

Providing a Framework for Virtual Reality Functions in B2B Business Customer Journey with a Focus on Immersion Features

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Abstract

Due to the dispersion of these functions in the literature and their anonymity, the purpose of this study is to identify the functions of virtual reality immersion feature in B2B business customer journey and provide a framework. The concept of these functions involves the three stages: before the purchase, purchase and after the purchase of this journey. This study has been done by adopting a qualitative approach and thematic review method. The required data was collected through literature review. First, research articles on B2B marketing and virtual reality were searched in Google Scholar and Scopus databases, and during the steps and filters, a total of 274

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articles were extracted from these two databases. Duplicate article, 257 articles were obtained. In the next step, by applying the exclusion criteria, 224 articles were deleted and finally 33 articles were finally reviewed. After performing the thematic analysis steps, 67 codes were extracted, which were presented in the form of four themes or main functions and nine themes or sub-functions. The findings of this study contribute to a more comprehensive understanding of managers and marketing and sales experts of the functions of the VR immersion feature at each stage of the B2B customer journey. Managers and owners of B2B businesses can use these functions in customer journey based on their marketing and sales goals and enjoy its benefits. It also helps researchers identify and improve the scientific and managerial understanding of the functions of the VR immersion feature and how it creates value in B2B client journey. According to the results of this research to future researchers, reviewing the literature with more sources and a wider period, developing a research model using other theories; And model testing with initial data is recommended.

Keywords: B2B Businesses, Customer journey, Immersion, Thematic analysis, Virtual reality.

1.Introduction

In recent years, B2B customer travel has changed significantly. According to researchers, B2B customers have changed their shopping style due to the use of digital technologies (Steward et al., 2019). 57% of the procurement process is done online before contacting the supplier's representative and 67% of the procurement activities are done online (Kelly, Johnston & Danheiser, 2017). In addition, recent studies by Gartner (Bryan, 2018) show that more than 80% of B2B customers go to online channels even for more information at the end of the purchase process. Therefore, B2B companies must accept that the sales environment has changed and in order to remain competitive and meet the new needs and expectations of customers in the best possible way, they need to use digital technologies in customer travel (Boyd & Koles, 2019). One of these digital technologies is virtual reality.

Leading companies, such as Siemens, Philips, General Electric, Airbus and many others, are pioneers in the use of virtual reality technology in the B2B sector (Boyd & Koles, 2019). Many companies in various industries have also recognized the potential of virtual reality and are trying to identify the functions of using virtual reality and integrate it into their company processes (Pahnke, 2018).

Virtual reality, hereinafter referred to as VR, is "a computer-generated three-dimensional simulation in which the user can navigate, interact, and immerse himself" (Bloch et al., 1998). Immersion in the word means engaging, absorbing and engaging in a certain activity with full concentration and attention. Immersion is a key feature of VR technology that makes the user feel present in the virtual world at all times and considers himself part of that environment so that he forgets his physical presence in the real world.

This feeling of presence occurs when the user is surrounded by images, sounds or other stimuli in the VR system. The immersiveness of a VR system is important in that it creates more enjoyment, higher psychological ownership, a stronger presence experience, and better attention and concentration, and in particular, a more realistic feel compared to two-dimensional media (Boyd & Koles, 2019). For example, the features of complex products such as medical and construction equipment in traditional presentations (PowerPoint, touch screens) are difficult to understand, while displaying these products in an immersive virtual environment immerses the customer in a unique

and unforgettable experience that is deeply ingrained. And product performance leads (Finn, 2018).

Despite the extraordinary features that present VR immersion in B2B client travel, these functions remain largely unknown and there is no coherent knowledge about it. As a result, many companies have been deprived of the benefits of using it. In this regard, this study intends to address how to value the VR immersion feature in the B2B customer journey. And we will specifically answer the following questions:

1. What are the functions of the VR immersion feature in the pre-purchase stage, B2B customer journey?
2. What are the functions of the VR immersion feature in the purchase phase, B2B customer journey?
3. What are the functions of the VR immersion feature in the post-purchase phase, B2B customer journey?

2.Virtual reality and immersion feature

Virtual reality has been around since the late 1960s, but has recently entered the realm of personal and professional experience due to the development and advancement of its implementation tools. "Virtual reality is a digital computer environment that can be experienced and interacted with as if it were a real environment" (Gerald, 2015). Virtual reality technology has the unique ability to provide perceptual simulation of real-world situations, separating users from their surroundings and providing them with audio and visual stimuli that make them feel that they are in a completely different environment (Loureiro, 2020). Virtual reality facilitates the experience of real presence and stimulates the imagination of viewers. Thus, simulated virtual reality environments may affect users' attitudes, behavioral goals, and end-behaviors (Lin, Huang and Ho, 2020).

A virtual reality experience is of four main elements; The virtual world is made up of immersion, sensory feedback, and interaction (Sherman & Craig, 2003).

Part of the virtual experience requires the user to be immersed in an alternative reality through the VR device. Whitmer and Singer (1998) consider immersion to be a psychological state in which the user perceives the isolation of the senses from the real world. Scientists refer to this type of immersion as "mental immersion." Examples of such immersion include watching movies, listening to

music, and daydreaming (Muhanna, 2015). In virtual reality, the effect of entering an alternative reality is more physical than mental. For example, the HMD embedding process physically transfers the user's peripheral vision from the real environment to the virtual environment. A VR experience usually involves both forms (physical and mental) of immersion (Muhanna, 2015).

Mental immersion, on the other hand, has different levels in a virtual reality experience. Such an experience can be a partial mental immersion or a complete mental immersion, it is worth noting that achieving a complete mental immersion in a virtual reality experience is still an active challenge for research. Researchers have proposed other methods for classifying immersion. For example, Nakatsu and Tosam (2005) in their paper introduced two types of immersion, active immersion and inactive immersion. Lack or presence of interaction is the main element that distinguishes these two types of immersion. Active immersion involves interacting with objects, while in passive immersion, users only receive information without interaction. For example, watching a movie can be considered an example of passive immersion. On the other hand, the artist who focuses on creating the scene is an example of active immersion (Muhanna, 2015).

On the other hand, the terms "immersion" and "presence" are often confused and used interchangeably. The virtual reality community refers to mental immersion as mere "presence." Presence is, in short, a sense of "being" within a space, even if one is physically somewhere else (Whitmer and Singer, 1998).

Also, VR systems have three technical features; Immersion, interaction and imagination (Burdea and Coiffet, 1994) These three characteristics are interconnected and affect each other (Chin Chi, 2018). Which are called I3 or virtual reality triangles. The most important feature of a virtual reality system is immersion. Technically, it refers to the objective level of sensory loyalty that the VR system provides that can engage users.

3.B2B Customer Travel

The origins of the digital marketing customer journey and related vocabulary go back to decades of B2B purchasing process studies. Steward et al. (2019), after studying more than 60 years of research related to the B2B purchasing process, identified seven main themes.

These themes are; Transactions, Situations, Impacts, Responses, Relationships, Networks, and Travel. They concluded that each theme introduces new concepts that lead to the creation of different models of the B2B purchasing process. The latest theme, the "travel" theme, known as the "customer journey", focuses on the impact of technology on the purchasing process and uses digital technologies to draw and model the customer's journey at contact points. The main theme in customer travel is transactions. It also includes aspects and themes of previous purchasing processes such as relationships, networks, effects and situations. Steward et al. (2019) argue that customer journey does not represent the purchasing process, but rather the conceptualization of a process that is more complex and involves all the interactional elements and their flow between the customer and the supplier over different time periods. By visualizing customer journey, companies can gain a deeper understanding of the customer experience (Lemon & Verhoef, 2016).

Customer travel mapping has become increasingly popular today, with the theme of customer travel considering the "public" customer, but also emphasizing that each customer has a unique journey and unique contact points with the vendor company. To improve the customer experience and provide better service to it, the seller must clearly understand these contact points (Rosenbaum, Otolara, Ramirez, 2017).

In its simplest form, a customer journey map is a diagram that shows the path and steps that the customer goes through during the purchase and interaction process with the company (Richardson, 2010) and is usually drawn from the supplier's perspective by the marketing unit (Tomans et al., 2017). Figure 1 shows an example of a B2B customer journey map.



Figure 1. example of a B2B customer journey map

This itinerary is a combination of Webster (1965) and Growel et al. (2015) models, completed with the final model of Kurt et al (2009). In this study, the customer experience is thought of as the "customer journey" with the company over time during the purchase cycle and at

several points of contact. Customer experience is a dynamic and repetitive process. As shown in Figure 2 and consistent with previous studies (Howard and Sheth 1969; Neslin et al 2006; Pucinelli et al. 2009), the customer experience can be conceptualized in three general steps: pre-purchase, purchase and post-purchase (Lemon). And Verhoff, 2016). The pre-purchase stage covers all aspects of the customer's interaction with the brand, group and environment before the purchase transaction.

Traditional marketing literature describes the pre-purchase stage with behaviors such as recognizing a need or problem, gathering information, and selecting a supplier. The second stage is the purchase stage. This stage includes all customer interactions with the brand and its environment during the purchase event. The buying stage is determined by behaviors such as selection, ordering and payment. The post-purchase stage is the customer's interactions with the brand and its environment after the purchase. This stage includes behaviors such as use and consumption, after-purchase participation and request for services (Lemon and Verhoff, 2016). In this regard, this study identifies the functions of the VR immersion feature and explains how to value them at each stage of the B2B customer journey.



Figure 2 - B2B customer travel steps

4.method

This study intends to identify the functions of VR immersion feature in customer travel and in the context of B2B businesses through thematic analysis of previous studies, therefore, the use of thematic review method is justified. First, data through literature review (Tranfield et al, 2003). was collected, then analyzed by thematic analysis (Braun & Clarke, 2006).

First search the Scopes database using Boolean operators; TITLE-ABS KEY ("Virtual Reality" or "Immersion Technology" or "Combined Reality" or "Extensive Reality") and TITLE-ABS KEY ("B2B" or "Purchase Process" or "Customer Travel" or "Sales"), Done. In total, 747 articles were identified. Next, the search results

were limited to the subject areas of business, management and accounting, engineering, and computer science for the period 2012-2011, and English articles reviewed in journals, conferences, and book chapters.

Due to restrictions, the number of articles was reduced to 87. Then, using the same keywords and time period, the Google Scholar database was reviewed. Among the extracted articles, articles were selected that included the keywords Virtual Reality, VR, Immersion Technology, Combined Reality, Extensive Reality, Digital Technology, B2B, Purchasing Process, Customer Travel, Sales, Customer Experience. A total of 274 articles were extracted from the Scopes and Google Scholar databases. The articles were transferred to Software and Note version X9 and 257 articles were obtained by removing 17 duplicate articles.

In the next step, according to the title, abstract, keywords and content, articles that did not address the capabilities, functions and benefits of VR, and articles without B2B marketing background were removed, and finally 33 articles remained. Subsequent reviews were performed on these 33 articles (Figure 3)

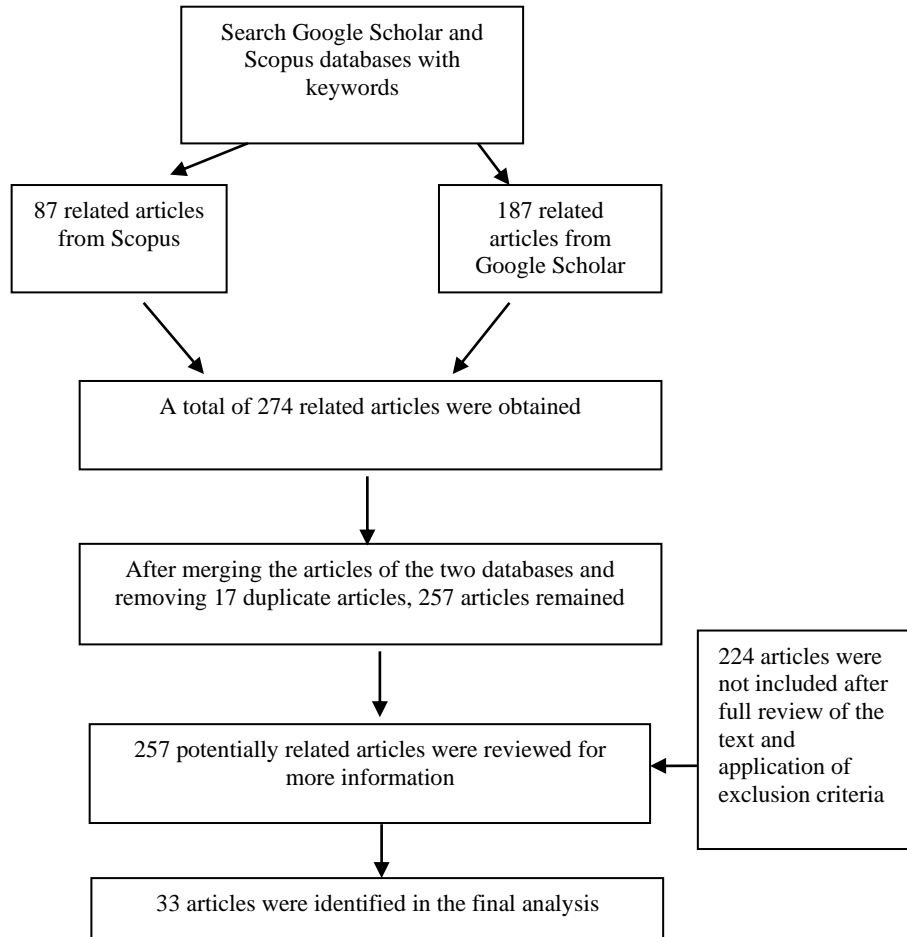


Figure 3 - Identification and selection of related research in the field of B2B and VR marketing

Thematic analysis method was used to analyze the collected data. As shown in Figure 4, this method has six steps: data familiarization, initial code generation, theme modeling, theme review, theme definition and naming, and final writing and analysis .

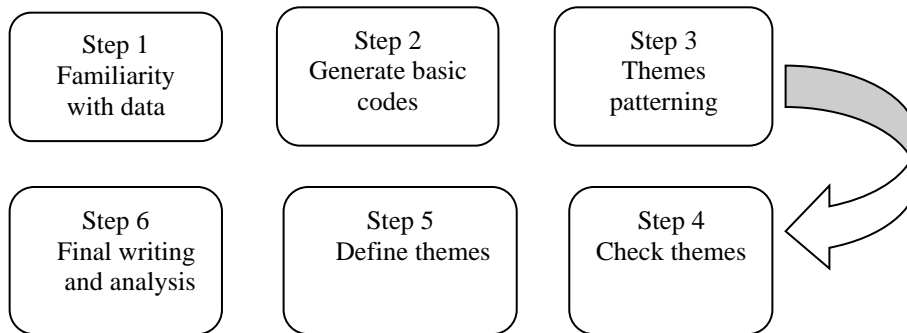


Figure 4 - Steps to perform thematic analysis

In the first stage of thematic analysis, in order to get acquainted with the depth and scope of the data content, in order to answer the questions of the present study, the data were read and re-read several times and ideas for coding, note-taking and marking were provided.

In the next step, the initial codes were extracted from the data. A total of 67 codes were obtained from 33 articles. Examples of codes extracted from the content of articles are given in Table 1. In the third stage or theme modeling stage, different codes were combined in the form of initial themes and all data related to each theme were collected. A total of nine initial themes were identified. An example of article content theme formation is provided in Table 2.

Table 1- Sample of coding the content of articles

Analyzed text	Extracted codes
Immersion technologies are an effective tool for training employees and developing their soft and hard skills (Smirnova et al., 2020). Immersion technologies are used for workplace training scenarios for employees and training of new workers (Borsci et al., 2016). In addition, it has been suggested that immersion technologies enable rapid and effective learning of various operations (Huang et al., 2012). In the area of after-sales service, VR can make services more tangible and thus enrich the customer experience and improve the training of support agents (Romero et al., 2019).	Effective staff training tools, on-the-job training for new employees and workers, fast and effective learning of various operations, improving the training of support representatives, enriching the learning experience ,Strengthening emotional responses, communicating with the audience on a more emotional level, enhancing the story experience

Analyzed text	Extracted codes
According to an experimental study, VR enhances emotional responses (Estupiñán et al., 2014), humanizes winners' compelling stories, and allows them to connect with their audiences on a more emotional level. In other words, VR enhances the storytelling experience (Łysik & Łopaciński, 2019).	

Table 2 - Sample content Themes of articles

Codes	Primary themes	The main themes
Strengthening emotional responses, communicate with the audience on a more emotional level, enhance the story experience, ...	Storytelling	Marketing Communications
Effective staff training tools, on-the-job training for new staff and workers, fast and effective learning of various operations, improving the training of support representatives, enriching the learning experience,	Staff training	Customer support services

5. Research Findings

In the themes review phase, the relationship between themes and extracted codes and data sets was examined. The initial themes identified in the previous step were reviewed and modified. Some themes that did not have enough data to support them were removed, while others were merged because the two themes appeared to be separate but were in fact one theme. Thus, the number of themes was reduced to nine primary themes and was placed in the form of four main themes, which are presented in Tables 3 to 6. Research Findings The functions of the VR immersion feature in the pre-purchase, pre-purchase and post-purchase B2B customer journey are presented based on the analysis performed.

Question 1 - What are the functions of the pre-purchase VR immersion feature, B2B customer journey?

Based on the findings, the VR immersion feature has two main functions and five sub-functions in the pre-purchase stage. These functions are shown in Tables 3 and 4 and Figure 5.

1. Marketing Communications

The first function of the VR immersion feature in the pre-purchase phase is marketing communications. Table 3 shows the functions of the VR immersion feature in the field of marketing communications and ancillary functions: product presentation, storytelling and experimental marketing, and the sources from which this information is extracted:

Table 3 - Marketing Communications

Main Themes	Primary Themes	Source
Marketing Communications	Product presentation	(Punk, 2018), (Schustrom, 2015), (Ghafel and Mohammad, 2020), (Prangel and Sarkar, 2020), (Kachour and Janushka, 2019), (Fisher, Sidenstricker and Popbbas, 2021), (Abir, 2014), (Kaw et al., 2017)
	Storytelling	(De Jong et al., 20121), (Abir, 2014), (Ronanen, 2018), (Boyd and Collies, 2019), (Ghafel and Mohammad, 2020)
	Experimental marketing	(Lorenchek, 2018), (Ghafel and Mohammad, 2020), (Loriro et al., 2019), (Pachko Monariz, 2020), (Poirie et al., 2020)

Product presentation

In B2B customer travel, the first point of contact of customers with the company is the stage of "research", "review and evaluation". At this stage, customers want to receive product information that meets pre-identified needs. Gartner's studies show that customers who see information from suppliers as a useful tool to facilitate buying process activities are 2.8 times more likely to buy and are three times more likely than other customers to make larger deals with the least amount of regret. Live and multi-sensory VR experiences convey more and more accurate information to customers and can increase their knowledge about the product, this reduces customers' uncertainty about product quality and has a lasting effect on their decision-making behavior.

Products are generally presented either in public at exhibitions and events, or in person at the customer's place, or online. Product delivery is a very important field for VR development in marketing and can be used for almost any type of product, but for physical

equipment that is not readily available for direct delivery due to various reasons (such as size, manufacturing cost and distance), like the; Large-scale machinery, aircraft, factories or production lines are more suitable. In Research by Ion et al., 2015; Punk, 2018; Marcopoulos and Hosannagar, 2018; Lisk and Lapozisch, 2019 have referred to this issue. Figure 5 shows the two main functions and five sub-functions of the pre-purchase VR immersion feature:

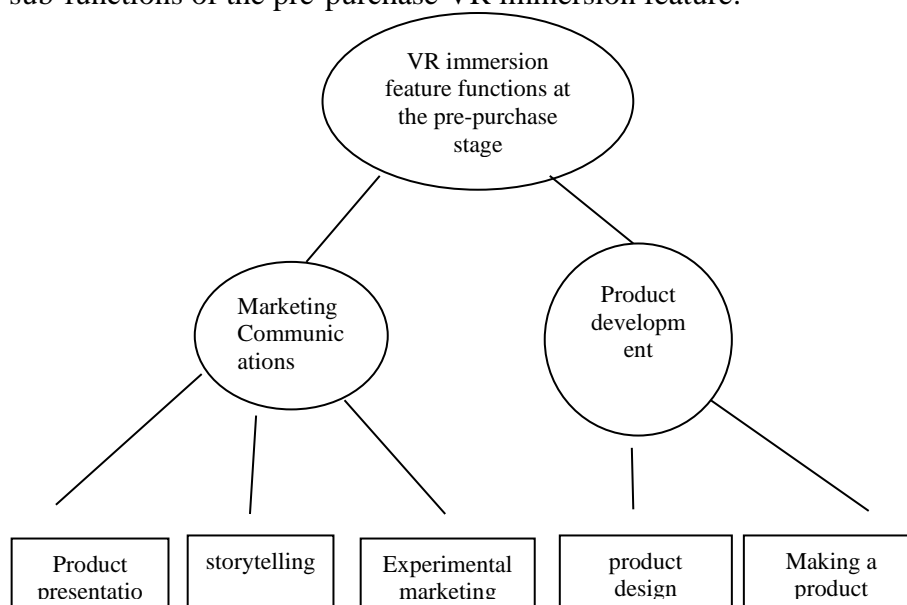


Figure 5 - VR immersion feature functions in the pre-purchase stage

VR immersion feature allows industrial companies to display their complex products without the need for physical presence and immerse the customer in a unique and unforgettable experience, also considering that companies are no longer required to carry large and complex products to exhibitions. Or there will be no meetings, the company saves costs and has less harmful effects on the environment. The use of VR in exhibitions not only increases the attention of visitors, but also increases brand awareness. Findings are in line with Punk Research, 2018 and Time, 2021.

Storytelling

Storytelling is the process of using reality and narrative to communicate with customers. What distinguishes storytelling using VR from other forms of storytelling is the creation of a completely

immersive experience in which the client does not experience the story from the outside, but is detached from reality and becomes part of the story. The power of storytelling with VR is not limited to entertainment because it also influences the customer's purchasing decision. According to a pilot study by Estupiñán et al. (2020), VR enhances emotional responses (and allows winners to communicate with their audiences on a more emotional level.

According to Google in partnership with Motizeta and CEB, 50% of B2B customers buy more if they can connect emotionally with a brand. This approach is much more effective than other forms and strategies in creating brand identity and brand awareness among customers. Also due to the "immersion feature", VR technology is expected to allow marketers to tell more complete stories to their potential customers, a function particularly suitable for B2B marketing where telling a complex sales story is a content challenge. This is mentioned in Kirkpatrick (2015) research.

Experimental marketing

Empirical marketing is a type of marketing strategy that attracts and interests customers by creating real experiences. The emphasis of this type of marketing is on the customer experiencing the brand and creating lasting memories of this experience in his mind. Recent findings, consistent with previous B2C literature, emphasize the role of VR in promoting empirical marketing by immersing the customer in fully simulated environments and allowing them to have an active part of the marketing experience rather than a passive recipient. The more immersive the technology, the more realistic the experience perceived by customers.

The enjoyable and exciting quality of VR technology allows the customer to better remember the brand, product features and marketing campaign; Therefore, VR technology also plays an important role in designing the customer experience and can be directly translated into other benefits, such as the image of the company, depending on the goals of the content writers. These findings are consistent with the research of Monariz, 2009; Ghafel and Mohammad, 2020.

2.Product development

The second function of the pre-purchase VR immersion feature is

product development. The product development process is divided into a set of distinct and recognizable stages (e.g., preliminary studies, concept development and testing, business plan development, product development, testing and validation, full production and marketing), VR immersion feature opens up new opportunities in stages Creates product design and prototyping the product development process.

Table 4 - Product development

Main Themes	Primary Themes	Source
Product development	product design	(Landman, Stolls-Romerman, Günter, 2020), (Berg and Vance, 2017), (Asr and Opperman, 2016), (Ahmed et al., 2015), (Ardel, 2018), (Haryharan et al., 2020), (Ghafel and Mohammad, 2020), (Fisher, Sidenstricker and Popbass, 2021), (Abir, 2014), (Caro, 2021), (Punk, 2018), (Avila and Bailey, 2014)
	Making a product prototype	(Frank, Dalnogar and Ayala, 2019), (Backhouse et al., 2014), (Pope, Gilgen and Safrodin, 2017), (Punk, 2018), (Nupova, Nordin and Surma, 2019).

product design

VR is mostly used in the decision-making process during product design, which takes place in the early and conceptual stages of a project. Using VR, design ideas can be regularly reviewed and adapted long before the first 3D physical models are made, and corrective action can be taken if necessary. In fact, by immersing oneself in a virtual environment, errors can be identified more quickly. And removed. This not only increases the productivity of VR, but also reduces the cost of reprocessing if implemented correctly through configuration and error correction. In general, this minimizes the risk of a bad investment. In Asr and Aperman Research, 2016; Punk, 2018; Landman et al., 2020 referred to.

Making a product prototype

In the first stage of design, prototyping is done, this stage is an interactive process in order to continuously improve the design, so it can be said that it is inherently time consuming and costly. But with realistic texture mapping, stereoscopic views, and even large-scale VR images, the virtual prototype can be as real as the physical prototype. The VR immersion feature reduces misconceptions about the

prototype (virtual), otherwise it may only be seen in real-scale production.

VR technology allows designers and other potential stakeholders to walk through virtual environments, experience a model in real size, and even interact with design. When different stakeholders touch the model and change its size, they can better understand the relationships between the components and make informed decisions. Thus, the production of these virtual prototypes allows customers to experience the product without making a physical prototype, this makes it possible for the customer to review the product and its features before spending company resources to produce the original product and take action if necessary. Make a correction. The results are in line with the research of Nopova, Nordin and Surma, 2019.

Question 2 - What are the functions of the VR immersion feature in the purchasing phase, B2B customer journey?

3. Decision Support

The VR immersion feature in the purchase phase has a main function and a sub-function in B2B customer travel, which is shown in Table 5:

Table 5 - Decision Support

Main Themes	Primary Themes	Source
Decision Support	Make informed decisions	(Poirier et al., 2020), (Fisher, Sidenstricker & Poplebas, 2021), (Ghafel and Mohammed, 2020), (De Jong et al., 20121), (Punk, 2018), (Haryharan et al., 2020).

The VR immersion feature helps customers make decisions. This feature enhances cognitive stimuli and immerses the customer in immersive experiences of the product and its features, thus transferring and absorbing knowledge about the product more effectively. This increases the customer's confidence and reduces his risk. This allows for more informed and faster decision-making within and between teams and stakeholders, leading to faster closing of transactions. In Research by Hariharan et al., 2020; Scholes and Smith, 2016, address this issue.

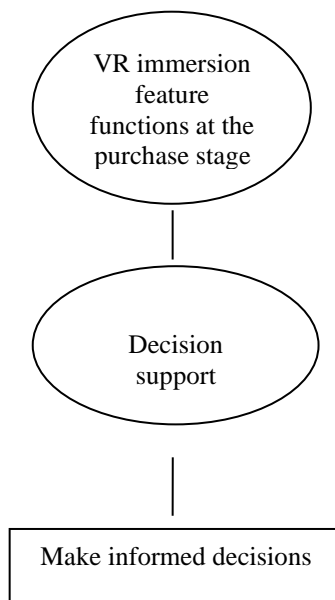


Figure 6 - VR immersion feature functions in the pre-purchase stage

Question 3 - What are the functions of the post-purchase VR immersion feature, B2B customer journey?

4.Customer Support Services

The VR immersion feature has one main function and three sub-functions in the post-purchase phase, as shown in Table 6:

Table 6 - Customer Support Services

Main Themes	Primary Themes	Source
Customer Support Services	Staff training	(Hariharan et al., 2020), (Smirnova et al., 2020), (Ghafel and Mohammad, 2020), (Frank, Dalnogar and Ayala, 2019), (Bursi et al., 2015), (Nosipova, Nordin and Surhamar, 2019), (Punk, 2018), (Abir, 2014), (Flussdorf, During and Da Silva Wagner, 2019), (Apades, Khandelwal, 2018), (Carla, Piska and Pitcaho, 2020), (Romero et al., 2019)
	Customer training	(Landman, Stolls-Romerman, Günter 2020), (Boyd and Collies, 2019), (Carla, Piska and Pitcaho, 2020), (Fisher, Sidenstricker & Popbass, 2021), (Ghafel and Muhammad, 2020), (Abir, 2014).

Main Themes	Primary Themes	Source
	Support for maintenance activities	(Ghafel and Mohammad, 2020), (Turner et al., 2016), (Fisher et al., 2021), (Fisher, Sidenstricker & Popbbas, 2021), (Boyd & Coliz, 2019), (Nosipova, Nordin and Surhamar, 2019), (Asr and Opperman, 2016)

The findings in the table show that the first function of the VR immersion feature in the post-purchase phase is customer support services. In general, the functions of the VR immersion feature in the field of customer support services include the following:

- Staff training
- Customer training
- Support for maintenance activities.

One area of functionality of the VR immersion feature during the post-purchase phase is staff training. Immersion technologies are an effective tool for training employees and developing their soft and hard skills. Immersion technologies are also used for on-the-job training scenarios for employees and training of new workers. In addition, it has been suggested that immersion technologies enable rapid and effective learning of various operations. In the area of after-sales service, VR can make the service tangible and thus enrich the customer experience and improve training for support agents

Sales professionals in various industries also use VR programs for educational purposes. VR allows sales professionals to practice in a low-stress environment before actually doing what they have learned. VR allows sales interns to immerse themselves in simulated virtual environments that they may encounter in the future. When trainees engage in sales simulations, they improve their skills and increase their self-confidence. Findings by Barsi et al., 2016; Smirnova et al., 2020; Padhi and Khandelwal, 2018; Romero et al., 2019 mentioned.

Customer training

VR is used not only to train employees, but also to train customers. Customer training can be done before or after use, depending on the type of product or service. The provider can give helpful instructions to the customer and support the learning process. Educating customers with VR improves the quality of education because images make

learning easier. Hence VR gives learners a deep understanding of various topics. The immersive learning experience with VR also facilitates the memorization of educational content. In Boyd and Collies Research, 2019; Lee, 2020 and Carla et al., 2020 are mentioned. Figure 7 shows the functions of the VR immersion feature in the post-purchase phase:

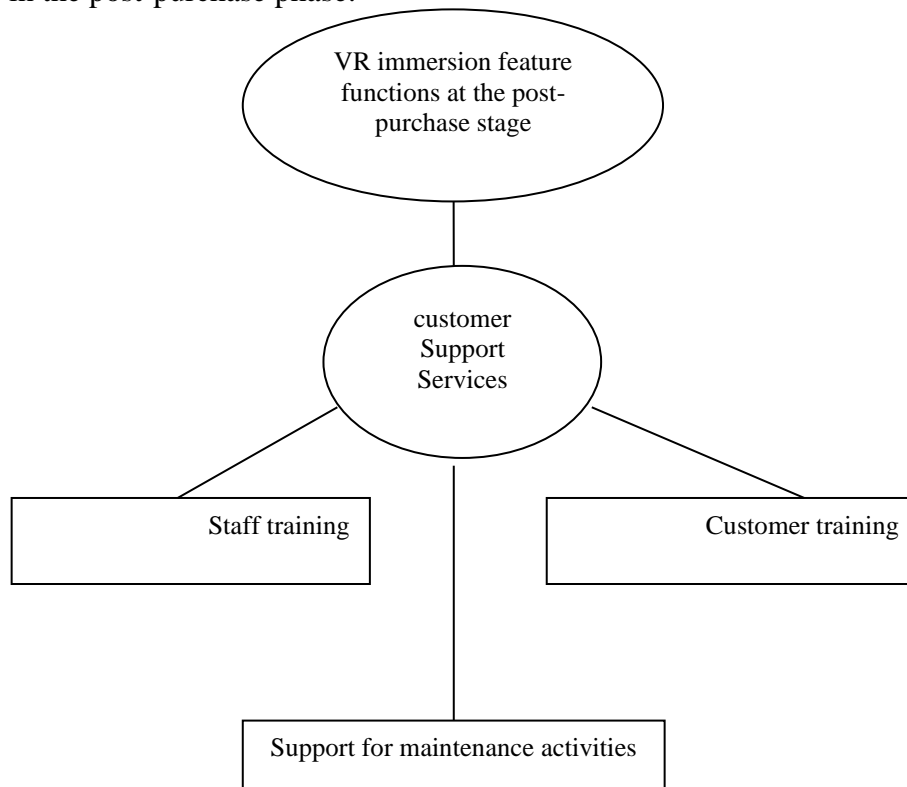


Figure 7. VR immersion feature functions in the post-purchase phase

Support for maintenance activities

VR technology supports the customer for repair activities, maintenance and any other related issues that may occur after the sale (Ghafel and Mohammad, 2020). In this regard, VR accelerates the routine of activities related to maintenance and training of workers by immersion simulation (Turner et al., 2016); Therefore, companies can use VR as a marketing differentiation strategy to distinguish themselves from competitors.

Based on the research findings, Figure 8 presents the conceptual

framework of VR immersion feature functions in three stages: pre-purchase, purchase and post-purchase B2B customer journey.

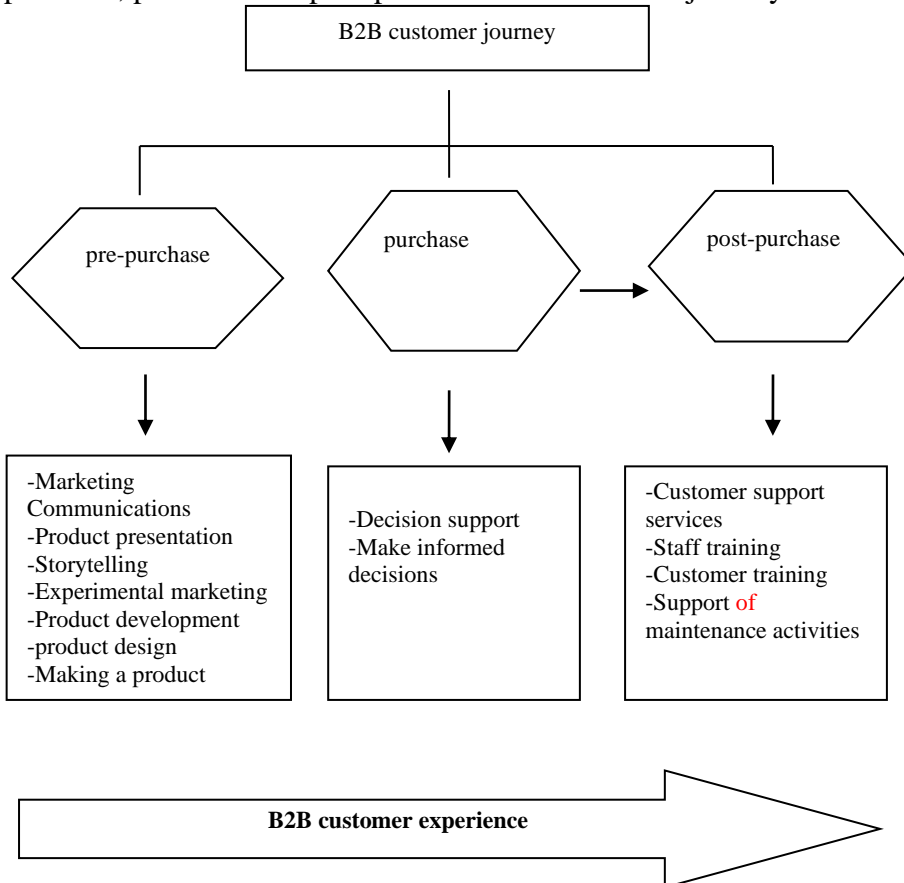


Figure 8- Conceptual framework of VR immersion feature functions in three stages before purchase, purchase and after purchase from B2B customer journey

6. Conclusion

Considering the unique functions and capabilities that feature VR immersion in the travel of B2B businesses and their anonymity and scatter in the relevant literature, the present study is done by adopting a qualitative approach and using thematic review method. The functions are discussed and provide a conceptual framework of the functions of the VR immersion feature in the pre-purchase, purchase and post-purchase stages of the B2B business customer journey. Based on the research findings, four main functions were identified,

two functions are dedicated to the pre-purchase stage, one function to the purchase stage and one function to the post-purchase stage. Therefore, the feature most affected by VR immersion is related to the pre-purchase stage.

The first function of the VR immersion feature in the pre-purchase phase is marketing communications. Marketing communications, through product presentation, storytelling, and empirical marketing based on the VR immersion feature, create vivid, multi-sensory experiences of the product that engage and interest potential customers and capture lasting memories of those experiences in their minds. In this way, customers remember the brand, product features and marketing campaigns better.

Their knowledge of the product also deepens, helping customers in the pre-purchase phase as they "search" for product information that meets pre-identified needs. Also, by experiencing the product before purchasing, customers can thoroughly "review and evaluate" a product and become familiar with how it works and its benefits. Brands communicate with their customers on a more emotional level by using storytelling based on the VR immersion feature. This leads to improved information processing and confidence building.

The second function of the pre-purchase VR immersion feature is product development. The VR immersion feature is used in the design and prototyping stages of the product development process. In the design phase, by immersing yourself in the virtual environment, errors can be identified and eliminated more quickly; Therefore, the designs are regularly reviewed and adapted, and if necessary, corrections are made before the physical prototype is produced. By virtually modeling different stakeholders, they can touch the model, resize it, and better understand the relationships between components. The VR immersion feature has the least functionality in the B2B customer journey shopping phase. The VR immersive environment enhances cognitive stimuli and motivates the customer to choose the most appropriate offer. In fact, VR supports decision making by providing the conditions for more informed and risk-based decision making.

Finally, the function of the VR immersion feature in the post-purchase phase is customer support services. These services include staff training, customer training, and support for maintenance activities. The immersive learning experience with the help of VR gives customers and employees a deep understanding of various topics

and facilitates learning and memorization of training items. In the field of maintenance, VR accelerates the routine of maintenance and training of workers with immersive simulations; Thus, the VR immersion feature, value creation in the three stages of B2B customer journey, facilitates this journey and provides a pleasant and memorable experience for customers. This leads to greater satisfaction and ultimately their loyalty, and helps build long-term customer relationships that are critical to B2B marketing.

Findings of this study help to give managers and marketing and sales experts a more comprehensive understanding of the functions of the VR immersion feature at every stage of the B2B customer journey. Managers and owners of B2B businesses can use these functions in customer travel based on their marketing and sales goals and enjoy its benefits. It also helps researchers identify and improve the scientific and managerial understanding of the functions of the VR immersion feature and how it creates value in B2B client travel. The results of this research include reviewing the literature with more sources and within a wider period of time and, developing a research model using other theories; Model testing with initial data is recommended as well.

References

- Aberer, C. (2018). *Business opportunities for virtual/augmented/mixed reality Doctoral dissertation*, Wien.
- Ahmad, A., Al-Ahmari, A. M., Aslam, M. U., Abidi, M. H., & Darmoul, S. (2015). Virtual assembly of an airplane turbine engine. *IFAC-PapersOnLine*, 48(3), 1726-1731.
- Avila, L., & Bailey, M. (2014). Virtual reality for the masses. *IEEE computer graphics and applications*, 34(05), 103-104.
- Azman, S. M. F. S., & Ahmad, N. (2021). The Foresight Study of Virtual Reality as An Advertising Tool. *Research in Management of Technology and Business*, 2(1), 166-183.
- Backhaus, K., Jasper, J., Westhoff, K., Gausemeier, J., Grafe, M., & Stöcklein, J. (2014). Virtual reality based conjoint analysis for early customer integration in industrial product development. *Procedia CIRP*, 25, 61-68.
- Berg, L. P., & Vance, J. M. (2017). Industry use of virtual reality in product design and manufacturing: a survey. *Virtual reality*, 21(1), 1-17.
- Boyd, D. E., & Koles, B. (2019). Virtual reality and its impact on B2B marketing: A value-in-use perspective. *Journal of Business Research*, 100, 590-598.
- Borsci, S., Lawson, G., J.B., Burges, M., & Salanitri, D. (2016). Effectiveness of a multidevice 3D virtual environment application to train car service maintenance procedures. *Virtual Reality*, 20(1), 41-55.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Bryan, J. (2018). *What sales should know about modern B2B buyers*. Gartner2018. March 22.
- Carou, D. (2021). *Aerospace Transformation through Industry 4.0 Technologies*. In *Aerospace and Digitalization* (pp. 17-46). Springer, Cham.
- CEB (2012) *The Digital Evolution in B2B Marketing*. [online document]. [Accessed 24 September 2020]. Available <https://www.cebglobal.com/content/dam/cebglobal/us/EN/best-practices-decision-support/marketing-communications/pdfs/CEB-Mktg-B2B-Digital-Evolution.pdf>.
- Cuomo, M. T., Tortora, D., & Metallo, G. (2014). In Store Augmented Reality: Retailing Strategies for Smart Communities. *Mondo Digital*, 49, 11-19.
- Davis, F.D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology, *Management Science*, 35, 8 982-1003.
- de Jong, A., De Ruyter, K., Keeling, D. I., Polyakova, A., & Ringberg, T.

- (2021). Key trends in business-to-business services marketing strategies: Developing a practice-based research agenda. *Industrial Marketing Management*, 93, 1-9.
- Erdle, K. (2018). *Methodik zur Abschätzung von Nutzenpotenzialen für industrielle Virtual Reality Lösungen in der Automobilindustrie (Doctoral dissertation, Hochschule für Technik und Wirtschaft Berlin)*.
- Esser, R., & Oppermann, L. (2016). Head-Mounted Displays in German Companies a Virtual, *Augmented and Mixed Reality Check. I-com*, 15(2), 211-217.
- Estupiñán, S., Rebelo, F., Noriega, P., Ferreira, C., & Duarte, E. (2014). Can virtual reality increase emotional responses (Arousal and Valence)? A pilot studies. In International conference of design, user experience, and usability Springer, *Cham*, 541-549.
- Finn, G. (2018). Virtual reality is poised for big business-to-business sales. Retrieved from <https://venturebeat.com/2018/02/21/virtual-reality-is-poised-for-big-business-to-business-sales/>, Accessed date: 21 February 2018.
- Fischer, H., Seidenstricker, S., Berger, T., & Holopainen, T. (2021, July). *Digital Sales in B2B: Status and Application. In International Conference on Applied Human Factors and Ergonomics* (pp. 369-375). Springer, Cham.
- Fischer, H., Seidenstricker, S., Berger, T., & Holopainen, T. (2021, July). *Digital Sales in B2B: Status and Application. In International Conference on Applied Human Factors and Ergonomics* (pp. 369-375). Springer, Cham.
- Flosdorff, M., Döring, M., & da Silva Wagner, T. (2019). Virtual Reality in the Product Development in the Fashion Industry: Application Areas, Opportunities, and Challenges of Virtual Reality in the Product Development.
- Frank, A. G., Dalenogare, L. S., & Ayala, N. F. (2019). Industry 4.0 technologies: Implementation patterns in manufacturing companies. *International Journal of Production Economics*, 210, 15-26.
- Ghafel, K., & Mohammed, O. (2020). Understanding Vr/Ar In Marketing & Sales For B2B: An Explorative Study.
- Grewal, R., Lilien, G. L., Bharadwaj, S., Jindal, P., Kayande, U., Lusch, R. F., & Sridhar, S. (2015). Business-to-business buying: Challenges and opportunities. *Customer needs and Solutions*, 2(3), 193-208.
- Guest, G., MacQueen, K. M., & Namey, E. E. (2011). Applied thematic analysis. sage publications. DOI: <https://dx.doi.org/10.4135/9781483384436>.
- Hariharan, A., Pfaff, N., Manz, F., Raab, F., Felic, A., & Kozsir, T. (2020).

- Enhancing product configuration and sales processes with extended reality. *In Augmented Reality and Virtual Reality* (pp. 37-50). Springer, Cham.
- Howard, John A. and Jagdish Sheth (1969). *The Theory of Buyer Behavior*. New York: John Wiley & Sons.
- Huang, Y. C., Backam, S. J, & Backamn. K. F. (2012). Exploring the impacts of involvement and flow experiences in Second Life on people 's travel intentions. *Journal of Hospitality and Tourism Technology*, 3(1), 4-23.
- Jin, O. & Yazdanifard, R. (2015). The Review of the Effectivity of the Augmented Reality Experiential Marketing Tool in Customer Engagement. *Global Journal of Management and Business Research*, 11, 59-65.
- Kaarlela, T., Pieskä, S., & Pitkäaho, T. (2020). *Digital Twin and Virtual Reality for Safety Training*. In 2020 11th IEEE International Conference on Cognitive Infocommunications (CogInfoCom) IEEE, 000115-000120.
- Kelly, S., Johnston, P., & Danheiser, S. (2017). *Driving Results Through Account-Based Marketing*. In Value-ology Springer International Publishing, 141–151.
- Kirkpatrick, D (2015). Virtual reality is instrumental in the complex B2B sales process". Retrieved from <https://www.marketingdive.com/news/virtual-reality-is-instrumental-in-the-complex-b2b-sales-process/404679/>, Accessed date: 27 August 2015.
- Kaczor, M., & Januszka, M. (2019, March). Application of augmented and virtual reality technologies in semi-trailer's lifecycle. In AIP Conference Proceedings (Vol. 2078, No. 1, p. 020099). AIP Publishing LLC.
- Kao, Y. C., Lee, C. S., Liu, Z. R., & Lin, Y. F. (2017). Case study of virtual reality in CNC machine tool exhibition. In MATEC Web of Conferences (Vol. 123, p. 00004). EDP Sciences.
- Landmann, E., Stolz-Römmermann, J., & Günther, T. (2020). Customer Integration Through Virtual Reality Implementation: A SWOT Analysis in the Area of Production Systems. In *Augmented Reality and Virtual Reality*. Springer, Cham, 253-266.
- Lee, W. J. (2020). Use of Immersive Virtual Technology in Consumer Retailing and Its Effects to Consumer. *The Journal of Distribution Science*, 18(2), 5-15.
- Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), 69-96.
- Lu, L., Chi, Ch.G. & Liu, Y. (2015). Authenticity, involvement, and image:

- evaluating tourist experiences at historic districts. *Tourism Management*, 50, 85–96.
- Lorentschk, M. (2018). *Benefit of a virtual reality rapid room planning application in marketing and sales of high involvement medical devices—ergonomics, user acceptance and profitability (Doctoral dissertation, Hochschule für Angewandte Wissenschaften Landshut)*.
- Loureiro, S.M.C., Guerreiro, J. & Ali, F. (2020). 20 years of research on virtual reality and augmented reality in tourism context: A text-mining approach. *Tourism Management*, 77, 104028.
- Loureiro, S. M. C., Guerreiro, J., Eloy, S., Langaro, D., & Panchapakesan, P. (2019). Understanding the use of Virtual Reality in Marketing: A text mining-based review. *Journal of Business Research*, 100, 514-530.
- Łysik, Ł., & Łopaciński, K. (2019). Use of virtual reality in digital marketing communication. *Informatyka Ekonomiczna*, 4(54), 29-45.
- Markopoulos, P. M., & Hosanagar, K. (2018). A model of product design and information disclosure investments. *Management Science*, 64(2), 739-759.
- Muhanna, M. A. (2015). Virtual reality and the CAVE: Taxonomy, interaction challenges and research directions. *Journal of King Saud University-Computer and Information Sciences*, 27(3), 344-361.
- Neslin, Scott A., Dhruv Grewal, Robert Leghorn, Venkatesh Shankar, Marije L. Teerling, Jacquelyn S. Thomas, et al. (2006). Challenges and Opportunities in Multichannel Customer Management. *Journal of Service Research*, 9(2), 95–112.
- Nussipova, G., Nordin, F., & Sörhammar, D. (2019). Value formation with immersive technologies: an activity perspective. *Journal of Business & Industrial Marketing*, 35(3). 483-494.
- Pacheco Munarriz, F. M. (2009). *Impacto De La Experiencia De Realidad Virtual En La Imagen De Marca En Capacitaciones (B2B), En El Sector Minero*.
- Pahnke, T. K. (2018). Implementierung von Virtual Reality im B2B-Marketing (Doctoral dissertation, Hochschule für Angewandte Wissenschaften Hamburg).
- Pope, E., Gilgen, D., & Safrudin, N. (2017). Virtual reality goes mobile in the digital age. In *Shaping the Digital Enterprise* (pp. 309-330). Springer, Cham.
- Pöyry, E., Parvinen, P., Mattila, O., & Holopainen, J. (2020). Engaged, but with what? Objects of engagement in technology aided B2B customer interactions. *Journal of Marketing Management*, 36(3-4), 334-360.
- Pranjal, P., & Sarkar, S. (2020). Business Not as Usual: Recovery and Future Preparedness of B2B Manufacturing Firms in a Post-COVID World. Available at SSRN 3626182.

- Pucinelli, Nancy M., Ronald C. Goodstein, Dhruv Grewal, Robert Price, Priya Raghurir, and David Stewart (2009). Customer Experience Management in Retailing: Understanding the Buying Process. *Journal of Retailing*, 85 (March), 15–30.
- Pullman, M. E., & Gross, M. A. (2004). Ability of experience design elements to elicit emotions and loyalty behaviors. *Decision sciences*, 35(3), 551-578.
- Richardson, A. (2010). *Using customer journey maps to improve customer experience*. Harvard Business Review, 2–5 November.
- Romero, D., Gaiardelli, P., Pezzotta, G., & Cavalieri, S. (2019, September). The Impact of Digital Technologies on Services Characteristics: Towards Digital Servitization. In IFIP International Conference on Advances in Production Management Systems. Springer, Cham. 493-501.
- Rosenbaum, M. S., Otalora, M. L., & Ramírez, G. C. (2017). How to create a realistic customer journey map. *Business horizons*, 60(1), 143-150.
- Ryynänen, J. (2018). Discovering market potential for virtual reality as a marketing communication tool for B2B clients.
- Schmitt, B. (2007), *Customer Experience Management*, John Wiley & Sons, NJ.
- Scholz, J. and Smith, A.N. (2016). Augmented reality: designing immersive experiences that maximize consumer engagement. *Business Horizons*, 59(2), 149-161.
- Sherman, W. R., & Craig, A. B. (2003). *Understanding virtual reality*. San Francisco, CA: Morgan Kauffman.
- Sjöström, E. (2015). Virtual reality as a sales tool for industrial companies.
- Smirnova, A., Zaychenko, I., Bagaeva, I., & Gorshechnikova, P. (2020). Digital technologies in the industry: application of immersive training technologies in the oil and gas complex. In SHS Web of Conferences, EDP Sciences.
- Steward, M. D., Narus, J. A., Roehm, M. L., & Ritz, W. (2019). *From transactions to journeys and beyond: The evolution of B2B buying process modeling*. *Industrial Marketing Management*, 83, 288-300.
- Thompson, M (2017). Retrieved from How Virtual Reality Will Change B2B Marketing. <https://www.chiefmarketer.com/how-virtual-reality-will-change-b2b-marketing/>, Accessed date: 27 June 2017.
- Toman, N., Adamson, B., & Gomez, C. (2017). The new sales imperative. *Harvard Business Review*, 95(2), 118-125.
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British journal of management*, 14(3), 207-222.
- Tynan, C., & McKechnie, S. (2009). Experience marketing: a review and

- reassessment. *Journal of marketing management*, 25(5-6), 501-517.
- Turner, C. J., Hutabarat, W., Oyekan, J., & Tiwari, A. (2016). Discret event simulation and virtual reality use in industry: new opportunities and future trends. *IEEE Transactions on Human-Machine Systems*, 46(6), 882-894.
- Upadhyay, A. K., & Khandelwal, K. (2018). Virtual reality: adding immersive dimension to sales training. *Human Resource Management International Digest*, 24(2), 219-233.
- Webster, F. E., Jr., & Wind, Y. (1972). A general model for understanding organizational buying behavior. *Journal of Marketing*, 36(2), 12–19.

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