

The Impact of Immersive Technologies on Value Creation in Retail Industries

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Abstract

As companies are looking to strengthen their market share and maximize their value creation and revenue through process optimization, innovation, and efficiency, they look at different methods, instruments, and implementations that may help achieve their goal. Two such instruments are the adoption and integration of artificial intelligence for daily and repetitive tasks, and the implementation of augmented reality and virtual reality applications to create business value and gain an advantage over the competitors. The purpose of this paper is to discuss what impact the adoption of immersive technologies, such as augmented reality or AR, and virtual reality or VR has on the value creation, the revenue streams, and customer relationship. To achieve this, a narrative literature review was conducted, in which articles from Web of Science were analyzed and frequent topics were selected for discussion in this paper. This paper aims to discuss these three topics, namely, the impact of immersive technologies on value creation, the impact on revenue streams for enterprises, and the impact on customer relationship. Some immersive technology implementation methods, related to the three topics mentioned above, were also discussed, to further analyze their applicability. This paper found that immersive technologies can create value in different forms for companies. One of the practical implications and finding of this paper is that the adoption of such technology can become a direct revenue channel because enterprises can charge a fee for access to this technology. Another finding and practical implication is that immersive showrooms can be created where users can experience a personalized interaction with products and the surroundings. Purchases can be made in such immersive showrooms, increasing the revenue and decreases the risk of refund for such products. A third finding is that immersive technologies can improve the customer relationship through personalized experiences and keeping the user engaged over a longer period of time. The originality of this paper consists of the fact that it shows multiple ways, how immersive technologies can help generate financial as well as non-financial benefits for companies.

Keywords

Immersive technologies; metaverse; AR; VR; value creation; retail

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Introduction

Nowadays immersive technologies such as augmented reality and virtual reality become more attractive for companies to implement in their daily activities. On the one hand this shows that companies see a value and utility in using such technologies to streamline processes, reduce processing time and test different parameters for their product or service. This depends on the extent to which a company is willing to adopt immersive technologies and trust this type of technology. On the other side, in the current literature state, companies find it hard to implement such technologies because there is no methodology or guidance in applying and even combining such technologies (Hilken T. et al, 2022). Furthermore, there is the financial aspect to be considered, since this adoption requires a substantial investment in order to create the ideal

framework where users can utilize such technologies. This is a major factor in the decision to embrace this technology and can be a deal breaker for many companies. However, the literature, although still in its infancy, shows that there are a lot of use cases for these technologies and that they can be useful for enterprises, but the exact value it brings is not enough researched. This paper aims to reduce this gap in the literature by providing practical examples of the way the adoption of immersive technologies, such as augmented reality and virtual reality, benefit companies. The leverage of AR and VR currently is more prone in some domains than others. For example, the technology sector can benefit relatively easily from these technologies. Such is the case with the gaming industry, a branch of the tech sector, where AR and VR have already been used and implemented for some years already. An example of such application is Pokémon Go (Dragomir & Pelau, 2025), an augmented reality application that generated a lot of interest for its users and can be classified as a successful integration of such technology in a video game. Depending on multiple factors, one technology is more suitable than another to achieve a specific objective. For instance, AR is shown to be perceived more practically than VR when talking about the retail industry (Boletsis & Karahasanovic 2020).

1. Literature review

Augmented Reality has transformed the interaction of customers' with products of various brands (Lazrek & Hamadi, 2024). Nowadays, more companies are adopting different augmented reality applications to take advantage of this transformation, and to enhance customer experience (Abu Elsamem et al., 2025) and purchasing decision. Especially impulse purchases are directly influenced by the adoption of AR technologies, as they enable users to interact with products (Hsu et al., 2024). This is one of the reasons why the AR market is growing and has potential to grow further in the future (Hsu et al., 2024). This is also the case for VR or virtual reality applications. However, the impact of this type of technology is still unclear (Mütterlein & Hess 2017), compared to AR, therefore, needing more research. Studies have shown that AR implementations can have a positive impact on revenue streams of enterprises (Hilken T. et al, 2022). Therefore, the utility of AR in the value creation process is already known by researchers, and more enterprises want to adopt it. In this context, the term co-creation appears, and refers to the active engagement of the customer in the relationship customer-enterprise. Based on that, the success of AR applications can be determined by the user's attitude to use such application (Cranmer et al., 2021). This attitude is influenced by intrinsic factors such as emotions, as well as the level of enjoyment and gratification application (Cranmer et al., 2021), and shapes the user's willingness to interact in the future with this type of technology. Also, how the user interacts with AR applications is strongly influenced and this can be analyzed through time spent, purchases made, objects the user interacted with frequently, and so on. This data is valuable for enterprises; therefore, one can say that AR has brought some form of value to the company. It is important to note that value does not mean only a financial benefit but can be present under different ways. Therefore, it is important to think about the term value in its entirety. Value for enterprises can be in the form of knowledge or data, in the form of a more streamlined process, in the form of shorter response time, in form of better and more qualitative customer data, and many more.

Despite these factors, there is a degree of uncertainty as well as the high costs associated with the development and maintenance of AR applications that is slowing its adoption and therefore its usage as previously expected (Cranmer et al., 2021). However, in spite of this, the adoption and usage rate will increase due to advances in the technology sector that will make this technology more accessible.

When looking at the whole evolution of metaverse and metaverse related applications such as AR and VR and their relationship with Business Models, one study shows that there can be identified three major milestones or so-called waves (Latino et al., 2024). According to the study, the first wave is temporally located between 1998 and 2006 and it shows that Business Models started moving towards so-called virtual networks through virtual markets and supply chain and virtual communities. It shows the first steps made to embrace the metaverse and the whole virtual space. Here were the first virtual markets, virtual supply chain, and virtual communities developed (Latino et al., 2024). According to the authors, the second wave is temporally located between 2007 and 2014 and further develops the idea of the first wave introducing virtual objects into the equation. This was one of the founding mechanisms of the early metaverse, where this concept emerged. This wave is represented by virtual goods as well as avatars, virtual tokens, and even currencies (Latino et al., 2024). The last wave, based on the paper mentioned earlier, is temporally located between 2015 and 2023 and it strengthens the idea of metaverse and focuses on the value generated by new technologies and applications generated in and with metaverse. One such application that is applicable in the manufacturing industry can be the testing of a concept, of a product or a part with AR or VR, to analyze some specific points, such as the efficiency or feasibility of the product. This also has a strong impact on the error-reducing rate, as the parts or products are pre-tested in the virtual space (Hagl & Duane, 2018).

Furthermore, this results in cost savings and faster and more reliable development cycles (Hagl & Duane, 2018). Another example can be the fuel consumption of a part needed in the automotive industry to manufacture cars. This wave is an expansion of the concept of metaverse, identified in the second wave, where the metaverse becomes a solid ground for the development of different technologies. All these waves incorporate aspects and tools that companies can leverage to generate business value in their domain.

When discussing the idea of Business Models, or BMs, it is important to mention that nowadays the focus shifted from classic Business Models to so-called BMIs, or Business Model Innovation. This refers to a process through which a company adapts its existing Business Model to challenges or opportunities, as well as diversification and general innovation (Geissdoerfer et al., 2018). Business Model Innovation is implemented through entirely different new processes and activities that help to strengthen economic growth and adapt to new dynamic challenges (Liu et al., 2025). However, a new concept arises that includes the idea of immersive technologies and metaverse, in general. This new concept of Metaverse Business Model Innovation, or MBMI, refers to all stakeholders, such as humans and virtual humans, avatars, characters, robots, and so on, that interact with each other and with different objects in a virtual space (Liu et al., 2025). A study discusses this topic and categorizes MBMIs into four major categories, depending on their actors and context. These four categories are: digital twin interaction, duplicate interaction, mirroring interaction and immersive interaction models (Liu et al., 2025). According to the study, the digital twin interaction facilitates realistic simulations, the duplicate interaction facilitates virtual consumption, mirroring interaction leverages the virtual sensemaking, and the immersive interactions facilitate various experiences to interact and respond to a dynamic environment (Liu et al., 2025). For this MBMI model to be implemented successfully, there are some prerequisites to be considered. Beyond the financial constraints that come with the implementation of such Business Model, there are technological constraints and fluidity topics to mitigate. This encompasses topics such as lags, delays, and general connectivity and response time issues that negatively impact the usage and interaction experience of users. Therefore, a stable platform with less functionality and shorter response time is desired in comparison to a platform that has a lot of features but has bugs, lags, and makes in general the interaction less desirable. Security concerns are also an important aspect, since there are more data to be processed and users might be reluctant to use such technologies out of fear of personal data loss. A secure connectivity such as end-to-end encryption or similar is required to ensure accurate and reliable data protection. A specific company culture needs to be present in order for such Business Model to be successful. People must be willing to take risks and easily adaptable, as the success of such new BM is uncertain. Therefore, some agile principles and practices are recommended to be implemented to allow this BM to fully achieve its outcome.

2. Research methodology

For this paper, we have chosen to conduct a narrative literature review of articles from the Web of Science that were written in English and discuss different topics and ideas that were proposed, based on a previous paper called “Virtual and Augmented Reality: Analysis of Business Implementation in Retail”. The mentioned paper contains some of the concrete implementations of immersive technologies in businesses that were further analyzed in this paper from a value generation perspective. Other implementations of immersive technologies were found on the internet and the most significant one, the most successful ones, as well as the implementations from big companies were selected to be analyzed. In successful implementations, we refer to implementations or applications that still continue to utilize this technology at the time of writing this paper. The examples analyzed come from major companies, active in different industries. The reason why the major companies were chosen is because they can invest enough resources to implement such technologies successfully. There is also the fact that the brand name helps in promoting such implementations, making them known to the general public. The companies that were analyzed in this paper are: IKEA with IKEA APP, Sephora with Virtual Artist, Nike with Nike Fit. To learn from these implementations, after analyzing them and the existing scientific literature, we have identified three major research interest points for our topic that were discussed below in this paper. These topics are: the influences of immersive technologies on value creation, the impact on the revenue channels of economic actors, and the overall impact on the customer relationship. We have then proceed further discussing these topics and trying to further explain them and their utility in the value generation process. Also, to clarify the topic of value creation with the help of immersive technologies, four major directions were analyzed, namely the financial benefits, non-financial benefits, direct and indirect benefits. These are different types of value immersive technologies that implementations can have on businesses while addressing the three research interest points mentioned earlier.

3. Results and discussion

To incorporate changes in the business model of a company, flexibility in their way of operation is required. Therefore, these changes can be implemented more easily if the company has an agile business model and adapts quickly to fast-changing necessities. This does not mean that continuous change is recommended. In fact, it is not because if the business model changes constantly, then the success of previous measures is hard to determine. There is a fine balance between knowing when to adopt changes in business models and when not. Traditional business models are not perfectly suited to incorporate changes quickly, but they can adapt to changes at a slower pace compared to agile business models. An example of an agile business model industry is the tech sector, where changes happen on a regular basis and companies want that so that they can maintain their competitiveness and market share. In this sector, companies already use AR and VR applications for the development, testing, and launching their products. There are already games and platforms that run on AR and VR technology, such as Pokémon Go, an AR application that overlays characters onto the main world so that users can interact with them, IKEA with its IKEA App that lets users customize their surroundings with IKEA products (Dragomir et al., 2025). This trend of adoption of AR and VR, especially in the tech sector, will likely grow due to its high applicability and practicality. Not only the tech sector can benefit from the advantages brought by AR and VR, but other sectors as well, such as education, manufacturing or even healthcare (Dragomir & Pelau 2025). Manufacturing companies can use AR/VR applications to better visualize and develop the specific components they need or sell to customers.

In the automotive industry, engineers can develop virtual prototypes of components, such as engines or suspension systems, and evaluate their performance in simulated environments prior to physical production, thereby reducing both development time and associated costs. Similarly, in the aerospace sector, teams can collaborate in real time within virtual environments to examine the structural characteristics of complex components and to identify potential design deficiencies in the early stages of development.

Healthcare can benefit from such applications, since physicians and doctors also interact in the virtual space, simulate diverse scenarios in VR and extract valuable data from it (Kulkov et al., 2021). For example, surgeons can rehearse complex procedures using three-dimensional models of patients' organs derived from medical imaging data, allowing the refinement of surgical techniques prior to real surgical interventions. Also, specific procedures can be exercised and medical staff and students can be trained (Kulkov et al., 2021), showing its applicability in the education field. For instance, medical students can engage in VR-based simulations that replicate emergency scenarios, such as cardiac arrest or severe trauma, facilitating the development of rapid decision-making skills within a controlled and safe environment. Furthermore, these technologies enable the systematic collection and analysis of performance-related data, contributing to the continuous improvement of both medical practice and educational processes. These aspects show that AR and VR can be integrated in different domains, having a positive influence on the activity of the enterprise or entity and generating value.

The overall value of immersive technologies brought to enterprises that implement them can be classified into four categories. These are financial benefits, non-financial benefits, direct and indirect benefits. Financial benefits are shown as the monetary value that the company gains after implementing such application. It is mostly applicable to situations where users need to pay in order to use or interact with such implementations. Non-financial benefits are shown in form of data, or gained knowledge about customer preferences and customer experience that can further be developed to meet customer expectations. Direct benefits are the benefits that companies expect to gain when implementing such technologies, for example, the gaining of knowledge of customer preferences. It is an example of a non-financial and direct benefit or value. Indirect value is the form of benefit that the company gains not as a result of the immediate action taken.

Interesting to note is the fact that AR has the ability to enhance the customer relation management, or CRM, of different enterprises due to its immersive visualization features. This is possible because AR allows one to overlay different objects in different ways in the real world. Therefore, customers can interact directly with products and be more involved in market campaigns, enhancing the overall interaction between the customer and the enterprise (Sanodia, 2021). It is also the reason why AR is generally promoted in different brand-related and marketing campaigns (Boletsis & Karahasanovic, 2020). According to a study, from a retail practice perspective, AR and VR are mostly used in branding and marketing, Virtual Try-on and sales channel as well as After-sale customer service (Boletsis & Karahasanovic, 2020). As the paper suggests, there are multiple steps in which AR can generate value for businesses in the different processes and activities. New clients can be gained and the existing ones are more inclined to become loyal customers to a specific brand due to this highly enriched interaction experience. Although AR can add different visual stimuli in the form of objects during the interaction, it can also remove objects from the user's view (Cran-

mer et al., 2021). It is helpful in situations where companies want to reduce the surrounding noise, or background noise such as unnecessary elements of distraction, so that the customer can focus on a product or the interaction itself.

A concrete example of the application of augmented reality (AR) in the furniture retail sector is the application IKEA Place, developed by IKEA, which allows users to visualize furniture products in their own real-world space through the mobile device camera. In this interaction, AR technology performs two complementary functions. On the one hand, it introduces virtual objects into the user's field of view, accurately representing the dimensions, proportions, and appearance of the selected product within the real spatial context. On the other hand, according to the concept of removal of objects from the visual field, the system can reduce or blur background elements considered irrelevant or potentially distracting, such as environmental clutter or objects that do not contribute to the evaluation of the product. This visual filtering capability contributes to reducing informational "noise," enabling the user to focus exclusively on the analyzed product. Consequently, the decision-making process is supported through a clearer and more focused experience, which can lead to increased confidence in the chosen option and, implicitly to a higher likelihood of conversion and brand loyalty. This example shows a form of non-financial and direct value for the company, since it does not directly generate revenue, but it collects user data and the way the user interacts with the products, what products were interacted with, time spent and so on. Such AR implementation tends to make a company top of mind, because it offers a new method of interaction with its products, therefore having a strong positive impact on CRM. This means that when potential customers want to make changes in their home design, they will opt to use the features of IKEA APP and try different IKEA products, even if they do not intend to purchase an IKEA product. The value here comes in the fact that the user becomes engaged with IKEA through the app, and by trying various products, the likelihood of a purchase rises significantly, and their impression of the brand and its products gets positively influenced.

A similar mechanism can be observed in the cosmetics industry through applications such as Sephora Virtual Artist, developed by Sephora, where users can virtually test makeup products. In this case, AR not only overlays virtual elements on the user's face but also enhances the visual experience by reducing distractions, directing attention toward the evaluated product. Therefore, augmented reality is not limited to the addition of virtual elements in the real environment, but also includes the ability to selectively modify the visual perception in order to optimize interaction and support decision-making processes in commercial contexts. This leads to an even more immersive experience that generates data for companies. This example shows a form of non-financial, direct, and indirect value for the company. The initial value stream comes in the fact that these tailored interactions make the customer feel understood and raises their engagement. This data is a non-financial and direct benefit for the company, since it is one of their goals to gather customer data, tendencies, preferences, and keeping them overall engaged. Talking about the cosmetic industry, it is important to note that many purchase decisions are based on specific vectors, such as other people's recommendations, either being influencers, friends or even family members. A second value stream emerges, this one referring to the word of mouth for products as well as for their concept of virtual makeup test, since those will be discussed and even recommended through the vectors mentioned earlier. This is an example of an indirect value that the company benefits from, while it does not specific target this goal. It can be seen as sort of a side effect. This illustration is another example of the value generated by adopting AR technologies in the CRM strategy of a company.

A relevant example of the application of augmented reality (AR) in the footwear retail sector is the "Nike Fit" solution, developed by Nike. This system uses scanning and image processing technologies to analyze the shape of the user's foot through the mobile device camera, subsequently generating personalized recommendations for the optimal shoe size. From a functional perspective, the AR system enables the overlay of a digital model onto the real representation of the foot, facilitating a more accurate assessment of the compatibility between the user and the product. This approach contributes to reducing the uncertainty associated with size selection, which is a frequent source of error in online shopping. Consequently, the implementation of this technology has direct implications for the consumer experience by improving the accuracy of decision making and reducing the likelihood of product returns. At the same time, the personalization enabled by AR supports increased user satisfaction and can positively influence brand loyalty. This example highlights how augmented reality goes beyond simple product visualization, extending into functional applications with a direct impact on decision-making processes and commercial efficiency. This illustration shows a similar form of value, as shown in the paragraph above, namely a non-financial, direct and indirect benefit for the company.

This data is valuable for enterprises since they can adjust and refine their strategy and even business model according to these findings. This is a type of non-financial and direct value that immersive technologies can bring to companies that implement them. Furthermore, this can result in new AR applications, such as

immersive showrooms with AR, where customers can interact with more products and better decide what to purchase, which brings even more value to the enterprise. This leads to more time spent in the showroom, which is also valuable for the enterprises because it raises the likelihood of a purchase decision. All of these factors can be categorized as value stream generators for companies that implement immersive technologies, showing that they have a positive impact on business models. One sector that is suited for such applications is the retail sector. There, companies can implement such immersive showrooms and benefit from its influences on customer behavior. This can be further extended to create a virtual showroom, fully integrated in the metaverse, and not depending on a physical store or location. This is especially useful in cases where the objects shown are physically too voluminous and space is limited or not available (Wieland et al., 2024). However, it requires a more complex framework to operate, such as a stable metaverse platform and devices such as VR Headsets to operate in the metaverse. In comparison, the AR immersive showrooms is easier to achieve, faster to implement, and can be analyzed easier to determine its efficacy and profitability.

One interesting aspect to note here is the fact that in both AR and VR immersive showrooms, the experience can be personalized according to the user's preference. This strengthens the positive perception of the brand as a customer-oriented brand and aims to strengthen customer loyalty to the brand. In the context of integrating AR (Augmented Reality) and VR (Virtual Reality) technologies into the business environment, two dimensions of organizational value become particularly relevant: data-driven value and operational value. Data-driven value is generated through the ability of AR and VR systems to collect, process, and interpret large volumes of behavioral data resulting from user interactions within immersive environments. In AR applications, users interact with augmented elements overlaid on the real environment, enabling the capture of detailed information such as product preferences, engagement levels, the duration of the interaction, and decision-making patterns in purchasing contexts. In VR environments, where the user is fully immersed in a virtual space, even more complex behavioral datasets can be obtained, including navigation paths, attention distribution across virtual objects, interaction frequency, and responses to simulated stimuli. This data is subsequently processed using advanced analytics and machine learning techniques, enabling organizations to develop a more granular and evidence-based understanding of user behavior.

As a result, strategic and operational decisions can be grounded in empirical insights, reducing uncertainty while enhancing personalization, marketing effectiveness, and product development processes. Operational value refers to the optimization of internal organizational processes through the use of AR and VR in activities such as design, training, simulation, and product interaction. AR enables the integration of digital elements into real-world environments, allowing for real-time visualization and manipulation of virtual components without the need for physical prototypes, thereby accelerating development cycles and improving precision in execution. VR, in turn, facilitates the simulation of complex and controlled environments in which processes, tasks, or scenarios can be replicated safely and consistently, supporting training effectiveness and reducing operational risk. In this way, both technologies contribute to streamlining workflows, improving coordination, and enhancing the efficiency of organizational activities across different functional areas. In general, the interaction between data-driven value and operational value highlights that AR and VR technologies not only enhance user experience, but also simultaneously contribute to the optimization of internal processes and the grounding of organizational decision-making in data generated within immersive environments. This dual contribution supports increased organizational efficiency, adaptability, and long-term competitiveness.

Another way of implementing AR and VR is in direct relation to the revenue channels of companies, a form of direct and financial value generator. Enterprises that use AR and VR can benefit from these through different ways depending on their operation mode. For example, in the retail industry, these immersive showrooms can be made available as a form of subscription-based feature. This ensures a direct financial benefit for the enterprise and is, therefore, a direct and financial benefit. This proposed idea shows a level of exclusivity that is sought after many clients. It shows an improved experience in comparison to normal ones that are available for the entire market. However, aside from the monetization of the access to these immersive shows, these still have a positive impact on the revenue. This is because the customer can interact with the sought product, test it, and develop an initial opinion of it. This shows a form of non-financial indirect value. This gained knowledge, leads to fewer product returns, which in return, leads indirectly to more available financial resources for the company, which is also a form of indirect value. Since the product serves the expected utility and functionality for the customer, he should not have a reason to return it back and ask for a refund. This also increases also the customer satisfaction and retention in the long term. Based on this data, companies can develop new revenue paths. These examples show the different types of value, ranging from direct to indirect and from financial to non-financial, the implementation of immersive technologies has on businesses. Another way of indirect influence on the revenue channels is the fact that immersive technologies can be implemented to eliminate or sink the travel needs (Hagl & Duane, 2018).

Employees, users, and customers can meet and interact in the metaverse where the specific of the activity does not mandate a physical presence. In this example, companies are inclined to spend money on such applications because the subscription is generally less than the costs associated with delegations. Especially when scaling this idea, the cost difference is better seen and the subscription-based VR meetings are more attractive than a travel delegation. Another revenue path for companies leveraging immersive technologies can be VR product launches. This refers to product launches that occur in the metaverse through VR technology. A participation fee can be implemented for the attendance at such events, just like the real physical ones. The customization of its own avatar can also be seen as a revenue source for companies since they can charge a fee for the modification and adjustment of the avatar. This is not something completely new or unheard of. It happens already in the gaming industry, through customized skins, packages, bundles, and limited-time offers in video games.

Conclusions

This paper is focused on the potential usage of immersive technologies in the form of a value generation mechanism for businesses. It shows various types of value such usage has on businesses overall with focus on the retail sector, that are also valid for other branches and domains. Beyond financial gains, such as subscription type access to these applications, there are also non-financial benefits as well as direct and indirect benefits. Non-financial benefits are mostly related to collected user data through different parameters such as user experience, user retention, or time spent. The direct value of immersive technologies implementations comes from the fact that the company achieves its main goal that was set when deciding to implement such technologies in the first place. If the goal is to gather customer data, for example, then this is the direct value that the implementation aims to bring. The indirect value comes from a secondary effect that the company experiences after gaining a previous one. Such is the case with Sephora and word of mouth. It is already known that immersive technologies can have a positive impact on the enterprise in various types, and this paper further strengthens this idea. The degree of impact is however hard to quantify because it is dependent on the level of adoption a company is willing to embrace and the way it implements such technologies. This paper also reinforces the versatility of immersive technologies like augmented reality, AR, and virtual reality, VR, for different applications in different domains, retail being a domain where parameters related to customer experience can be tested, analyzed, and implemented because they can be used as a lever for business growth. This applies to small as well as large retailers especially those that are high-tech, since this technology requires an advanced level of technology. Small retailers can benefit from such implementations since they can attract easy new customers, and increase their market share. For large companies, the focus is more on customer retention and analysis, since they already have an established market share. The purpose is to try to keep the customer engaged and make him loyal to the brand and the company. For low tech retailers, it is also recommended to analyze specific immersive technologies applications in their customer interaction, but since this usually requires a substantial investment, another form may be adopted. For instance, small retailers can be present in the metaverse at a specific event, like a fair, where they are a participant, not the host, and can interact with possible clients.

The current level of understanding and discussions that are found on Web of Science is still emerging; therefore, the practical application of this technology is still in its relatively unexplored stages. Also, exact implementations are hard to find, and it is one limitation of this paper. This is because companies are not that enthusiastic to share their data with researchers out of fear that they might lose that advantage over their competition. This is a big limitation for this paper and for future papers as well. This study is based on the implementations that were found in published papers in Web of Science, and in the retail sector. The biggest limitation here is that there are not that many applications studied, likely because there are not that many applications of immersive technologies in retail. And the few that exist, are relative hard to analyze because of the reason mentioned above. It is also the reason why it is hard to discuss cases in exact numbers in this topic. The farthest discussed implementation was 10 years ago and is Pokémon Go in 2016, while the others were launched either in the same year or after it. It shows that companies have tested the ground for immersive technologies in their domain of activity. The fact that recent implementations are scares, means that companies show a level of reluctance to this technology and it is likely linked to the implementation costs. However, these technologies tend to become more affordable as the time passes and an increase is to be expected in the number of applications as well as number of papers in this topic, since this paper shows that there is a vast utility in using such technologies. One suggestion for future research direction is to analyze the user interaction with this technology. For instance, an eye tracking experiment could be used to find out what elements do have a significant impact on the user experience. Such elements can be the strategic positioning in an immersive shop, the level of detail of the product, the overall

environment and how the user looks and interacts with it, and the locations where the user spends more time looking.

Generative Artificial Intelligence (GenAI) usage statement:

No GenAI tool was used in the development of this paper.

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