated in-shop purchase as a purchase option. In the same article we also learn that the use of augmented reality will explode. It is expected that 80% of those born between 1995 and 2010 will use the technology in the next five years. Interestingly, women are more interested in augmented reality experiences, both online and physical, than men. In addition, men aged 18to 35 have used more augmented reality applications both online and offline.

In UK, clothes and accessories are the most popular items purchased using augmented reality in both online and offline stores according to

getapp.co.uk. Only 15% of consumers in the UK have used AR technology to buy something online. However, of the 85% who have not used the technology to shop online, more than half (53%) would be willing to try it. AR technology is also used when buying cosmetics (40%).[1]

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Theoretical part – SLOVENIA

AR for eCommerce

The lines between in-shop and online shopping experiences are becoming increasingly blurred as more brands experiment with augmented reality (AR) and virtual reality (VR) to create innovative customer experiences. In recent years, AR /VR technology has been touted as "the next big thing', but adoption has been a little slower than initially expected (Telus International, 2021).

Augmented reality (AR) is a technology that enhances our physical environment with virtual information. In other words, AR enables the addition of virtual elements - such as videos, 3D models, animations, links, etc. - into the real world. In this way, we can change our perception of the real world (viz-obl, 2019).

AR experiences can change the way online customers perceive the products they intend to buy. By using AR, customers can better understand their needs and determine whether the products they intend to buy meet their requirements. Some online sales brands have already started experimenting with AR, which will help them stand out from the competition (Luka Žvar, 2020).

Increasingly online purchases are being made via mobile phones. Retailers

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[1] https://www.getapp.co.uk/blog/1713/1-in-2-consumers-uk-willing-to-use-ar-technology-shopping

will have to work hard to ensure that consumers have the same shopping experience regardless of which device they use to access their online shop. This means that a lot of attention will have to be paid to multi-channel selling.

Artificial intelligence and augmented reality will play an increasingly key role in online sales, replacing the in-shop salesperson and reducing the number of product returns (FinancePro, 2020).

Augmented reality ("AR") is revolutionising online shopping. This technology allows consumers to see the product they want to buy in full detail, making it easier for them to make a purchase decision. It is particularly welcome in fashion shops and shops selling furniture and other home accessories. More people would probably choose to shop online if they had the opportunity to try on a particular item of clothing, and that is exactly what augmented reality enables us to do (Siol1net, 2021).

In March 2019, Technology Park Ljubljana hosted the first Slovenian Look Around 360 conferences dedicated to virtual and augmented reality technologies and opened a laboratory for all lovers of future technologies. Technology Park Ljubljana aims to be the centre for young enthusiasts and develop breakthrough ideas with the help of various experts and mentors (Tehnološki park Ljubljana d.o.o., 2019). AR for eCommerce is still in its infancy in Slovenia. AR is only used by larger international companies. For the time being, AR is used in Slovenia for production optimisation and tourism.

There has been some progress in the pharmaceutical sector. What was science fiction yesterday is now standard equipment at pharmaceutical giant Novartis. Novartis in Slovenia has developed its own mixed reality platform in 2021 to provide holographic coverage of their laboratories and production facilities. The platform, an entry point into the world of mixed reality that offers simple solutions to very complex problems, was developed by Novartis in Slovenia and will be available worldwide (Dragica Bošnjak, 2021).

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Theoretical part – ROMANIA

The number of physical shops switching to online mode is growing. The COVID -19 pandemic has made it easier for businesses to go online. Seles websites have a 2D design that can provide customers with simple product information. With augmented reality technology, sales pages can be created in a friendlier format.

Private companies are adapting to the new augmented reality technologies. For example, a major furniture company in the industry has introduced an augmented reality application. With this application, you can try out various products with the cameras of your smartphone.

With Augmented Reality, you can furnish the whole house without leaving your room. With the Ikea application, you can set up over 2,000 3D products from Ikea's online shop in your home using only your smartphone's camera or your PC.

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