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MASTER OF BUSINESS ADMINISTRATION

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TITLE OF DIPLOMA THESIS
Augmented Reality as an Instore Marketing Tool

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SUMMARY
1. Main objective:
The main objective of the thesis is to make an approach and use the Augmented Reality technology as an in-store marketing tool for sales and promotion. There is an effort to prove the volume of increased turnover of the store if Augmented Reality is used and give recommendations.
2. Research methods:
A quantitative research took place, observing 200 LEGO customers during a period of 2 weeks in LEGO store in Prague. The sample is divided in two categories: Parents with kids and Giftgivers. The tools of the research were a LEGO printed catalogue, the LEGO 3D app installed in an iPad mini and the observation grid with data about each customer.
3. Result of research:
The great majority of 200 people who participated in the survey were positive towards Augmented Reality experience inside the store, they made more purchases, spent more money and time in LEGO store, in comparison to those who were exposed to the printed catalogue.
4. Conclusions and recommendation:
Augmented Reality seems to be a quite interesting marketing tool that attracts the attention of marketers and shoppers. AR experience is possible to affect purchase decision more than traditional methods, such as the printed catalogue and its use is recommended as an in-store marketing tool.

KEYWORDS
Augmented Reality In-store Marketing Interactive Marketing Customer behavior

JEL CLASSIFICATION
·   C830 - Mathematical and Quantitative Methods, Data Collection and Data Estimation Methodology; Computer Programs, Survey Methods; Sampling Methods ·   M3- Marketing and Advertising

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1. INTRODUCTION

Technology has always been an important contributor and a tool for companies to introduce their products to consumers and to promote sales. The ever-growing pace of technology nowadays brings new opportunities for marketing. Every technological breakthrough and trend is adopted as a tool that will make marketing effort more effective. Marketers have to adapt quickly and utilize these tools to the needs of products and services.

During recent years there has been a shift from traditional forms of promotion, such as TV ads, newspapers, brochures, etc., to more technology dependent methods. One such new technology is Augmented Reality (AR).

What makes Augmented Reality stand out is the fact that boundaries between the real world and what is computer generated, are blurred. It is a way to enrich the environment with more elements, thus enhancing the sense of sight and hearing with sounds, videos, graphics data or positioning data. Between our eyes and the environment there is a "layer" of digital information. In this way, the procedure of promotion becomes more efficient.

As the development of Augmented Reality has reached a satisfactory level, it has attracted the attention of many large companies as an innovative marketing tool.

The objective of this thesis is to make an approach and use the Augmented Reality as an effective tool regarding in-store marketing and sales promotion, and give recommendations regarding the use of AR. There is an effort to prove the volume of increased turnover of the store if Augmented Reality is used. There is an observation of the interaction between shoppers and each given tool, in order to measure their impression and the attractiveness of marketing tools (LEGO 3D application and printed catalogue).

It is generally admitted that the purpose of advertising is to catch the attention of potential buyers. Users today seek for a more active role rather than being passive recipients. Advertising and promotion, traditionally are based on the expectation that the consumers will stop what they are doing and turn their attention to the message (Scott 2007, p. 7). However, the rapid expansion of the Internet, which focuses on different options, interaction and information, pushed advertisers and retailers to new methods to promote their products and services.

At the same time, the internet has greatly contributed to changing behavior of consumers. They want to participate, to be co-creators of the messages and interact with both a brand name and other users that are interested in the same product (Tuten, 2008, p. 127).

People do not want a message to follow a one-way direction without the possibility of a reaction from the target audience. With the average person passively receiving hundreds of advertising messages a day, people now do not easily trust advertising (Scott, 2007, p. 7).

Augmented reality is the marketing tool that takes full advantage of the modern needs of promotion of products and sales. It is a strong and important means of interaction and participation, having a major role in the dissemination of advertising messages.

In the following chapters there is an attempt for a more detailed analysis of the technology of Augmented Reality and its use/impact in marketing.

The second part includes the literature review with the analysis of concepts as in-store marketing, interactive marketing, a description of Augmented Reality (AR), how it started, its evolution and how it stands today. There are surveys that prove the importance of brick-and-mortar stores over e-commerce and how shoppers use their smartphones while shopping in a physical store.

There is an extensive description of the relationship of AR technology with marketing and multinational companies such as IKEA, LEGO, BMW and more, that use AR in order to promote their goods. Furthermore, the potential and benefits of AR in marketing are outlined.

The analytical part of the paper includes a two weeks observation of 200 customers in LEGO store in Prague. They were divided in two groups, half of them experiencing LEGO® 3D Catalogue mobile application through an iPad mini and the other half, the printed LEGO catalogue. Customers are Parents with kids and Giftgivers (no kinds in the store).

The third and final part contains the results of the research in LEGO store and graphs with the results. There are chapters regarding the proposed substitution of recent technologies and methods in LEGO store, the benefits, summary, recommendations and conclusions.

2. THEORETICAL – METHODOLOGICAL PART

In the theoretical part is included the literature review with terms such as in-store marketing, interactive marketing and Augmented Reality. This part is of great importance as it covers basic concepts regarding the topic and paves the way for the research. Below, there is the technological advancement of AR and examples of multinational corporations that include marketing campaigns and tools based in Augmented Reality.

2.1 In-store Marketing and Media

Companies are investing huge amounts in "out-of-the store" marketing in order to advertise their products and make the customers visit the store. TV and radio ads, billboards, brochures, online ads, is something that we all see around in a daily basis for different types of products and services. However, the marketing efforts are not limited in out-of-store media as they are not sufficient, in-store marketing is also an important part of the marketing strategy that retailers and brands take into consideration.

After bringing the customer in the store, retailers have to persuade him to purchase as many products as possible. Here comes the "in-store marketing". According to Investopedia (2017), the concept could be described as "all the marketing activities available in stores that strongly influence consumer behavior at the point of purchase".

According to a research made by Pragma Consulting in UK and published in July 2016, 84% of participants admitted that they prefer online channels to make the research for the product they are interested in. However, 53% said that they prefer being in store in order to make the final decision. Therefore, the brick-and-mortar experience seems to be of great importance. This indicates that the retailer still has the possibility to influence customer's decision and behavior, in an easier, more direct and probably a more efficient way.

In the same research it is indicated that it is 43% more likely to purchase in-store for customers who prioritize the overall shopping experience and while being in store, impulse purchases are 10% more likely.

In contrast with out-of-the store marketing, which has a marginal effect on attention, in-store marketing primarily affects attention. Marketers are devoting a growing part of the promotional budgets to in-store marketing rather than out-of-the store media and retailers are responding by adopting increasingly sophisticated shelf management and audience measurement tools (Egol, 2008, p. 68).

Visual attention is the primary goal and visual marketing plays a key role, as it is widely recognised to be an important practice. As a part of point-of-purchase stimuli may be considered store displays, shelf talkers, packages and flyers (Wedel, 2007, p.1). These are some of the ways that companies chose to communicate with their customers, they use visual aids to make the product promotion more effective.

As Wedel defines it, visual marketing is "the strategic utilization of commercial and non-commercial visual signs and symbols to deliver the messages and experiences to customers" (Wedel, 2007, p.1-2). Customers have to believe what they see, and since "believing is buying", it is important to make the customer see and pay attention to the product. Make him see as many as possible. Thus, there is an opportunity to maximize the profit.

Visual marketing is a crucial in-store method. Since the shopper is in the store the retailer has to take advantage of his presence. There are different in-store marketing tools in order to promote products in the field. As more traditional tools can be considered the spot in the shelf for a specific product, the banners in the store, product samples, product demonstrations, special offers, buy one, get one free, special discounts, coupons and in-store displays showing the promotional message.

The tools mentioned above are widely used, however the question is how effective they may be, if they are enough and to what extent they may benefit or even harm the brand.

Behind the methods of in-store sales promotions (discounts, buy-one-get one free etc,.), the purpose may vary, either to boost sales, reduce the inventory, or build consumer awareness of a new brand and attract more buyers for a brand that is already known. This method, especially when it is not priced based, can be very effective in order to raise consumer awareness. Premium-based promotions may be more effective than price-based. An example of this kind of promotion may be a giveaway, such as a hairbrush with a hairdryer.

On the other hand, price-based sales promotions may have the opposite results, especially for some premium products. A brand may hurt its image and reliability when the discount is above a specific percentage and is done quite often or without any announcement. A study from Babson University indicated that deep discounts (20% or more) are more possible to hurt the brand in the long-term, rather than lower price cuts. These kinds of actions are more and more frequent as marketers stress for more immediate profits. Therefore, sales promotions are short-term orientated and do not enhance long-term brand reputation.

Another practice is the in-store display, that is an effort to catch the attention of the customer with different messages that end up spamming them, rather than enhancing the shopping experience.

Based on the above findings, may come the conclusion that the overuse of this kind of actions can harm the image of the brand and the qualitative values it stands for.

It should be mentioned that besides the temporary methods that may boost the sales, what should retailers focus on, is the overall shopping experience, with a more relaxing and entertaining buying experience, better customer service and an in-store ambiance tailored to the needs and lifestyle of the modern consumer.

Since the modern consumer can be described as tech savvy (well informed and proficient in the use of modern technology), technology should play a key role in in-store marketing. One suggested marketing tool to enhance the shopping experience, could be (among others) Augmented Reality.

2.2 Interactive marketing

Thanks to the development of technology there are new tools being introduced and can be applied through devices we all have in our hands. The purpose is to catch the attention of the shopper, make him being involved in the message. Here comes the term of interactive marketing. " Interactive marketing (or trigger-based or event driven) is a strategy that uses two-

way communication channels that allow consumers to connect with the company directly" (Sargeant, 2002, p.5).

The communication can take place in person, however it can be also done online, through email, social media, mobile devices. It is a marketing tactic in response to something a consumer does and demands an action from the part of the consumer.

The broadband connections opened a whole new world for digital revolution, billions of people share their lives and personal details on social media such as Facebook, Twitter and Instagram, allowing the marketers to reinvent the direct marketing.

Rapp introduced a new concept, the one of iDirect Marketing, an interactive, information driven, individualised paradigm that was crafted at the intersection of digital technologies and direct marketing practices (Rapp, 2010, p.2). It is described as the most affordable and responsive approach to increase revenue goals and attract the customer. Since the consumer is transferred online, the marketer has too, regardless whether the marketing method is for online or in-store shopping. Interactive and direct marketing are two concepts that now are considered to be more united than ever.

One example of ambidextrous communication is the technology of beacons, which first started from Apple in 2013 with iBeacon in iPhones and iPads. Companies communicate with their audience using a wireless network. Through Bluetooth, beacons can send messages to shoppers who are in the range of a beacon. Marketers can monitor the behavior of the shoppers, their preferences, their interests, the time they spend in the shop, and use the data to improve and personalize the geo-located message.

Nowadays, beacons combined with push notifications are used as a targeted form of communication between brands and the public. Beacons are considered a successful form of interactive marketing.

When talking about retailers, Amazon may be the best example of interactive marketing. The giant of online retail is one of the biggest innovators in interactive marketing. The policy of the company is to collect and process data regarding the visitors of amazon.com, and then adapts the promotion tools according to the needs of each customer or group of customers. Suggesting a book based on previous search or purchase, or a product based on what other users preferred, Amazon seeks to make the shopping experience more personal and convenient, in order to keep the visitor for a longer period of time and make more purchases.

Based on the customer's buying history, Amazon would send promotional emails based on his preferences or highlight specific products while visiting the online store. Interactive marketing makes the customer feel unique, that their needs are understood and they receive more personalized services.

Using interactive marketing, companies have better chances to meet consumer's needs as they have already shown an interest about a specific product. Furthermore, it contributes in reducing the risk, since the basis is the customer behaviour. As Mindy Lilyquist refers to an article in The Balance (2016), some of the most important benefits of interactive marketing are that:

1. It increases sales thanks to the fact that when you have an idea of what the customer wants, you have better chance to deliver it by recommending related items that they may have searched in the past, or products that fit with other items they bought. Therefore, it is possible to increase the sales.

2. It may increase customer satisfaction. Since interactive marketing is based on the actions of the customer, it is more possible for the retailer to make a relevant match, thus the customer is satisfied receiving the right product or service.

3. For marketers, this kind of marketing is low cost and more convenient. When you have an established customer basis, knowing their preferences and behaviour, it is much easier and cheaper, rather than trying to attract new customers. Furthermore, it is an automatic procedure. Everything is done by computers and algorithms that track the actions of the customer, channeling the personalized messages and recommendations.

On the other hand, interactive marketing does not only come with benefits for the marketers and the retailers. There are also some disadvantages such as the fact that a large number of consumers may consider it as an intrusive way, breaching their personal lives by tracking their actions.

Talking about interactive marketing, Augmented Reality (the concept of which will be examined in the following paragraphs.) could also be considered as a promising form of interactive marketing.

2.3 Augmented Reality and its application in In-store Marketing

This chapter includes the concept of Augmented reality its evolution, how it stands today and how it can be used as a modern marketing tool.

2.3.1 Augmented reality evolution

Augmented Reality can be defined as the superposition of virtual objects (computed generated images, texts, sounds etc.) on the real environment of the user (Faust et al., 2012, p.1164). There is a similarity with Virtual Reality (VR), however, VR creates the whole image and the viewer is being transferred in a "new world" which is completely artificial. On the other hand, AR manages to blur the boundaries of what is the real world and what is computer generated.

The technology of Augmented Reality has come to the fore due to the advances of last years, however the term in literature exists since 90s. It is believed that AR term has been formulated for the first time by a Boeing employee, Thomas Caudell in 1990.

As we know it today, it first appeared in "Virtual Light", a science fiction book of William Gibson. It can be considered being closer to the term reality rather than virtual reality. As

Azuma argues, augmented reality can be considered as the mixed (real-virtual) territory between the virtual environment (absolutely synthetic) and the televisualization (absolutely true).

In a few decades, Augmented Reality has evolved from a concept idea to reality. Evolution and miniaturization of technology was a key factor in the development of commercial applications of augmented reality. Today, AR software applications are readily available for a great range of electronic devices, spanning from expensive dedicated devices to inexpensive smartphones and tablets.

AR aims to enhance the view of the real, physical world by introducing new elements to our perceptive environment. The first Augmented Reality-like experience was described in 1901 in a novel by Frank L Baum. Back then he described a device called "character marker" a set of glasses that would map data onto people. For the next decades, we had no progress in Augmented Reality technology.

However, the evolution of electronics and computers made Augmented Reality relevant again. In 1968, Ivan Sutherland developed the first head-mounted display system. The system was quite bulky and for convenience it was suspended from the ceiling. The system would generate simple wireframe drawings.

In 1974 the first "Artificial Reality" laboratory, named Videoplace, was created by Myron Krueger. The Videoplace was combining projectors and video cameras that emitted onscreen silhouettes, surrounding users in an interactive environment.

While the specific technology was growing bigger for quite a while, it wasn't until 1990 when the term "Augmented Reality" was used for the first time by Tom Caudell, a researcher of Boeing.

In 1992 Louis Rosenberg developed "Virtual Fixtures". This device was a full upper-body exoskeleton which allowed the military to virtually control machines in a remote operating environment. "Virtual Fixtures" was one of the first functioning Augmenter Reality systems.

From this point, Augmented Reality made its way into the entertainment market. In 1994, Julie Martin created the theater play "Dancing in Cyberspace", featuring acrobat who danced amongst virtual object on a physical stage.

In 1998 Augmented reality made its appearance during sport broadcasts. A dedicated computer system would cast a virtual yellow marker during a live NFL game. The next year, Naval researchers started working on "Battlefield Augmented Reality System", a robust model of the early wearable units for soldiers. The same time, Nasa X-38 spacecraft is flown using a Hybrid Synthetic Vision system, which used augmented reality to overlay map data creating a virtual navigation experience.

Open source software was crucial to the expansion of AR technology. In 2000, Hirokazu Kato created ARToolKit, an open-source software library that uses video tracking technology to overlay computer generated graphics. Many years into development, in 2009 ARToolKit brought Augmented Reality features to browsers. ARToolKit is still being used today with many Augmented Reality experiences.

2.3.2 Augmented Reality and media

Arriving in the last recent years, Augmented Reality gained in popularity, eventually making a leap towards the consumer audiences. In 2014, Google announced Google Glass, an Augmented Reality device that would start the trend of wearable AR.

Picture 1 Google Glass worn by Google executive Sergey Brin

Source: Glass-apps.org

In Picture 1, Google executive Sergey Brin is wearing Google Glass, a promising gadget costing 1500 dollars, which Google decided to discontinue in 2015. Google Glass is an Augmented Reality wearable computer (in the shape of eyeglasses), displaying information in a smartphone like format, without using hands. The user could use voice commands to interact with the device.

At the same time, investments in AR are growing, reaching 700 Million dollars in 2015 and 1.1 billion dollars in 2016. Microsoft releases HoloLens Developer Kit, an Augmented Reality device aiming the mass market.

AR technology sees many applications, including car manufacturers. Cars will now project useful information on the windscreen, that will enhance the driving experience. Game industry will utilize AR with great success. Pokemon GO is such an example, which had great success and introduced AR to the masses. The Pokemon Go craze, that started in summer of 2016, is not at the same levels today, but it is a great example for retailers, on how this technology can be used in order to engage consumers.

The goal of AR technology is to create the feeling that virtual objects are in the real world. In order to achieve this, it is required the power of computer software combined with virtual reality elements to the real world. AR is more effective when virtual pieces are added in real time. Because of this, AR often involves adding two-dimensional (2D) or three-dimensional (3D) elements to a real-time video (Cawood 2007, p.12-15).

It strengthens the user's perception and interaction with the real world. Virtual objects include information that the user would not be able to perceive with his own senses. Information containing virtual objects helps the user in his everyday life.

This paper focuses to the application of the technology without using a physical index. This kind of augmented reality application uses an object of the environment, therefore it is the most user-friendly. Advertisers have the possibility to use existing objects of the environment and provide the content the viewer wants, such can be natural objects and faces. This kind of AR can be reached easily, as the camera of a third-generation smartphone is needed, it can be an expensive iPhone or Samsung smartphone, or a cheap entry level smartphone less than 100 euros.

2.3.3 Augmented Reality and Marketing

Technologies as AR or VR, have not yet been mainstream, however manufacturers, marketers and retailers, hope to change that. "Virtual Commerce" is considered as a way to address common shopping annoyances and engage consumers.

The augmented reality technology has influenced e-marketing. Large companies try to promote their products and services with the help of this technology. King Rachel states that marketers hope that augmented reality will reach out to their audiences deeper than other social media such as, Facebook fan pages and Twitter followings.

According to Grec Davis, General Manager of the Total Immersion in the USA branch (an AR company based in France, which supports the largest augmented reality partner network, with 130 solution providers), AR has attracted the interest for its ability to bring users "closer to experience" on specific products. At a time when the "return of commitment" has emerged as a major growing metric, Davis says AR is delivering results of higher user engagement than any other marketing application.

Being able to put the final version of the product in the "hands" of the customer is vital for the retailers. Enhanced reality allows customers to visualize any kind of product, regardless the size, package or location.

Virtual and Augmented Reality are becoming more and more popular with the progression of the computer graphics, that have reached a point where images are not easily distinguishable from the real world. Microsoft HoloLens founder, Alex Kipman, in August 2017 claimed that smart-glasses will replace smartphones. He supports that the smartphone era has come to an end but it is not realized yet, mobile devices such as smartphones, tablets, and the screens of other devices such as TV, will be replaced by wearable holographic devices, such as a smart-glass screen.

Although that era may need some more years, many large companies and organizations have started to take advantage of this technology, in order to promote, through a more innovative way, their products. The final goal is to increase their sales and profit.

2.3.4 Project Tango

One of the most important developments came from Google, which could revolutionize mobile devices. Basically, Google wants tablets and smartphones to see the world the way we see it,

enabling them to provide AR experiences. This is done through 3 core functions: a) motion tracking (to understand the position and and orientation), b) depth perception (examines the shape of the surroundings, it can give accurate gesture control and provide 3D object rendering), c) area learning (maps and remembers the area around it).

Google introduced Project Tango to the masses with the consumer devices Lenovo Phab 2 Pro (2016) and Asus ZenPhone AR (2017), with approximately 500 dollars (which is a normal price for a smartphone) AR is places into everyone's hands, and there is no need to buy 3000 dollars devices such as Microsoft HoloLens. The applications are endless, such measuring the dimensions of a room, when going to IKEA, no need to take a pen and a paper to see if the sofa fits in your living room. These devices are able to help shoppers navigate through the store, find the products and any promotion.

It is believed that by 2018-2019, Project Tango apps will be able to run on most devices, bringing AR experience to numerous users.

2.3.5 Aisle411 mobile application

An interesting Project Tango application is Aisle411 which is incorporated in the inventory searchable indoor maps. Users navigate through the products they are looking for, in a 3D AR environment inside the store. This is an example of an in-store mobile marketing platform providing users personal offers, rewards, coupons that "pop up" of the shelf as they navigate through the aisles. Customers will also collect loyalty rewards.

For now the app is being used through a smartphone or a tablet, but in the future, as the smart glasses will become more mainstream, there will be no need to have a device in your hand. All the information will pop up in front of your sight. The in-store shopping experience would be more immersive in comparison to nowadays and regular online shopping, without requiring huge headsets.

2.3.6 Shoppers choose brick-and-mortar stores over e-commerce

Online shopping is easier than ever, but shoppers keep choosing brick-and-mortar stores over e-commerce. Retail Dive's Consumer Survey (published in February 2017) indicates that the reason is the fact that they want to touch, see, feel and try out the items (62% of the respondents) and ask for more compelling in-store shopping experiences.

Another reason is the speed of shopping, 49% of the respondents say that they chose stores because they need the items immediately. 1 in 5 consumers cite the easy return of the product and 18% mentions the enjoyment of shopping in-stores.

The ability to ask questions to sellers, does not seem to be an important reason (13% said they choose in-store shopping over e-commerce). This percentage indicates that buyers have become more "independent", they are accustomed to having information in their fingertips (smartphones).

Figure 1 Reasons for choosing shopping in stores vs. online

Reasons for choosing to shop in Stores vs Online

Source: Retail Dive, 2017

Therefore, shopping in physical stores still seems to have a great potential, with buyers taking into consideration the overall shopping experience and the speed of purchase. They do not want to wait in order to receive the product. On the other hand, the modern consumer does not seem to need the seller, he uses its own sources to be informed about the product, the sources (smartphones) that the retailers may use for their own benefit, by putting the promotional message there.

2.3.7 Mobile Commerce (m-commerce)

AR in retail could have a great potential in boosting the sales, as researches show there is an increasing number of shoppers that use their smartphones when they are inside the store. During recent years, online shopping has gain more popularity, thanks to giants like Amazon, however, most people still visit physical stores more frequently than shopping online. According to a research published by Euclid Analytics (November 2016 in the USA), 91% of the respondents go to a local store once a week, while only 49% shop online with the same frequency.

A research from SessionM indicated that more than 90% of the respondents use their smartphones while shopping in a retail store. 54% use their mobile devices to compare prices, search for more information (48.4%) or reviews (42%)

According to Statista, smartphone owners are estimated to reach 2.32 billions in 2017. This means, that there is a huge number of users, ready to accept new ways of marketing, that include mobile devices.

Figure 2 Number of smartphone users from 2014 to 2020, (in billions)
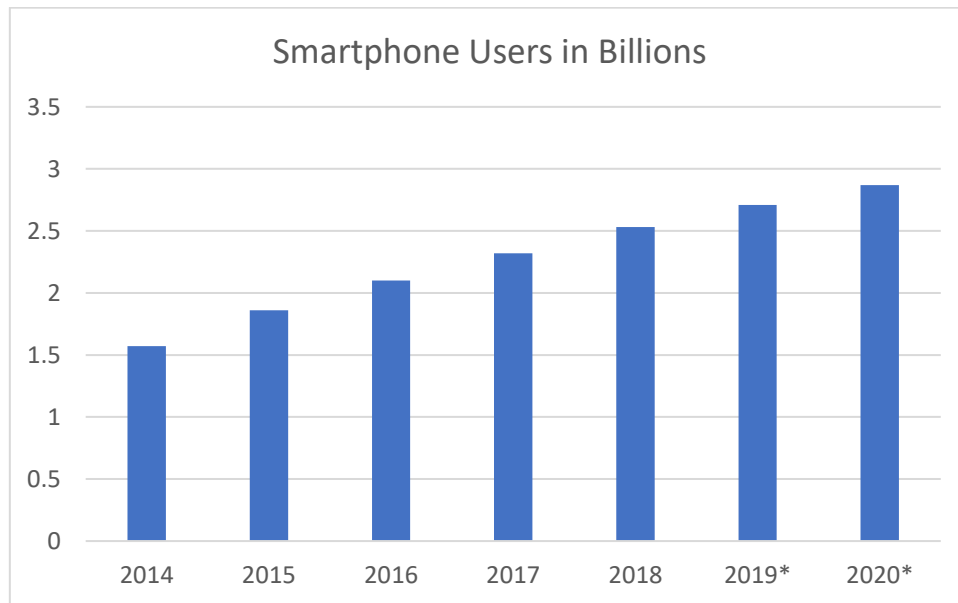
Source: Statista, 2017

The results of SessionM survey show that the brick-and-mortar store still has a great value for the customer. In-store shopping is an easier experience because they can touch/try the product, before making the final decision. Therefore, there is a need for more information regarding the product. The authors of the survey suggest that in the future retailers need to adopt more innovative ways to stimulate physical interactions with the product.

In comparison to websites, shoppers prefer mobile apps, due to the fact that the experience is more personalized, and this is done thanks to the customer data that brands are able to gather and incorporate to their promo messages.

The same survey shows that 57% of consumers would likely shop at a store, if they receive push notifications about relevant deals and product information.

Retailers are suggested to see in-store smartphone usage as an extension of the traditional retail experience and adapt their marketing strategies. They should take account of and leverage from smartphone shopper behavior.

A positive fact for retailers was that showrooming (visiting a shop in order to examine a product before buying it online at a lower price), was not so common. However, 17% of shoppers, use their smartphone in-store, to find a better price on a competitive store.

It is of great importance to be aware of the purpose that shoppers use their smartphones during their stay in the store. The great majority (about 40%) uses the smartphone for talking, texting, checking emails and applications. A percentage of 31% check their emails for promotions. Regarding the apps that are being used, Facebook is first with 35%, Google follows with 33%, 31% of the respondents use Amazon and 26% said they use store-specific mobile applications.

The surveys indicate that there is a quite big consumer base equipped with the technological gadgets and accustomed to use their devices while shopping. Thanks to mobile devices, businesses can have access to first-party data and connect in a better way offline and online channels, as well as analyse the effectiveness of their strategies, optimise them so as to increase sales and customer loyalty.

2.3.8 Augmented Reality in retail

Shoppers keep showing their preference to physical stores over online ones, however, the latter continues to gain ground in areas such as clothing. A 2015 study in 200 malls in USA by Internet Retailer, found that in-store clothing sales increased by only 1% that year, while online sales rose by 20%, during the same period.

Regarding the potential of Augmented Reality in retail, consumers appear at least curious about it. It seems that augmented and virtual reality apps may influence their final decision. In February 2016, Walker Sands, conducted a survey which indicated that 55% of respondents could be somehow influenced by such apps.

In a 2016 survey by Retail Perceptions in the USA, 61% admitted that AR has influenced where they shop and 68% said they would spend more time in a store where they could use AR. Six out of 10 consumers would prefer stores with AR over the ones that do not have it. Because of AR, three-quarters admitted that they bought something they did not plan before, while 40% of respondents are willing to pay more for a product, if they have Augmented Reality experience, before the purchase. An impressive 71% said that would shop at a retailer more often, if they offered Augmented Reality, which means that this kind of technology may help increasing customers engagement. What makes Augmented Reality likeable, is the fun, time-saving and that it shows more features of the product (e.g. different colours). 41% use AR to find deals and special promotions.

Figure 3 The impact of Augmented Reality on retail and how would shoppers react

THE IMPACT OF AUGMENTED REALITY ON RETAIL

40% would be willing to pay more for a product if they could experience it through augmented reality

61% of shoppers prefer to shop at stores that offer augmented reality, over ones that don't

71% of shoppers would shop at a retailer more often if they offered augmented reality

Source: Retail Perceptions, 2016

Figure 4 outlines the advantages of AR in retail and how specific companies used it for their benefit:

- AR provides interactive user experience
- Highly customizable content according to user's needs
- AR tightly connects readers with printed content
- AR removes language barriers
- Contributes to customers' decisions and reduces returns of purchases
- Increases in-store traffic and provides Brand awareness
- Collection of detailed analytics and better understanding of users' behaviour

Figure 4 Benefits of Augmented Reality (AR) in retail and companies that use AR
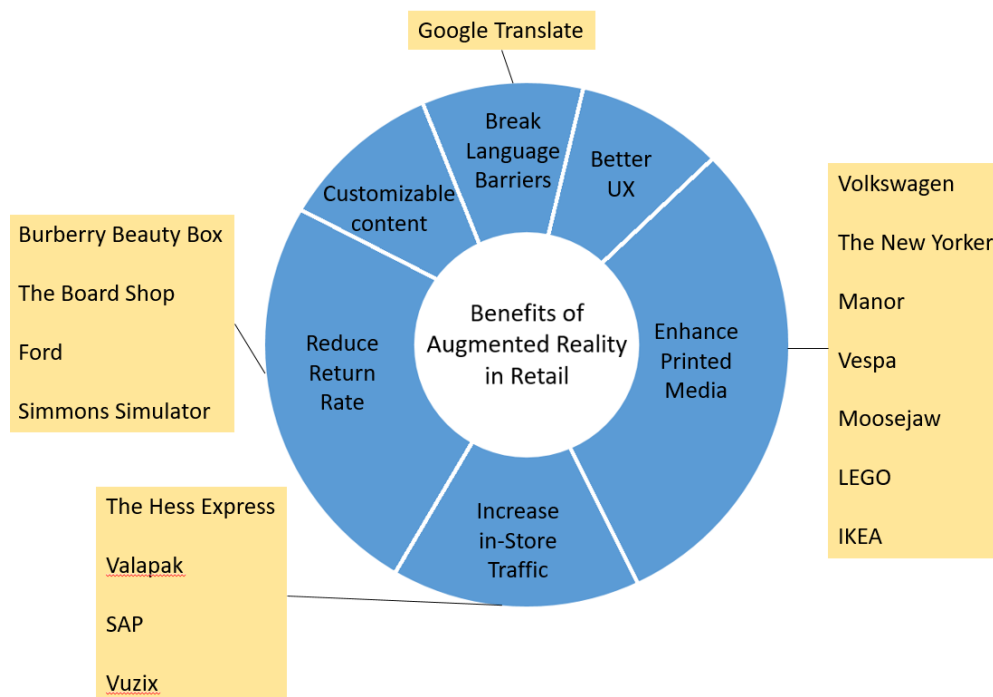
Source: Think Mobiles, 2017

Google Translate is the service of the tech giant that allows its users to translate (in real time) text from documents or pictures by pointing the camera of the smartphone. Thanks to AR it manages to offer a better UX and break language barriers. LEGO, IKEA, The New Yorker, Vespa, Violkswagen and Mooseajaw are some of the companies that used AR in their advertisements, enhancing their printed media.

Another benefit of AR in marketing is that it manages to increase in-store traffic, as happened in The Hess Express, Valapak, SAP, Vuzix. Examples such as Burberry beauty Box, The Board Shop, Ford, Simmons Simulator, indicate that, when used, AR may also reduce return rate.

2.3.9 Companies using Augmented Reality

In the following paragraphs are included examples of multinational companies from different segments, that incorporated Augmented Reality in their marketing strategies. Among the companies are names such as IKEA, LEGO, Sephora, BMW and more. The companies chose either to launch AR applications to enhance the shopping experience or advertising campaigns.

IKEA

In 2013, IKEA catalog was launched trough an AR application that allowed users to have a virtual preview of how would the furniture fit in the house, office, garden, etc. (https://www.youtube.com/watch?v=uaxtLru4-Vw). IKEA has found that 14% percent of its customers end up buying furniture that do not fit in the intended location due to the wrong size. Potential buyers were able to "try" the furniture with the contribution of a printed catalog, an app and a smartphone/ tablet. As shown in Picture 2, all you had to do is close the printed catalog, put it in the spot where you want the new furniture and point the camera of the smartphone/tablet in that direction. The display of your device can show how will the table, sofa, bookcase etc., fit in your living room.

Picture 2 IKEA Augmented Reality app, used with printed catalogue to try on a sofa in the living room
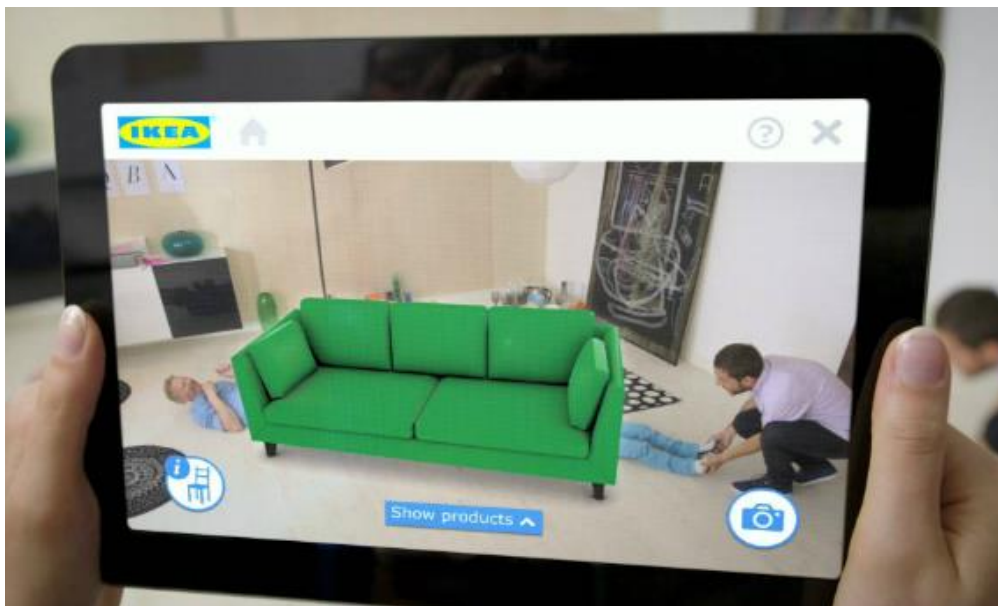

Source: Ikea.com, 2017

IKEA has the Virtual Kitchen app for HTC VR headset and in collaboration with Apple will launch the first (of its kind) AR app that will allow you to make a reliable buying decision. The IKEA products will first come to the AR app, then in stores.

SEPHORA

Sephora offers to its customers the ability to apply virtual cosmetics to their faces through their official website, or the dedicated mobile app. It is possible to "try on" a make up while you are at home and make the purchase online, or while being inside the store.
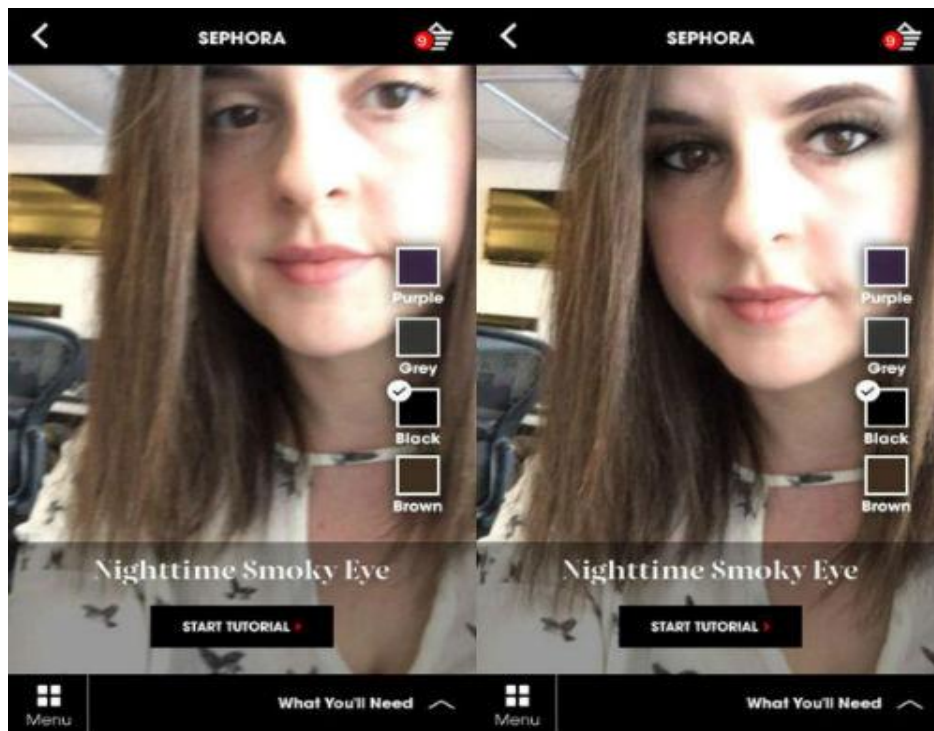
Source: Sephora.com, 2017

Picture 3 on the left side shows the imported picture without make up, and the right side depicts the virtual make up.

LEGO

Lego is a huge brand that adopts new technological trends, such as Augmented Reality. The company first tested out the idea to install Digital Boxes throughout the stores in order to allow customers to "see what is inside the box" before they buy and open it. All they have to do is to stand in front of the kiosk with the toy they intend to purchase and see how it will be. The Digital Box is a monitor connected to a computer with a Logitech webcam to capture the video (https://www.youtube.com/watch?v=BUDIduApeLI). Each box has a tracking mark that shows the computer where it should place the LEGO model in the video. The end user can see exactly what the finished product will look like, in 3D. A very important factor is that, this strategy has very low technological requirements and the campaign can be accessible to almost everyone. Furthermore, it can be expanded online, and change the way we do online shopping through our computers, not only for LEGO, but many other product categories.

However, this is not the only marketing effort from LEGO that uses Augmented Reality as a tool. Since June 2014 the company has launched the LEGO® 3D Catalogue mobile application for Android and iOS mobile operating systems, which can be used in combination with the printed catalog that supports AR. Using the application and the catalog, customers explore the new LEGO products in 3D animations. All they have to do is to open the camera of the smartphone or tablet, scan the page an see how the product would look like in the real world. The 3D animations are enriched by sounds and motion, so the final experience to become more interesting and seem more real. Furthermore, in some products there are small stories and information about their features.

Throughout the LEGO stores there are posters with the yellow logo of the app, so that you can use your smartphone and bring the characters in to life. The photo booth allows users to capture themselves in photos and videos next to their favorite characters in 3D. The app is updated quarterly the last 3 years with over 14 LEGO characters.

Picture 4: A page from Lego printed catalogue used with 3D Catalogue mobile application, the object appears in 3D with sound and motion

Source: Own research, 2017

Picture 4, which was shot during the research of this paper, shows the catalogue which has been placed on the table, the LEGO 3D app was launched and the camera of the tablet opened. In the screen of the tablet appeared the helicopter in 3D, started moving around the catalogue and simulating the sounds of a real helicopter at the same time.

CONVERSE and GAP

In the apparel industry, Converse and GAP are two of the companies that use Augmented Reality mobile applications.

Converse Sampler app (Picture 5) allows you to choose any shoe from its catalogue and by pointing the mobile device towards your foot, you see how different shoes would look, by changing different types and colours. The app may be used either during online shopping, or while being in the store, so you can save time not trying on different colours of Converse. Through the mobile application the user has also the possibility to buy the product that he tried on, as the app supports purchases.

Picture 5: Converse Sampler app used by pointing the camera of the smartphone to your feet and virtually trying converse shoes
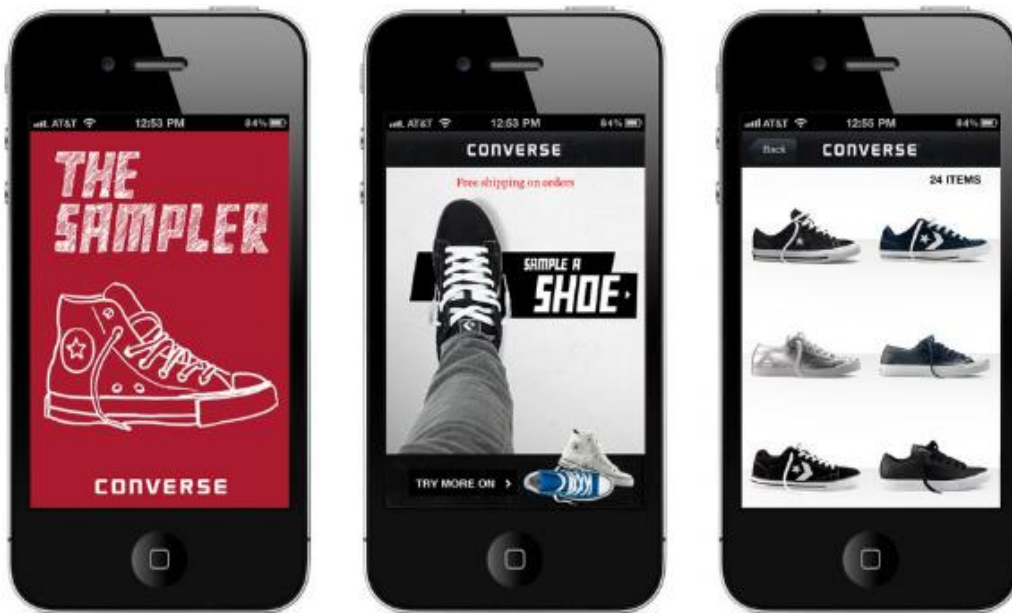
Source: Augment.com,2017

Traditionally, the fashion industry is not being involved with technological trends in a great extent, but GAP is one more global brand that focuses on AR with the hope to increase sales. In January 2017, Gap Inc. launched DressingRoom app in collaboration with Google and start-up company Avametric, through which potential buyers can virtually try on clothes. Users have to enter their personal characteristics such as weight and high, the application creates a 3D avatar which will show how the clothes would look like in the specific body shape. There is also the possibility to buy the clothes you like, through DressingRoom app.

BMW and VESPA

The German luxury automaker BMW, in January 2017 became the first in the industry to announce that gives to its customers the ability to view BMW's hybrid and electric 'i' cars with Augmented Reality. Future buyers of BMW, using a smartphone can interact with the virtual car, as if it is real. They can activate the lights, open the doors, change the interior design and the colour of the vehicle. This is possible thanks to Google's Project Tango (PT) technology (which is described in chapter 2.3.4). The phones equipped with PT crate a real-size 3D image of the car, which is overlaid in the environment visible by the camera of the mobile device and projected by the screen (https://www.youtube.com/watch?v=PYdhLvcXCbU).

According to the company this is the best option to give the customer an almost real experience of the car, when it is not available on the store.

BMW's Augmented Reality project launched in key markets such as Germany, Japan, US, China, and Great Britain. Depending on the success, the company intends to launch the application in Google Play Store, so users can use it in any place.

Picture 6: Vespa AR magazine advertisement depicting a customized scooter, using the mobile application
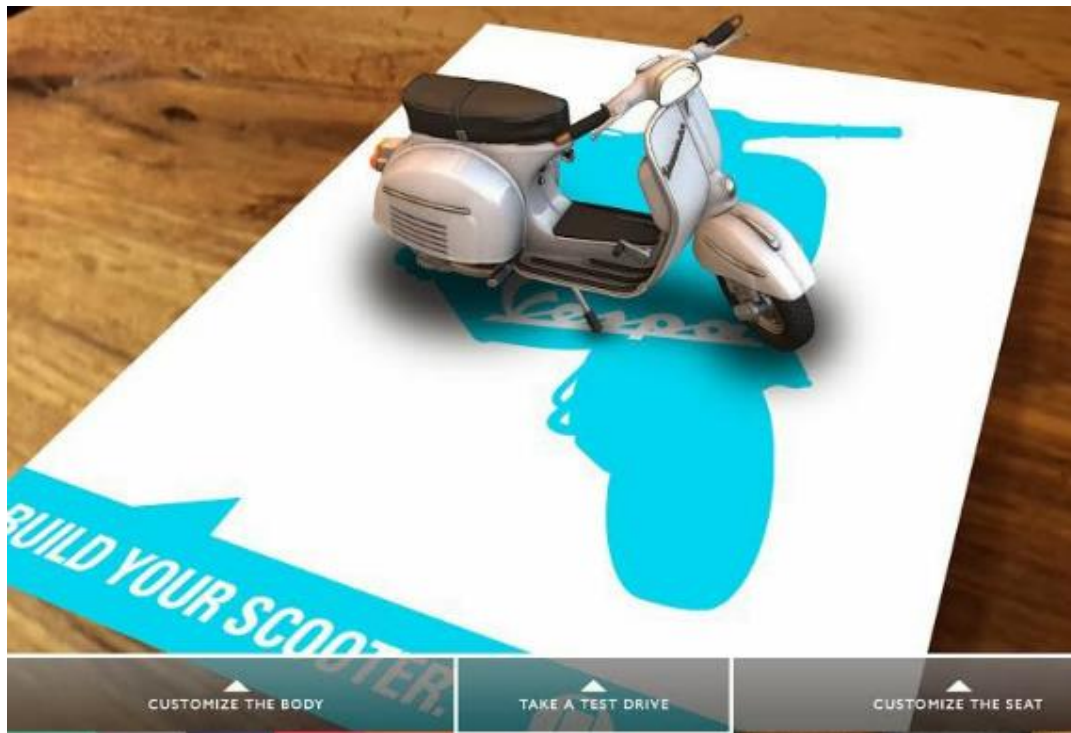
Source: Vimeo.com, 2014

The Italian company used AR magazine advertisement as depicted in Picture 6, for its famous scooter. The user has to download the app, point the camera to the page of the magazine and create a customized Vespa according to his taste.

The user can choose different colours, seat, accessories and even have a virtual test drive via the screen of the smartphone or tablet. When the customized model is finished, the app pops out GPS directions to the nearest Vespa location, in case the customer wants to make the purchase of the product he created (https://vimeo.com/97486802).

The literature review and search, conducted as part of this diploma thesis, showed that the number of the companies including Augmented Reality in their marketing strategies, is quite limited and the effects of such strategies are not measurable yet. However, the companies adopting this technology are global brands (IKEA, BMW, etc.), they are dominant in each sector, thus they are considered to pave the new marketing way for more businesses (big or small) around the world.

The fact that they spent a large part of their promotional budgets in AR, indicates their view that it may become the mainstream futuristic marketing method in the near future, enhancing the shopping experience and promoting sales.

2.4 Methods

As shown in the previous chapters, from the literature review, it is generally admitted that Augmented Reality has managed to catch marketer's attention. It is believed that it will be the next revolution in retail offering a futuristic shopping experience and shoppers show their interest in this technology. Offering AR experience is news itself, it brings attention to the brand and attracts customer's interest.

There is no doubt that it has a place in retailer's long-term business plans, however, besides impressing, the real question is whether it really affects store's turnover and increases sales. Since it is a completely new marketing area, at this point there is not enough evidence that prove to what extend the use of Augmented Reality increases the sales of a physical store.

For the purpose of the analytical part of this paper, a research was conducted in LEGO store in Prague. Prior to launching the research, several visits took place to the store in order to inform the manager of the store about the research and ask for the permission to conduct the survey on real customers.

Furthermore, the visits took place in order to observe the number of the visitors, if they would be enough to collect the necessary data for the research. The visits also helped to create the observation grid and divide the customers into two groups, those accompanied by children and those without kids. There were also some trials, in random customers so as to see how they would react to the possibility of using Augmented Reality, if they would be positive and try it.

The quantitative research is done throughout 200 LEGO customers who visited the store during a two weeks period, from August 1 until August 15. Despite the fact that the store is a small one, the traffic was quite increased as it is located in the city centre.

Each customer was exposed (randomly) either to LEGO 3D app, or to the printed catalogue and they were not aware of the research until the end of the shopping (those who had the Augmented Reality experience).

The data were collected manually through an observation grid, which includes fields about whether the customer is a parent with a child or a Giftgiver, if they are exposed to LEGO 3D catalogue or LEGO printed catalogue and their reaction to each method, if they were positive or negative in trying it. In addition, it is recorded if they made a purchase or not.

Those who bought a product before exiting the store, are divided in 3 price categories: 100-1000czk, 1000-2000czk, more than 2000czk. The starting price was decided to be 100czk since almost all the products are priced above 100czk.

Through the observation grid were also collected data about the time spent in the store, the categories are 4: 5-10 minutes, 10-15 minutes, 15-20 minutes and more than 20 minutes. Recording the time each customer spent inside the store, would later make it possible to observe if those who were exposed to the 3D app spent more time shopping than those who had the catalogue, and if there would be any difference between the two categories of customers, parents with kids and Giftgivers.

Finally, before leaving the store, customers who had made a purchase (either they had the AR experience or not), they were informed about the research and asked if the used marketing method had affected the purchase decision. Depending on the answers, there would be clearer

how AR might or might not have affected their decision. Furthermore, there would be a comparison between those who had the printed catalogue and the users of Augmented Reality application.

After completing the research, the collected data were later entered in Excel. In order to make the analysis, the data were divided in 4 categories, Category 1 includes Parents with kids exposed to 3D catalogue, Category 2 includes Giftgivers exposed to 3D catalogue, Category 3 includes Parents with kids exposed to printed catalogue and Category 4 includes Giftgivers exposed to printed catalogue.

The second question if the customer was exposed to 3D Catalogue had as possible answers, "YES" and "NO", for the purposes of the analysis, "YES" was transformed to number 1 and "NO" to number 2. The same happened with question 3, where the answer "Positive" stands for 1 and "Negative", for 2. In questions 4 and 7, "YES" and "NO" are also imported in Ecxel as 1 and 2, respectively.

Based on the Excel data, there were created two tables with customers exposed to 3D Catalogue and those who had the printed one, in their hands. The tables contain the two categories of customers (parents with kids, Giftgivers) and information that indicate if they made a purchase, how they reacted to the tool they were exposed (LEGO application, LEGO printed catalogue), the highest value of purchase and the highest time spent in the store. There are also graphs, so as to achieve a visual result for presentation purposes.

The primary objective is to understand what the use of the the 3D Catalogue and the mobile application, bring in terms of turnover. Does it brig additional uplift to retailer?

Furthermore, the level of interaction between shoppers and each element of given engagement tools, is being observed. There is an attempt to measure the attractiveness and the impact on decision making process, for each of the tools.

3. Analytical Part

The analytical part includes the description of the research regarding AR and in-store Marketing, the analysis of the results, proposed substitution of recent technologies and benefits.

3.1 Research on AR and In-store Marketing

Firstly, it should be outlined that this is not a lab research, the participants are real shoppers of LEGO and they are not aware of the survey during their stay in the store.

The used tools in the store are:

- The printed LEGO catalogue and
- LEGO® 3D Catalogue mobile application in an iPad mini

The sample is divided in two categories:

- Parents who are accompanied by children during shopping (100 people)
- People who are not accompanied by children, those may be parents, grandparents, aunt, uncle, friend etc., and are described as Giftgivers (100 people).

Each group was divided in two categories (50-50), and each part was shown either the printed catalogue or the catalogue in combination with the LEGO® 3D app, thus having the Augmented Reality experience.

Through the observation grid were collected the information about the group that each customer belonged to, parents accompanied by children and Giftgivers.

Furthermore, there are information about the value of the purchased items and the time consumers spent in the store, so as to observe if the use of AR increases the time and the money consumers spend in store.

The collected data will in the end show whether the use of Augmented Reality technology, manages to boost sales for the particular LEGO store during the 2 weeks period and will contribute in giving recommendations regarding the use of Augmented Reality in the store.

3.2 Analysis of the Results

The first part of the analysis consists the customers who were exposed to LEGO® 3D app from both categories (parents and giftgivers). The second part of the analysis includes Categories 4 and 5, Parents and Giftgivers exposed to printed LEGO catalogue, without any experience of Augmented Reality.

In addition, there is a comparison of the results between LEGO® 3D app and LEGO printed Catalogue and how each tool affected the purchase decision.

3.2.1 Category 1 – Parents with Kids exposed to LEGO® 3D app

Table 1 includes the customers who were exposed to LEGO 3D app, they are divided in Category 1 and 2, in total they are 100. There are information about the number of people who made a purchase or not, their reaction, if it was positive or negative, the highest value of purchase and the highest time spent in store.

Table 1 Customers exposed to LEGO 3D app (Σ=100), divided in two categories. Data for purchase decision, reaction, time and money spent are included

Category 1,2	Purchase	No Purchase	Reaction	Highest value of Purchase	Highest Time spent in store
Parents with Kids (Σ=50)	42	8	Positive= 48 Negative=2	1000-2000 czk=20	15-20 minutes=20
Giftgivers (Σ=50)	39	11	Positive= 45 Negative=5	1000-2000 czk=23	10-15 minutes=22

Source: Own survey data, N=200, 2017

People with children seem to be highly interested in Augmented Reality experience while shopping at LEGO store, they a made purchase, they ranged at a high priced category and remained at the store for a longer time, while admitting that their final decision was affected by the LEGO 3D application.

As shown in Table 1, from the group of parents and children who experienced AR during their stay at the store, 42 out of 50 made a purchase. Only 8 people left the store without buying a product, i.e. 16%.

Regarding the amount of money and time spent in the store, the results show that the majority (40%) spent 1000-2000 CZK in purchases and most customers remained at the store 15-20 minutes, which can be justified by the fact that AR was particularly attractive for children. 38% of those who made the purchase ranged at prices from 100 to 1000czk, while 6% exceeded 2000czk. A 26% remained at the store for more than 20 minutes.

When they entered the store, people were informed by the employee about the 3D app, and when asked if they would like to interact, the great majority of 96% was positive, while 4% was not interested.

3.2.2 Category 2 – Giftgivers exposed to LEGO® 3D app

Customers who were not accompanied from kids, also showed a great interest in Augmented Reality during their shopping, however the percentage who made a purchase is lower compared to Category 1. They spent the same amount of money but less time in the store.

From the sample of Giftgivers that are also included in Table 1, 78% bought a product, in comparison to customers from Category 1, the percentage is lower, and this is a sign that AR experience has a greater effect on children (who in turn can affect the parent regarding the purchase decision). 78% were positive in trying the AR app, but 22% were not interested to include it in their shopping experience.

43% of Giftgivers bought a product within the range of 1000-2000czk, which is almost the same as the Category 1. However, the time spent in the store is less than people with children, most of them (44%) visited the LEGO store for 10-15 minutes in total.

As depicted in Figure 5, in total, from Categories 1 and 2, 81% of the customers who had the Augmented Reality experience in the store, decided to make a purchase. The percentage is quite impressive and promising regarding the incorporation of AR in in-store marketing strategies.

Figure 5 Customers exposed to LEGO 3D app, 81% made a purchase, 19% din not

CUSTOMERS EXPOSED TO LEGO 3D APP

Not Purchased
19%

Purchased
81%
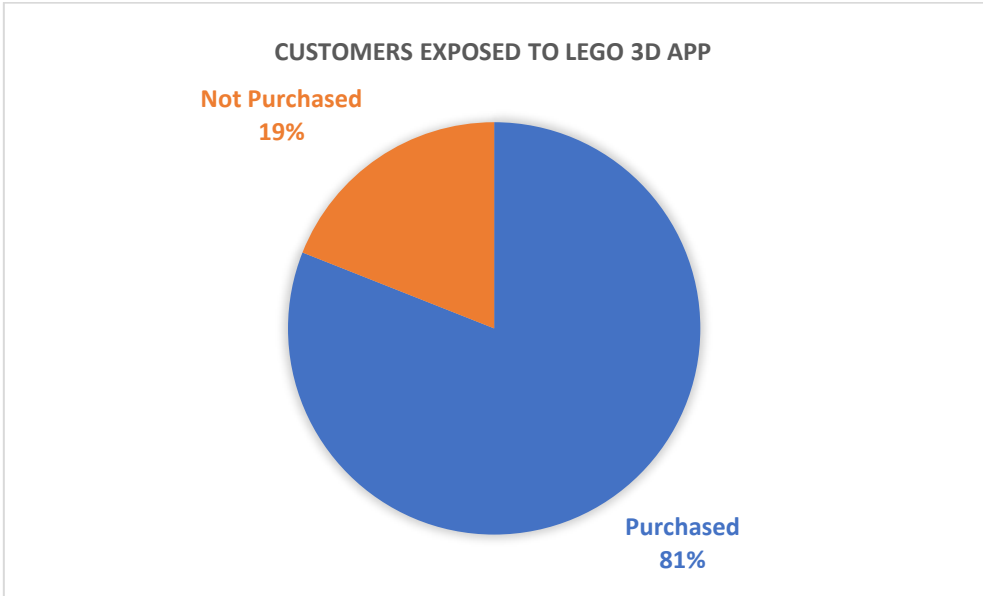
Source: Own survey data, N=200, 2017

Customer's attitude towards LEGO 3D app, from Categories 1 and 2 is shown in Figure 6. When entered the store, Parents with kids and Giftgivers were approached by the seller (holding the iPad) and were asked whether they would like to try the Augmented Reality application in order to see the products that are included in the catalogue.

Figure 6 Customer's attitude towards LEGO 3D app, 93% were positive in trying it, 7% were negative
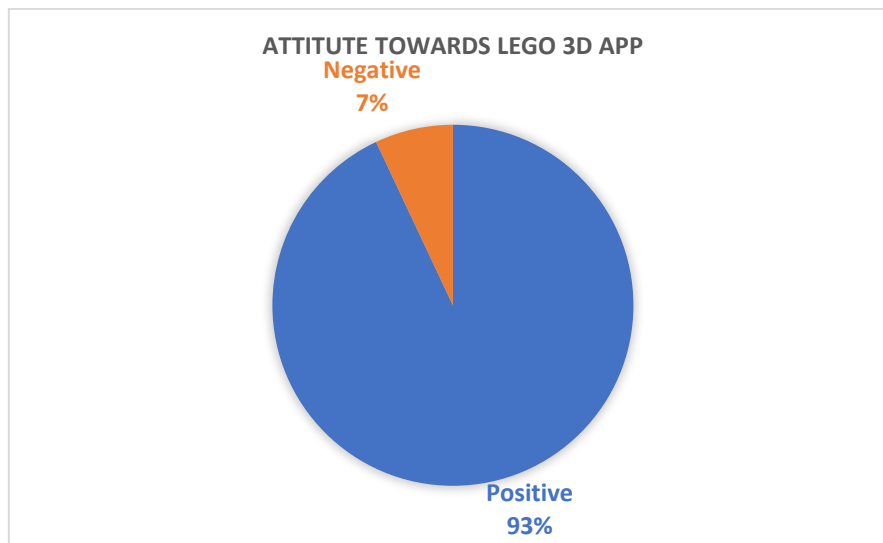
Source: Own survey data, N=200, 2017

An impressive percentage of 93% was willing to try it, while only 7% said they are not interested in the mobile application during their shopping. There is no doubt that the futuristic way of demonstrating the products of the store, caught the attention of potential buyers and that they were open in trying it.

3.2.3 Category 3 – Parents with Kids exposed to printed LEGO catalogue

In Table 2 there are customers who were exposed to LEGO 3D app, they are again divided in two categories, Category 3 and 4 and in total they are 100. The table includes information about the number of people who made a purchase, how did they react to LEGO printed catalogue (positive or negative reaction), the highest value of purchase and the highest time spent in store.

The number of people who made a purchase, the money and the time spent in the store are lower than in Table 1, while the percentage of people who had a positive reaction in LEGO printed catalogue, is lower than those who were willing to try the 3D mobile application and see the figures in 3 dimensions with sound and motion.

Customers who experienced only the printed catalogue seem to have a different behaviour compared to those from Categories 1 and 2. Those who made a purchase the day they visited LEGO store, stand for 74%, and 26% did not make any purchase. There is a difference of -10% compared to Parents with Kids, who experienced Augmented Reality.

Category 4,5	Purchase	NoPurchase	Reaction	Highest value of Purchase	Highest Time spent in store
Parents with Kids Σ=50	37	13	Positive= 25 Negative=25	100-1000 czk=25	10-15 minutes=30
Giftgivers Σ=50	32	18	Positive= 15 Negative=35	100-1000 czk=20	5-10 minutes=28

Source: Own survey data, N=200, 2017

When asked if they would like to have a look at LEGO products through the old fashioned product catalogue, 50% said yes while the other 50% was negative, the percentages in Cat. 1, were 96% and 4%, respectively. Therefore, the difference is quite important. Augmented reality appears to be a more attractive means of in-store marketing.

Most people spent 1000-2000czk (40%), which is pretty close to customers who made purchases valued from 100 to 1000czk (38%). Six percent of the people surveyed, made a purchase that exceeded the amount of 2000czk.

The time spent in store is 10-15 minutes for 60% of Parents with Kids, 20% of the same group stayed for 5-10 minutes, 12% remained 15-20 minutes and 8%, more than 20 minutes. Compared to Category 1, spent time at the store is reduced in Category 4.

3.2.4 Category 4 – Giftgivers exposed to printed LEGO catalogue

Giftgivers exposed to printed Catalogue, is the category with the lowest purchase rate. 18 customers out of 50 (36%) left the store without a purchase while 70% were negative, when offered the printed catalogue.

The money spent is also lower compared to the first two categories, most customers (40%) spent 100-1000czk, the same percentage as Parents with Kids in Cat. 3.

Although in Category 2, most of the Giftgivers spent 10-15 minutes for their shopping, here the time is limited at 5-10 minutes for 56% of the customers. Only 3 people remained more than 20 minutes at the store.

3.2.5 Comparison of the results: LEGO® 3D app vs. LEGO printed Catalogue

It is of great importance to compare the results from Categories 1 and 2 with those in Categories 3 and 4. The results show that when experiencing Augmented Reality inside the store, more people made a purchase, they spent more money, they are more positive in trying the new method. On the other hand, groups 2 and 3 have lower percentages in every category, and a more indifferent attitude towards the printed catalogue.

From Categories 3 and 4 (parents with kids and giftgivers exposed to printed LEGO catalogue), in total 69% made a purchase at the store, whereas in Categories 1 and 2 (parents with kids and giftgivers exposed to LEGO 3D application), the percentage of buyers was 12% higher (81%). Those who left the store without buying a product, count for 31% and 19%, respectively in each group.

Figure 7 Customers exposed to printed LEGO catalogue, 69% made a purchase, 31% did not
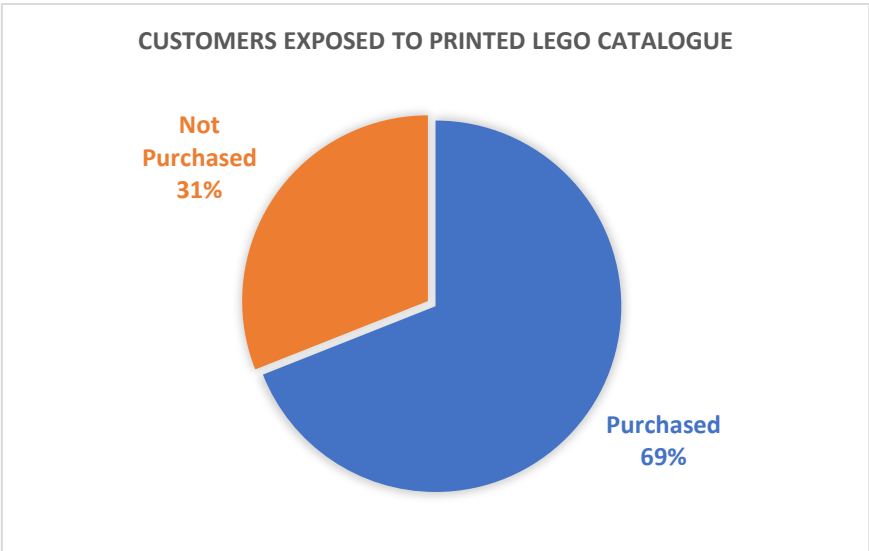
Source: Own survey data, N=200, 2017

The attitude towards the used tools in each category, was more positive to the group of customers who were exposed to Augmented Reality compared to those who did not. In total, 93% were positive when asked to try the LEGO 3D app, in contrast to those who were offered the printed catalogue, 60% were negative and 40% positive.

Figure 8: Customer's attitude towards LEGO printed catalogue, 40% were positive in trying it out, 60% were negative
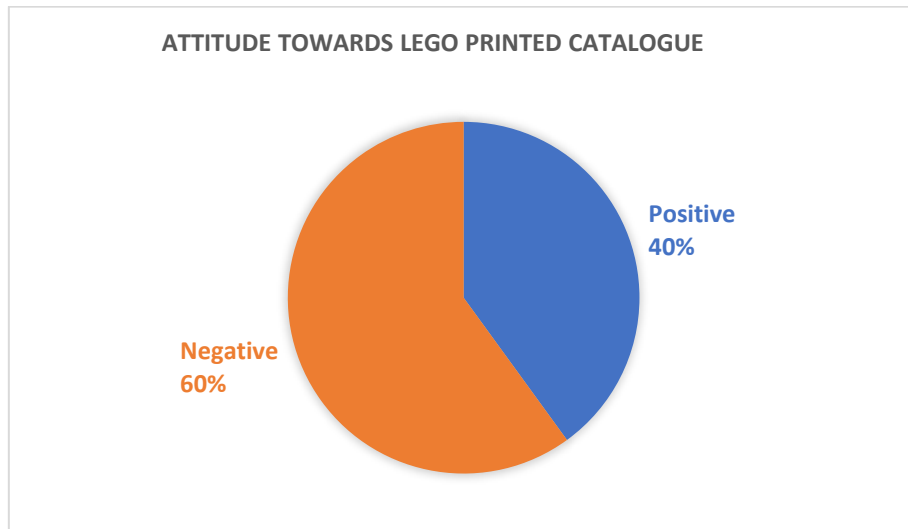
Source Own survey data, N=200, 2017

Furthermore, according to the collected data, customers who had the AR experience tend to spend more money and more time at the LEGO store.

33% of LEGO 3D app users spent 15-20 minutes at the store, while the corresponding percentage for the second group was at 11%. The majority of those who had the printed catalogue stayed at the store 10-15 minutes (44%). Customers who spent more than 20 minutes in the store, count for 17% in the category of AR experience and 7% for printed catalogue.

As for the money, 43% of AR users made a purchase within the range of 1000-2000czk, 11% bought a product priced over 2000czk. Most non-AR users made purchases ranged from 100-1000czk (45%), 16% belonged to the price category of 1000-2000czk while 9% went above 2000czk.

3.2.6 How Augmented Reality and printed catalogue influenced the purchase decision

From the interviews that took place during the exit of the customers who made a purchase, were collected the data regarding the influence of each tool to the final decision.

85% of the respondents who experienced AR, admitted that it positively influenced their final decision. 15% of the customers said that their buying decision was not affected by AR.

Figure 9 Influence of Augmented Reality in purchase decision, 85% of respondents were influenced positively, 15% were not

INFLUENCE OF AR IN PURCHASE DECISION

Not Influenced 15%

Influenced 85%
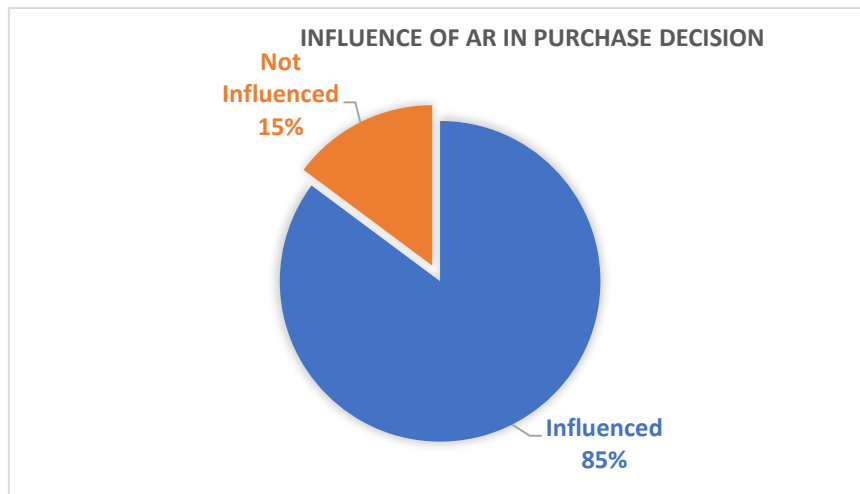
Source: Own survey data, N=200, 2017

Dividing the sample of buyers, to Giftgivers and Parents with Kids, 82% of the fist group said the use of LEGO 3D Catalogue helped in their final decision, and 88% of Parents gave the same answer.

On the other hand, customers who were offered the printed LEGO Catalogue during their shopping (and made a purchase), said that their final decision was not affected by the catalogue, 53% over 47% of those who supported that their purchase was somehow affected by the fact they had the catalogue.

Figure 10 Influence of LEGO printed catalogue in purchase decision, 47% were influenced, 53% were not

INFLUENCE OF PRINTED CATALOGUE IN PURCHASE DECISION

Not Influenced 53%
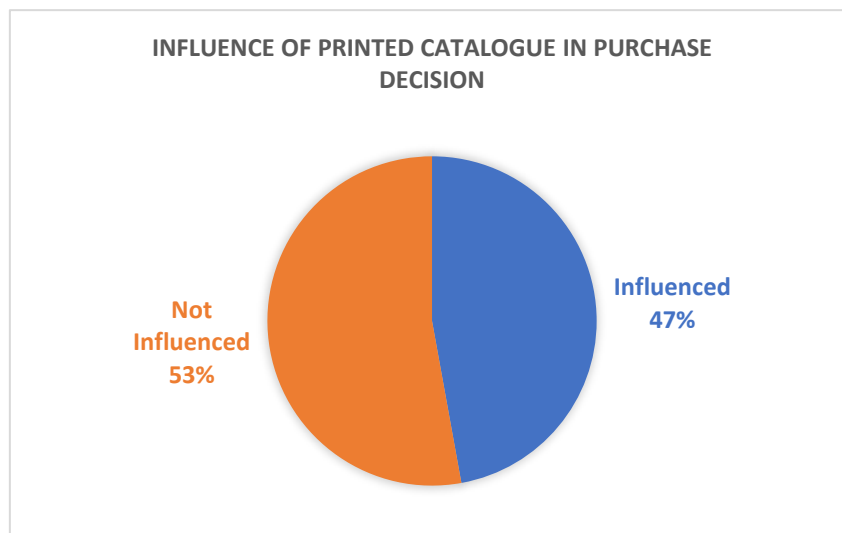
Influenced 47%

Source: Own survey data, N=200, 2017

There is a significant difference of 38% between people who experienced AR and were influenced by it, and those who were influenced by the printed catalogue.

3.3 Proposed Substitution of recent technologies

Although the research above is a small sample of how Augmented Reality can be incorporated as an in-store marketing tool, there seems to be a great potential. During the 2 weeks period, it was shown that when used, AR may crontribute to the significant increase of the sales.

However, the method described above, with the use of the LEGO® 3D app which transforms the printed content of the catalogue into 3D figures, is not normally applied in the LEGO store. The store offers the catalogue, there are other forms of printed promotional material (such as banners) and the assembled samples of some of the products.

Furthermore, when customers were informed about the mobile application, and how it works, they showed a great interest in downloading the app and use it in their own devices. However, when requested WiFi access, that was not possible, since the store lacks the equipment for WiFi network dedicated for the customers.

On the other hand, the phenomenon of not having a sufficient number of catalogues to handle to the customers who wanted to take it home and try it on their own devices, was quite frequent.

It is therefore suggested that the store should offer WiFi connection to customers and urge the shoppers to download the mobile application. It is also crucial to have a larger number of available printed catalogues inside the store.

Furthermore, there could be installed two or three booths inside the store equipped with mobile devices (tablets may be more suitable since the size of the screen is larger and offers a better experience to the end user). Shoppers would be able to have the AR experience and the seller is not necessary to be there holding the tablet or the smartphone, as it was done during the survey.

Regarding the overall marketing strategy of LEGO, besides the specific store in Prague, which was examined within this research it is suggested that the LEGO® 3D app should be promoted more aggressively. Customers did not seem to be aware of the existence of the mobile applications and how it works.

LEGO could follow the example of IKEA regarding the distribution of its catalogues. Every September, IKEA distributes door-to-door its product catalogue which contains new furniture and suggestions on how to decorate your home or garden. This way people do not have to visit the store in order to have the catalogue. Therefore, LEGO may apply the same strategy during holiday periods (before Christmas, Easter, etc.), as people tend to buy more gifts for kids.

Having the catalogue in their door, potential buyers will be informed about the chance to have the Augmented Reality experience if they download the mobile application through which they will see the printed products in 3D, accompanied by sound and motion. Since the customer is on his own house this means he has available internet connection, his mobile device and he is more relaxed, so it is more possible to download the LEGO® 3D application. Therefore, the next time he will visit the store he will be informed about the app and will have it installed in the device. He will be more informed about the products, having experienced them in AR.

3.4 Benefits, Summary and Recommendations

From both the literature analysis and the research conducted for the purpose of this paper, it has become clear that Augmented Reality technology may benefit retailers in various ways. In this case though, the spotlight is in in-store marketing, however it is a tool that has the potential to benefit online sales also.

Augmented Reality can be included in the list with the most attractive marketing tools. Its interactivity and the customization of the product, are two of the most important benefits. It manages to connect the customer with the product and the brand, while the sales may also show an increase.

To sum up, from LEGO's example, Augmented Reality seems to have a great impact on decision making process and may be more effective in promoting sales compared to a simple printed product catalog, which most businesses use.

Furthermore, it is a quite attractive in-store marketing tool, as over 90% of customers were willing to try it. By enhancing the shopping experience, the research above indicates that the brand may also increase the engagement with the customer, they are willing to spend more time inside the store and more money before exiting.

Regarding LEGO store, a more extensive use of Augmented Reality in selling process is suggested, as it may be a really effective method of sales promotion. The use of Augmented Reality can be recommended also as an in-store marketing tool in different segments.

Such sectors can be clothing, where people can save time instead of trying on clothes, in automotive industry saving space for retailers who do not need to have every car in the store, but in the same time, customers will have the chance to see all the features, different colours and create their customised model. It could also be highly recommended for packaged goods and show what is inside the box without opening it. One more sector that AR could have a great potential is in furniture, as IKEA has already made some efforts to integrate it in its marketing plan. Shoppers can try on the furniture in their house before the purchase.

3.4.1 SWOT analysis for LEGO store when Augmented Reality is used

Before the conclusions of this paper, the SWOT analysis provides an overview and a general picture about the recommended marketing strategy of the LEGO store. SWOT analysis identifies the strengths, weaknesses, opportunities and threats for the store when Augmented Reality is applied as an in-store method.

Through the SWOT analysis the company may evaluate its position, see what is helpful to accomplish its objectives, the obstacles to overcome in order to see its position in the future.

Figure 11 SWOT analysis of LEGO store, strengths, weaknesses, opportunities and threats are mentioned

SWOT ANALYSIS FOR LEGO STORE AND AR USE

Strengths

I
n
t
e
r
n
a
l

- Strong brand name
- Loyal customer base
- Customers willing to spend money + time
- AR increased sales
- AR offers interactivity, action, 3D shapes, motion, sound

Weaknesses

- Easy to be copied
- AR not used as in-store marketing method
- AR app not widely known
- Need for mobile device + app
- Need for internet connection

Opportunities

E
x
t
e
r
n
a
l

- New technologies as marketing tool (AR)

- Children change playing patterns (need for action)

Threats

- Growth of electronic games
- Dependency on licensed (3rd party) brands
- Low cost substitutes may be faster adopting new technologies
- Customers not willing to download the app
- App not available for all

Source: Own research

Figure 11 indicates the strengths of LEGO store which belongs to a strong global brand that leads the toymaking industry and when Augmented Reality is used, the benefits may be of great importance.

LEGO has loyal customers who seem to be willing to spend money and time in the store, while experiencing the mobile application. Therefore, based on the results of the research AR appears to increase sales, it offers enriches the shopping experience with interactivity, 3D shapes, motion and sounds.

The second part of SWOT analysis contains the weaknesses of LEGO. Such can be the fact that its activities may be easily copied by competitors, thus it should always be one step ahead, innovative and different in order to strengthen its competitive advantage.

Furthermore, regarding the AR experience, the method used for the purposes of this thesis, is not normally used in a daily basis during the promotion of in-store sales, despite its potential.

Another weakness of this strategy may be considered the fact that the existence of mobile application is not widely known among people who visit the store, it demands a compatible mobile device and internet connection in order to work.

As for the opportunities, due to technological advancement, the store is suggested to take full advantage of new technologies and incorporate them as a daily marketing tool. In addition, the fact that kids change their playing patterns, and they need more action, could be a great opportunity for LEGO to adapt its strategy to their needs and behaviour.

Last but not least, the threats are included in the SWOT analysis. Regarding LEGO brand, an important threat is the growth of electronic games, the dependency on licensed (3rd party) brands (e.g. Star Wars) and the low-cost substitutes that may also adopt new technologies quite fast.

One more possible threat regarding the application of Augmented Reality may be the unwillingness of customers to download and use the mobile app and that the mobile app may not be available for all devices and mobile platforms

4. Conclusions

To conclude, although Augmented Reality is considered to be a quite new and unknown technology for the masses, during the last few years, significant technological breakthroughs have taken place, and AR has started to make a presence in our everyday activities.

One such example is shopping. Multinational companies from different sectors embrace AR technology in order to promote their goods and services, create bonds with their customers, increase their loyalty and trying to be innovative. The final goal is to increase their sales and profits.

There is no doubt that the use of AR in marketing efforts, attracts the attention, of the media and customers. When IKEA and LEGO launched their product catalogues supporting AR in combination with a mobile app, they caught the attention of the largest media around the world for the different approach they adopted and for being innovative. However, the real question is how this marketing method may affect the purchase decision of the customer and to what extent it may contribute in increasing the sales numbers and turnover.

The example of LEGO which was the object of the research conducted for the purposes of this paper, indicates that Augmented Reality can be a useful tool in influencing shoppers final decision and bring an additional uplift to the retailer. The great majority of shoppers exposed to Augmented Reality made a purchase before leaving the store, they showed a great interest in trying the LEGO 3D app. They were willing to spend more money and time at the sore, than the group of people who did not have AR experience during their shopping. Furthermore, the category of parents with kids appeared to be the best target group for LEGO in comparison to Giftgivers.

Regarding the great potential of the AR, it is considered by many experts that it will revolutionize the retail in the next few years. Based on the results of the research above, it is suggested for LEGO stores to be equipped with devices that support Augmented Reality software and incorporate AR in selling procedure inside the store. Except for LEGO, it is suggested to other companies from different sectors to include AR in their long-term business plan.

This paper is restricted to LEGO store in Prague for a small period of time, however there is space for future research regarding either the same company for a larger period (quarter, annual research) or how the whole sector may be affected by the use of AR.

Abstract

This paper is about Augmented Reality, an innovative technology that enriches the environment with computer generated elements (videos, sounds, graphics, etc.) and blurs the boundaries between the real and artificial world. It is considered as a "layer" of digital information in the real world.

The concept is examined from the scope of in-store marketing, how it is used by global brands.

The objective of this thesis is to make an approach and use the Augmented Reality as an effective tool regarding in-store marketing and sales promotion and give recommendations.

There is a research that proves the volume of increased turnover of the store if Augmented Reality is used. There is an observation of the interaction between shoppers and each given tool, in order to measure their impression and the attractiveness of marketing tools (LEGO 3D application and printed catalogue). They appear to make more purchases, spend more time and money in the store, when experiencing Augmented Reality.

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APPENDIX

A1. Observation Grid

1. Customer is: Parent with child/children ☐
                                       Giftgiver ☐

2. Exposed to Lego 3D Catalogue: Yes   ☐
                                    No   ☐

3. Reaction when exposed to Catalogue: Positive   ☐
                                    Negative   ☐

4. Made a purchase: Yes   ☐
                      No   ☐

5. Value of Purchase (in czk):
    0   ☐
   100-1000   ☐
   1000-2000   ☐
   More than 2000   ☐

6. Time spent in store (in minutes):
    5-10   ☐
   10-15   ☐
   15-20   ☐
   More than 20   ☐

7. Did the use of LEGO 3D app/ printed catalogue help the purchase decision?

   Yes ☐

   No ☐

A2. Raw Data

No	Purchase	Reaction	Value of Purchase (CZK)	Time spent in store (minutes)	Influenced
Category 1: Parents with Kids, exposed to 3D catalogue					
1	1	1	1000-2000	>20	1
2	1	1	100-1000	5-10	2
3	1	1	100-1000	10-15	1
4	1	1	>20000	>20	1
5	1	1	100-1000	5-10	1
6	2	1	0	5-10	
7	1	1	100-1000	10-15	1
8	1	1	1000-2000	5-10	1
9	2	1	0	5-10	
10	1	1	100-1000	>20	1
11	1	1	1000-2000	10-15	2
12	1	1	1000-2000	10-15	1
13	1	1	100-1000	>20	1
14	1	1	100-1000	15-20	1
15	1	1	1000-2000	15-20	1
16	1	1	1000-2000	>20	1
17	1	1	1000-2000	15-20	1
18	2	2	0	5-10	
19	1	1	100-1000	15-20	1
20	2	1	0	15-20	
21	1	2	1000-2000	>20	1
22	1	1	1000-2000	15-20	1
23	1	1	>20000	10-15	1
24	1	1	1000-2000	15-20	1
25	1	1	100-1000	>20	1
26	1	1	1000-2000	15-20	1
27	1	1	1000-2000	15-20	1
28	1	1	100-1000	15-20	1
29	1	1	1000-2000	>20	2
30	1	1	100-1000	15-20	1
31	1	1	1000-2000	15-20	1
32	1	1	>20000	>20	1
33	1	1	1000-2000	15-20	1
34	1	1	100-1000	15-20	1
35	1	1	1000-2000	>20	1
36	1	1	1000-2000	15-20	1
37	2	1	0	15-20	
38	1	1	100-1000	>20	1
39	2	1	0	5-10	
40	2	1	0	5-10	
41	1	1	1000-2000	10-15	1
42	1	1	100-1000	15-20	1
43	1	1	100-1000	15-20	1
44	1	1	100-1000	>20	2
45	1	1	1000-2000	15-20	1
46	1	1	1000-2000	10-15	1
47	1	1	100-1000	15-20	1
48	1	1	100-1000	>20	1
49	2	1	0	5-10	
50	1	1	100-1000	5-10	2

No	Purchase	Reaction	Value of Purchase (CZK)	Time spent in store (minutes)	
Category 2: Giftgivers, exposed to 3D catalogue					
No	Purchase	Reaction	Value of Purchase (CZK)	Time spent in store (minutes)	
1	1	1	100-1000	10-15	1
2	1	1	>20000	10-15	2
3	1	1	>20000	10-15	1
4	1	1	1000-2000	>20	1
5	2	1	0	5-10	
6	1	1	1000-2000	10-15	1
7	1	1	1000-2000	10-15	1
8	1	1	1000-2000	10-15	2
9	1	1	1000-2000	15-20	1
10	1	1	1000-2000	10-15	1
11	1	1	1000-2000	15-20	1
12	1	1	100-1000	10-15	
13	2	1	0	5-10	1
14	1	2	1000-2000	10-15	1
15	2	2	0	15-20	
16	2	1	0	5-10	
17	1	1	100-1000	15-20	1
18	1	1	>20000	10-15	1
19	1	1	1000-2000	15-20	2
20	1	1	1000-2000	10-15	1
21	1	1	>20000	10-15	1
22	1	1	1000-2000	15-20	1
23	1	1	1000-2000	10-15	1
24	1	1	100-1000	15-20	1
25	1	1	1000-2000	10-15	
26	2	1	0	5-10	
27	2	1	0	5-10	1
28	1	1	1000-2000	5-10	1
29	1	1	>20000	10-15	1
30	1	1	1000-2000	15-20	1
31	1	1	1000-2000	15-20	2
32	1	1	1000-2000	10-15	1
33	1	1	1000-2000	15-20	2
34	1	1	1000-2000	10-15	1
35	1	1	>20000	5-10	1
36	1	1	100-1000	>20	
37	2	1	0	10-15	1
38	1	1	1000-2000	15-20	1
39	1	1	100-1000	10-15	1
40	1	1	>20000	15-20	2
41	1	2	1000-2000	>20	1
42	2	1	0	5-10	
43	2	1	0	5-10	
44	2	2	0	5-10	
45	1	1	1000-2000	10-15	1
46	1	1	100-1000	>20	1
47	1	1	>20000	15-20	2
48	1	1	100-1000	10-15	1
49	2	1	0	5-10	
50	1	2	1000-2000	10-15	1

III

Category 3: Parents with Kids, exposed to printed catalogue					
No	Purchase	Reaction	Value of Purchase (CZK)	Time spent in store (minutes)	
1	1	2	1000-2000	10-15	2
2	1	2	>20000	10-15	2
3	2	2	0	5-10	
4	2	1	0	10-15	
5	2	1	0	10-15	
6	1	1	1000-2000	>20	2
7	1	1	100-1000	10-15	1
8	1	2	100-1000	10-15	2
9	2	1	0	10-15	
10	1	2	1000-2000	15-20	2
11	1	2	100-1000	15-20	2
12	1	2	100-1000	10-15	1
13	1	2	100-1000	5-10	2
14	1	2	100-1000	10-15	2
15	1	1	100-1000	10-15	1
16	1	1	>20000	10-15	2
17	1	1	100-1000	>20	2
18	1	1	100-1000	10-15	1
19	1	1	100-1000	5-10	2
20	2	2	0	10-15	
21	2	1	0	10-15	
22	1	1	100-1000	10-15	2
23	1	2	1000-2000	10-15	2
24	2	1	0	10-15	
25	1	2	100-1000	5-10	2
26	2	1	0	10-15	
27	1	1	100-1000	15-20	2
28	1	1	100-1000	10-15	2
29	1	2	>20000	10-15	2
30	2	2	0	10-15	
31	1	2	100-1000	5-10	2
32	2	2	0	10-15	
33	1	1	100-1000	15-20	2
34	1	2	1000-2000	10-15	2
35	1	1	>20000	5-10	2
36	2	2	1000-2000	10-15	2
37	1	1	100-1000	>20	2
38	1	2	100-1000	10-15	2
39	1	2	100-1000	10-15	1
40	2	1	0	15-20	
41	1	1	100-1000	15-20	2
42	1	1	100-1000	5-10	1
43	1	2	1000-2000	5-10	2
44	1	1	100-1000	10-15	2
45	1	2	>20000	>20	1
46	1	2	100-1000	10-15	2
47	1	2	1000-2000	5-10	2
48	1	2	100-1000	10-15	2
49	1	1	100-1000	10-15	1
50	2	1	0	5-10	

IV

No	Purchase	Reaction	Value of Purchase (CZK)	Time spent in store (minutes)	
Category 4: Giftgivers, exposed to printed catalogue					
No	Purchase	Reaction	Value of Purchase (CZK)	Time spent in store (minutes)	
1	2	2	0	5-10	
2	2	1	0	5-10	
3	1	1	100-1000	10-15	2
4	1	1	>2000	15-20	2
5	2	2	0	5-10	
6	1	2	100-1000	15-20	2
7	1	2	1000-2000	10-15	1
8	2	2	0	5-10	
9	1	2	100-1000	5-10	2
10	2	2	0	>20	
11	1	2	100-1000	5-10	2
12	1	2	>2000	15-20	2
13	2	1	0	5-10	
14	1	2	100-1000	>20	1
15	1	2	>2000	10-15	1
16	1	2	1000-2000	5-10	2
17	2	2	0	5-10	
18	1	2	100-1000	>20	2
19	1	2	100-1000	10-15	2
20	1	2	100-1000	5-10	1
21	1	1	100-1000	5-10	2
22	2	2	0	5-10	
23	1	2	100-1000	10-15	2
24	1	1	100-1000	10-15	2
25	1	1	1000-2000	5-10	2
26	2	1	0	5-10	
27	1	2	1000-2000	10-15	2
28	1	1	100-1000	15-20	2
29	2	1	0	5-10	
30	1	2	100-1000	5-10	2
31	1	2	1000-2000	10-15	1
32	1	2	100-1000	5-10	1
33	1	2	100-1000	10-15	1
34	1	2	100-1000	5-10	2
35	1	1	100-1000	5-10	2
36	1	1	1000-2000	5-10	2
37	2	2	0	5-10	
38	2	2	0	5-10	
39	2	1	0	5-10	
40	2	1	0	10-15	
41	1	2	>2000	10-15	2
42	1	1	1000-2000	10-15	2
43	2	2	0	5-10	
44	1	2	100-1000	15-20	2
45	1	2	100-1000	10-15	2
46	2	2	0	5-10	
47	1	2	100-1000	10-15	2
48	2	2	0	5-10	
49	1	2	1000-2000	5-10	2
50	2	2	0	5-10	
	1=YES	1= Positive			1=YES
	2=NO	2= Negative			2=NO

V