

# Augmented Reality and the Customer Journey: An Exploratory Bibliometric Review

**Keywords:** Augmented Reality, Marketing, Customer Journey, Bibliometric Review.

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## ABSTRACT

The reactions regarding consumers and interactive environments through the purchasing process are still unknown. This article aims to deliver a quantitative approach of the relationship between Augmented Reality and the Customer Journey research. Manifested in 86 articles published in the Web of Science core index in the last decade (between 2013 and 2023). General results show that the topic has been gaining attention over the last 5 years and it is expected to keep growing in the future. Main authors are Chylinski, De Ruyter, Heller, Rauschnabel, Javornik, Hilken. Whilst Flavian, Lemon, and Kumar stand crucial to link AR to the Customer Journey; and Pantano, Dacko, and Grewal to Digital Marketing. Overall, AR technologies have a significant role in adding value to the customer experience throughout the Customer Journey by building customer confidence, helping shoppers make the right choice, making the shopping experience easier and more engaging, and increasing the purchase intention.

**Keywords:** Augmented Reality; Marketing; Customer Journey; Bibliometric Review.



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## INTRODUCTION

Augmented reality (AR) is defined as a computer graphic enhancement of reality (Milgram & Kishino, 1994). AR technologies can overlay the user's direct view with virtual content, enabling the coexistence of virtual and real elements on the same space (Azuma, 1997). To date, AR has been defined from many perspectives, some authors have also used the terms mixed reality (MR) or extended reality (XR) which encompasses the full Reality-Virtuality continuum, nevertheless AR is a particular subset on its own (Azuma, 2019). AR has been receiving increased attention over the last years, both from managers and scholars alike (Rauschnabel et al., 2022a). From a marketing-related perspective, some authors have recently examined how the usage of AR elements enriches the customer experience, improving marketing-relevant outcomes (Heller et al., 2023).

Customer experience is understood as the internal and subjective response customers have to any direct or indirect contact with a company (Meyer & Schwager, 2007). Experiential economy focusses firms' actions toward creating experiences for the consumers (Pine & Gilmore, 1998), distinguishing from traditional marketing by treating consumption as a holistic experience and recognizing both rational and emotional drivers for consumption (Schmitt, 1999). Customer experience is a definition that can be conceptualized, organized, and driven by Customer Journey models characterized by time stages of the purchasing process, namely pre-purchase, purchase and post-purchase and the different touchpoints with firms (Lemon & Verhoef, 2016).

The pre-purchase stage encompasses the customer encounters with the firm before the purchase and is characterized by behaviors such as consideration, information search and the need of recognition (Broilo et al., 2016). It is not uncommon for a consumer to be aware of a product from a specialty magazine, to evaluate the product based on an in-store demonstration, to read product reviews and research in-store product availability online (Berman, 2020). Consequently, the purchase stage encompasses all consumer contacts with the brand and the environment during the purchase event itself, and it is distinguished by behaviors such as choice (selecting a product), ordering (asking for said products), and payment (Lemon & Verhoef, 2016). The literature set mainly focuses on these first two stages (Tueanrat et al., 2021). Ultimately, the post-purchase stage includes client contacts with the brand and its surroundings after the purchase. Post-purchase activities include delivery, product in-hand, return and exchange, customer support, benefits, and feel-good factors (Kumar & Anjaly, 2017). The academic literature offers a consensus that touchpoints reside within Customer Journeys and can be split into brand-owned, partner-owned, and customer-owned touchpoints, and these touchpoints may involve multiple actors (Lemon & Verhoef, 2016).

The interactions regarding consumers' drivers/outcomes of marketing-based with computer-mediated interactive environments through the Customer Journey are still unknown (Hollebeek et al., 2020). There have been only a few studies that tackled both Augmented Reality and the Customer Journey concepts together, most of them being published during the last ten years. It is not clear if AR-based technologies enhance the customer experience across the different touchpoints (Hilken et al., 2018), "successful AR Marketing depends on understanding the user experience and unique characteristics within the AR customer journey" (Rauschnabel et al., 2022a), to do so, the new technologies frameworks across the Customer Journey should consider how the technology-mediated experiences enhance the cognitive, emotional, and social dimensions to create value (Hoyer et al., 2020).

The main objective of this review is to explore the relationship between AR and the Customer Journey using bibliometric analysis. This paper continues with the following

structure: Section 2 will address the methodology to be used. Section 3 will provide exploratory results and discussions. Section 4 regards limitations and future research. Finally, Section 5 encompasses the main conclusions of this investigation.

## METHODOLOGY

Pritchard introduced bibliometric techniques as a quantitative approach to work with broad bibliographic records (1969). The author defined the term as “the application of mathematics and statistical methods to books and other media of communication” (Pritchard, 1969). Bibliometric analysis works as a tool used to look for relevant information regarding the research state of a certain area, allowing academics to identify and partake in possible future research in the desired field of study (de Battisti & Salini, 2013). Bibliometric reviews have gained attention in business-related research in recent years, for its utility for handling large corpus of data and inherent capacity to produce high impact research (Donthu et al., 2021).

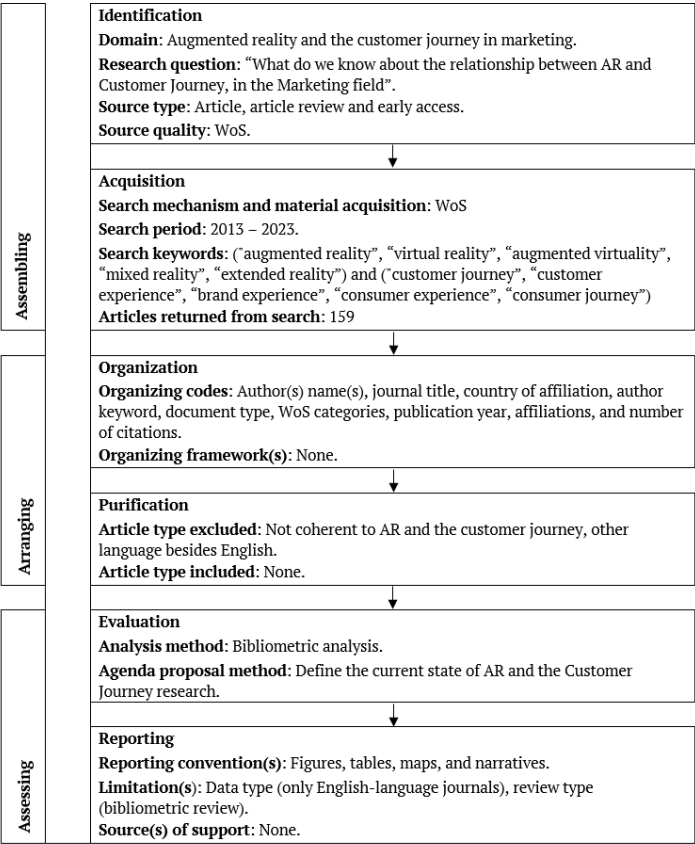
This study employed a bibliometric analysis relationship between Augmented Reality and the Customer Journey following the Scientific Procedures and Rationales for Systematic Literature Reviews Protocol (SPAR-4-SLR). This methodology was developed by (Paul et al., 2021) and allows researchers to assemble and arrange literature reviews thoroughly with logical and pragmatic rationales, and transparently reported stages and sub-stages: The first stage is known as Assembling—identifying and acquiring articles for evaluation—, the second as Arranging—organization and purification of the corpus collected in the research—and Assessing—evaluating and reporting the reviewed articles from the research.

The Assembling stage is divided into two sections, Identification and Acquisition. Identification requires four defined segments, domain, research questions, source type and source quality, the review domain chosen for this bibliometric analysis was Augmented Reality and the Customer Journey in marketing, whereas the research question is What do we know about the relationship between AR and Customer Journey in the Marketing field? The novelty of the issue provides the exploratory nature of the present review. Among the source types, article, article review, and early access are taken into consideration, alternatively proceeding paper is not included in this research. The Web of Science (WoS) platform is used as our source quality measurer for articles. The refinements this bibliometric analysis includes are the addition of the “\*” symbol to obtain singular and plural variations of the selection of keywords. In terms of Acquisition, the WoS database is used as the main resource. The search period is a 10-year band, between 2013 and 2023, as most articles on AR and the Customer Journey appeared in journals from 2013 onwards — as indicated by WoS —. The search was done using the keywords “augmented reality”, “virtual reality”, “augmented virtuality”, “mixed reality”, and “extended reality” in the field “topic”. Due to the nascent nature of research in VR and AR thus far, studies had used the terms virtual environment, VR, and virtual worlds inconsistently and often time, without including definitions of the terms (Yung & Khoo-Lattimore, 2019). The second search row was added using the connector “AND”, with the keywords “customer journey”, “customer experience”, “brand experience”, “consumer experience”, and “consumer journey”. Multiple definitions were used because particularly concerning the relation between customer experience and the customer journey perspective, issues concerning customer journey terminology (Følstad & Kvale, 2018).

The Arranging stage involves the Organization and Purification of articles returned from the search. In terms of Organization, the set of articles were coded according to author(s) name(s), journal title, country of affiliation, document type, author keywords, WoS categories, publication year, and number of citations. No organizing framework was used. Regarding purification, articles were manually excluded due to not being coherent to the subject of interest.

The Assessing stage involves the evaluation and reporting of articles under review. In connection with evaluation, the analysis methods involve the use of bibliometric analysis and software to describe the relationship between Augmented Reality and the Customer Journey. Microsoft Excel was used to compute the article metadata, whereas VOSviewer and WoS tools were used to sort tables and map information. Concerning reporting, findings are displayed in figures and tables. The amount of information presented is based on the Web of Science h-index. Limitations are acknowledged towards the end of this article.

Figure 1: Adapted SPAR-4-SLR Protocol



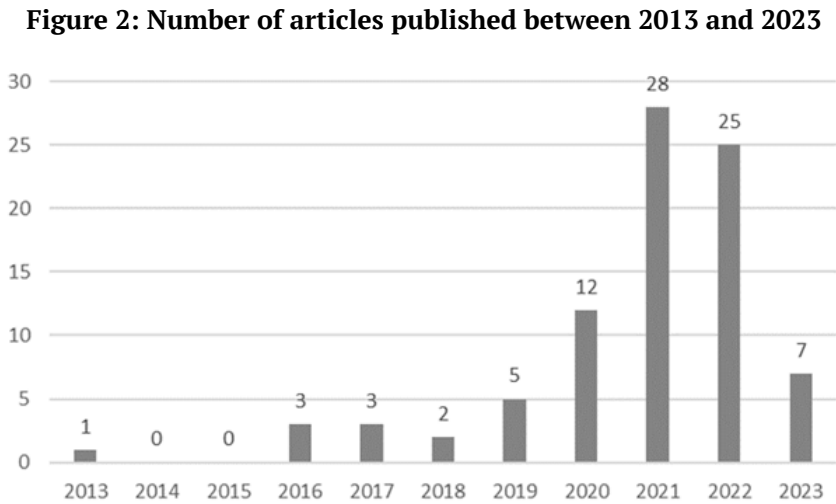
RESULTS AND DISCUSSIONS

This section presents the results and discusses the findings. It considers the number of articles published between 2013 and 2023, highlighting the most influential articles, authors, institutions, and countries. VOSviewer is used in this study to run a co-citation analysis, bibliographic coupling, and co-occurrence analysis. Various relevant metrics are

examined, such as AR types, research areas, and experimental main findings. The data used in this study was downloaded on July 6th, 2023. In total, 86 working papers have been used out of the 159 papers that have been returned from the WoS database. The selected papers were written in English.

***Number of Articles Published Between 2013 and 2023***

Figure 2 illustrates the evolution of the field based on the number of publications in the core collection of WoS corresponding to the search topic Augmented Reality and Customer Journey.



The first five years (2013 to 2018) reflect the publication of a few articles, which indicates that the field had a slow growth in its beginnings. The next five years (2019 to 2023) show that AR technologies have been gaining attention in current research (Rauschnabel et al., 2022). The most productive year was 2021 (n=28). 2023 has only seven articles, as the search was done in July, but as an expanding market (Bloomberg, 2023; Deloitte 2023), AR shopping tools to enhance customer experience research are expected to grow in the future.

***The Most Influential Articles, Authors, Institutions, and Countries***

Table 1 summarizes the most cited articles that relate to Augmented Reality and the Customer Journey, retrieved from WoS core collection.

**Table 1: Twenty-one most-cited publications of AR and the Customer Journey**

DOCUMENT	CITATIONS	TITLE
(Flavián et al., 2019)	326	The impact of virtual, augmented and mixed reality technologies on the customer experience
(Dacko, 2017)	203	Enabling smart retail settings via mobile augmented reality shopping apps
(Scholz & Smith, 2016)	177	Augmented reality: Designing immersive experiences that maximize consumer engagement
(Hoyer et al., 2020)	164	Transforming the Customer Experience Through New Technologies
(Javornik, 2016)	133	It's an illusion, but it looks real! Consumer affective, cognitive and behavioral responses to augmented reality applications
(Roy et al., 2017)	127	Constituents and consequences of smart customer experience in retailing
(Mishra et al., 2021)	121	Consumer decision-making in omnichannel retailing: Literature review and future research agenda
(Parise et al., 2016)	118	Solving the crisis of immediacy: How digital technology can transform the customer experience
(Wedel et al., 2020)	104	Virtual and augmented reality: Advancing research in consumer marketing
(Hilken et al., 2018)	103	Making omnichannel an augmented reality: the current and future state of the art
(Heller et al., 2019)	94	Let Me Imagine That for You: Transforming the Retail Frontline Through Augmenting Customer Mental Imagery Ability
(Pillai et al., 2021)	92	COVID-19 and hospitality 5.0: Redefining hospitality operations
(Chylinski et al., 2020)	63	Augmented reality marketing: A technology-enabled approach to situated customer experience
(Chandra & Kumar 2018)	56	Exploring factors influencing organizational adoption of augmented reality in e-commerce: Empirical analysis using technology-organization-environment model
(Barhorst et al., 2021)	52	Blending the real world and the virtual world: Exploring the role of flow in augmented reality experiences
(Rauschnabel et al., 2022)	46	What is augmented reality marketing? Its definition, complexity, and future
(Sung, 2021)	40	The effects of augmented reality mobile app advertising: Viral marketing via shared social experience
(Tan et al., 2022)	38	Augmented Reality in Retail and Its Impact on Sales
(Cruz et al., 2019)	33	An augmented reality application for improving shopping experience in large retail stores
(Batat, 2021)	30	How augmented reality (AR) is transforming the restaurant sector: Investigating the impact of 'Le Petit Chef' on customers' dining experiences
(Gatter et al., 2022)	29	Can augmented reality satisfy consumers' need for touch?

Flavián et al. (2019) was the most quoted article (326). It might be because it contains the whole continuum of Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR) technologies influence throughout the customer’s entire “purchase journey”. Their work describes the “core experience” of the customer as the baseline experience, which encompasses the fundamental, traditional experience in which technology is absent or plays a limited or secondary role. Establishing the core experience is critical for any study and company since it serves as the starting point for developing improved experiences using AR, VR, and MR technology. The integration of technology-mediated experiences with current customer core experiences leads to integral technology-enhanced experiences, which enhance the value delivered to customers, according to the key findings.

Following suit, the author Dacko (2017) has the second most cited article (203). A difference of over 100 citations from the most cited article. Their research investigates, in a retail environment, how adopting mobile augmented reality apps relate to both experiential value for customers and value for retailers. Extrinsic value is formed by the utilitarian advantage of efficiency, while intrinsic value is created by the aesthetics and playfulness of applications, according to the primary results. Additional data indicates that purchasing satisfaction is prioritized in mobile augmented reality buying apps.

The third author, with the paper Augmented reality: Designing immersive experiences that maximize consumer engagement, is Scholz and Smith (2016) with 177 citations. The purpose of this paper is to make recommendations for effective Augmented Reality marketing campaigns by developing more interactive advertising and allowing customers to experience products and venues in new ways. The main findings indicate that marketers

should consider the following: Experiences, nurturing engagement, target audiences, aligning AR with the marketing program, neutralizing risks, objectives, leveraging brand meanings, and enticing customers.

Hoyer et al. (2020) was the fourth most cited article (164). The article focuses on the Customer/Shopper Journey, and how AR/VR/MR is particularly important in the pre-transaction phase (as it is referred to in their research), as such devices facilitate imagination, allowing consumers to experience and test products or services in 3D in real-time. In the transaction phase it augments beyond the physical and facilitates payment. For example, a virtual cash register enables the shopper to virtually authorize a transaction. With this technology, the customer journey proceeds seamlessly from pre-transaction through the stages of the customer journey; post-transaction phase, AR/VR/MR upgrades and enriches consumption for consumers.

Javornik (2016) was the fifth most cited article (133). The research works with the augmentation of on-site/application-related responses, such as application attitude, number of application-related thoughts, and intention to use it again and to talk about it to friends, are mediated by flow. Reacting positively on affective responses towards the application and behavioral intentions in terms of revisit and recommendation intention, especially for the AR app with virtual try-on. However, on cognitive responses, in a negative way.

The common thread across the aforementioned articles is their shared articles is their shared acknowledgment and consensus regarding the positive influence that AR has on the Customer Journey, primarily during the pre-purchase and purchase stages.

Furthermore, Table 2 presents the results of most cited authors that relate AR to the Customer Journey retrieved from WoS core collection.

**Table 2: Twenty-one most-cited authors of AR and the Customer Journey.**

AUTHOR	DOCUMENTS	CITATION
Flavian, C	2	354
Ibanez-Sanchez, S	2	354
Orus, C	2	354
Chylinski, M	4	270
De Ruyter, K	4	270
Heller, J	4	270
Mahr, D	4	270
Dacko, S	1	203
Scholz, J	2	193
Smith, A	1	177
Hilken, T	3	176
Hoyer, Wd	1	164
Kraume, K	1	164
Kroschke, M	1	164
Schmitt, B	1	164
Shankar, V	1	164
Javornik, A	3	149
Balaji, M	1	127
Bang N	1	127
Melewar, T	1	127
Roy, S	1	127

Considering only citations, Flavian, Ibanez-Sanchez and Orus are the most influential authors, with 354 citations each, followed by Chylinski, de Ruyter, Heller and Mahr with 270 citations.

Table 3 summarizes the journals that have published articles that relate AR to the Customer Journey retrieved from the WoS core collection. In which articles of AR and the customer journey—the first fifteen publishers from WoS are taken into consideration in the development of table 3—.

**Table 3: Twelve journals that published AR and the Customer Journey.**

JOURNALS	RECORD COUNT
International Journal of Retail Distribution Management	6
Journal of Business Research	6
Psychology and Marketing	5
Journal of Service Management	4
Technological Forecasting and Social Change	4
Journal of Services Marketing	3
International Journal of Consumer Studies	3
Australasian Marketing Journal	2
Business Horizons	2
Fashion Style Popular Culture	2
International Journal of Hospitality Management	2
Journal of the Academy of Marketing Science	2

In terms of the principal journals, or publications titles as it is referred to in WoS the gathered information shows that the two leading platforms were the International Journal of Retail Distribution Management and the Journal of Business Research, with six publications present in their archives, at the time of the collection of data (July 6, 2023).

After these two main publishers, the record count for the next journal—Psychology and Marketing—declines in comparison, reaching five publications. From then on, the numbers plummet to four (Journal of Service Management and Technological Forecasting and Social Change), three (Journal of Services Marketing and International Journal of Consumer Studies), and two for the rest of the journals.

Please note that only journals with more than one article associated with them are detailed in Table 3, the ones that have one publication are not detailed in said table.

On the other hand, Table 4 summarizes the county of origin from the articles retrieved from WoS core collection.



**Table 4: Record count of countries that published AR and the Customer Journey.**

COUNTRIES/REGIONS	RECORD COUNT
England	20
USA	19
Australia	10
China	9
France	8
Germany	8
India	7
Netherlands	5
South Korea	5
Italy	4
Scotland	4
Spain	4
Austria	3
Canada	3
Finland	3
Singapore	2
Taiwan	2
Tunisia	2

Lead researching countries in the topic of AR and the costumer journey are England, USA, and Australia, leading the board with nineteen, nineteen, and ten publications respectively. England having Dako and Javornik as two of their most cited authors, the USA with Scholz and Hoyer, and Australia with Roy and Hilken (Table 2). Following, with nine publications, we have China, and France and Germany with eight. India with seven, and the Netherlands and South Korea five publications each. For this list and the ones that follow, countries with only one publication associated with them are not included in the list, therefore Taiwan was the last country included on Table 4 for this section. The information provided by the number of publications per nation directly correlates with the list of universities that published articles with the topic of this bibliometric analysis, Table 5.

The list summarizes principal universities that have affiliated articles that relate AR to the Customer Journey the most retrieved from WoS core collection.

**Table 5: List of twenty universities that published AR and the Customer Journey the most.**

AFFILIATIONS	RECORD COUNT
University of London	6
Maastricht University	4
N8 Research Partnership	4
University Of Sussex	4
Bundeswehr University Munich	3
Kings College London	3
Manchester Metropolitan University	3
Swinburne University of Technology	3
University of New South Wales Sydney	3
Columbia University	2
Management Development Institute Mdi	2
Royal Holloway University London	2
Udice French Research Universities	2
Univ Lyon II	2
Universite De Lille	2
Universite De Lille Isite	2
University of Manchester	2
University of Texas Austin	2
University of Texas System	2
University of Western Australia	2
University of Zaragoza	2

Regarding the affiliation with universities, the University of London leads the chart with a record count of six publications associated with them; within the first three universities, two are from England, and from the universities displayed in Table 5, six of the mentioned above are from that same nation (University of London, University of Sussex, King’s College London, Manchester Metropolitan University, Royal Holloway university London, the N8 research partnership of Universities from the north of England, and University of Manchester); for the USA, Australia, and the other countries mentioned in the previous section, there were many universities from these nations with only one publication associated with them, most of these institutions could not fit the list that we used for Table 5, as we decided to consider universities with more than one publication associated with them.

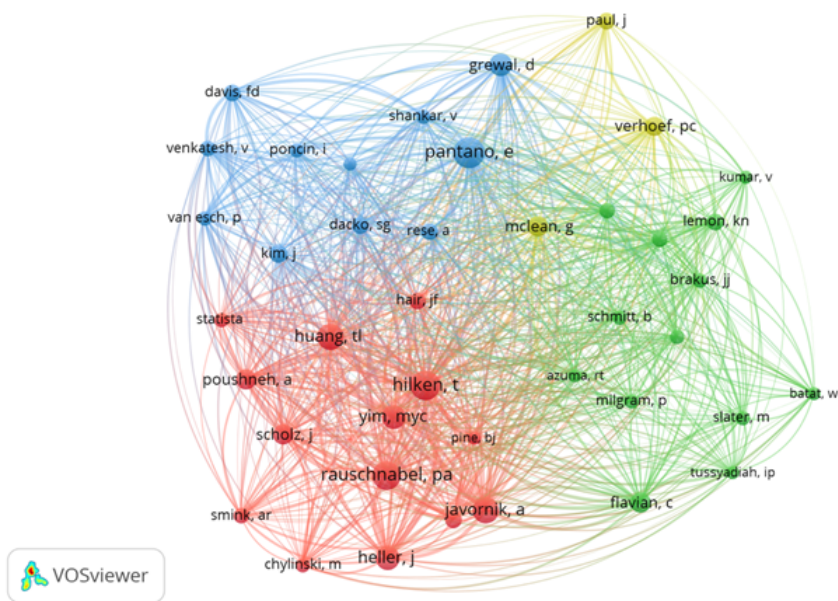
These results follow the lines of the information reflected in the principal countries section, validating the numbers of publications associated with certain countries (Table 4) and connecting this information with the universities that back up and there are filiated with authors of this area of research —AR and Customer Journey—.

### ***Bibliometric Relationship Maps Co-citation Analysis***

Academy is constantly changing with the evolution of certain terms, or innovative ideas that are introduced into this field of study, as was stated by Llanos-Herrera and Merigo, it is vital, for researchers, to gather and analyze articles previously published, in this case with AR and customer journey, to lay a foundation for future research (Llanos-Herrera & Merigo, 2019). As a result, understanding the structure of academic production and publication of articles, in terms of the authors who are referenced together —co-citation analysis—, and their citation structure in terms of common patterns in author citation — bibliographic coupling analysis— is necessary.

The first analysis made with VOS viewer is ran to identify the authors who had citations in common in works related to AR and the Customer Journey—as it is stated in the methodology section —, it is necessary to start with a co-citation analysis to see the relationships that these documents have with one another’s (van Eck & Waltman, 2010). Co-citation is selected as the type of analysis and cited authors as the unit of analysis; with fractional counting as the counting method to create a map with VOS viewer. A minimum of 15 citations per author are selected, from the 4458 authors detected by the program, 41 met this threshold.

**Figure 3: Bibliographic data Map of co-citation analysis based on authors.**



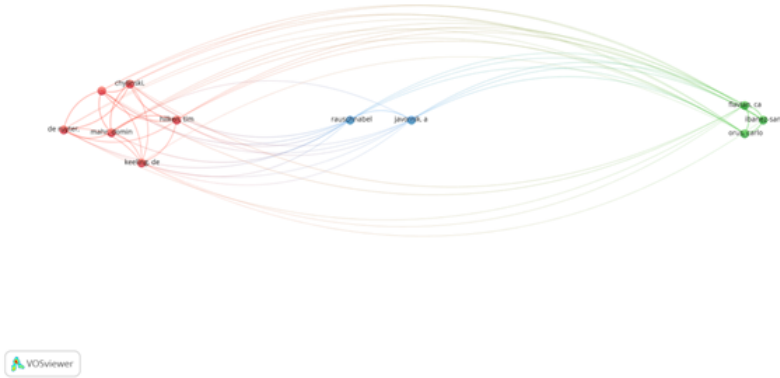
The four clusters, red for cluster one, green for cluster two, blue for cluster three, and yellow for cluster four, represented in this map, show the network visualization of co-citation of the authors that are present in WoS’s data.

As it is reflected in Figure 3, Rauschnabel, Flavian, Pantano, and Verhoef are part of the main co-cited authors for their respective clusters, in the collected data of 86 articles from WoS in relation to AR and Customer Journey. In the red cluster of authors, as we can see from the size their names occupy in the map, Hilken, and Javornik are sharing the spotlight with Rauschnabel—all authors related with digital marketing—. Lemon, and Kumar, are the representatives for the second cluster alongside Flavian, authors focused on traditional marketing. Following, Dacko, and Grewal work as the main researchers in Marketing and Customer Journey alongside Pantano. And lastly, Verhoef, McLean, and Paul.

### ***Bibliographic Coupling Analysis***

A second analysis is processed to identify the groups of authors that have a similar structure of quotations. To complete this task, VOSviewer is used to make a bibliographic coupling analysis by using authors as the unit of analysis and a fractional counting modality. With a minimum of 2 documents and 80 citations per author, only 11 authors of 243 met this threshold.

**Figure 4: Bibliographic data Map of bibliographic coupling analysis on authors.**

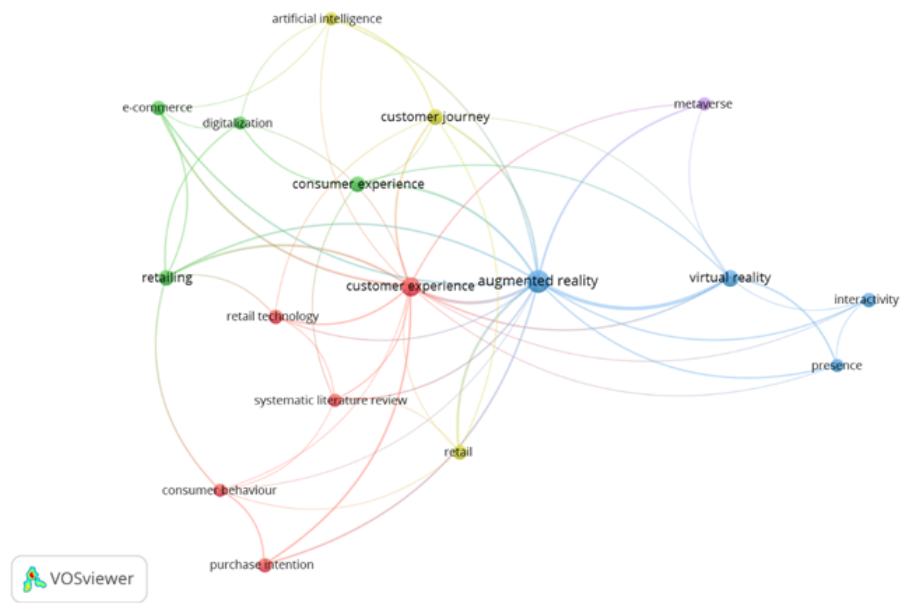


When examining the findings of the bibliographic coupling analysis (Figure 4), it is crucial to note how the various theoretical frameworks are used to construct the research are different. After analyzing this information through VOS viewer, three clusters were formed. The red group, also known as cluster 1 is constructed by the following authors: Chylinski, De Ruyter, Heller, Hilken, Keeling, and Mahr; this group is characterized by the usage of the main topic of this bibliography, their work mostly focuses on virtual shopping, and AR and its effect on the Customer Journey—measured through customer experience—. In the second cluster (green) only three representatives are present: Flavian, Ibanez-Sanchez, and Orus; Customer experience (CX) becomes their top priority, they research how new technologies, such as AR, VR, and MR, have an impact (positive or negative) on the interaction between them and CX throughout any stage of the Customer Journey—pre-purchase, purchase, and post-purchase—Authors Javornik and Rauschnabel are the representatives for cluster number three (blue), they mainly focus on a variety of AR advertising.

### ***Co-Occurrence Analysis***

The last analysis with VOSviewer sought to identify the underlying structure of the concept related to Augmented Reality and Customer Journey. This method allows for the display of the concepts associated with each research as well as the concepts that are relevant by the keywords chosen by the authors. Therefore, for the sake of this type of analysis, authors' keywords selected, with a fractional counting method; the minimum number of occurrences of a keyword was set to three. Of the 317 keywords, only 18 of them met the threshold. The results can be seen in Figure 5.

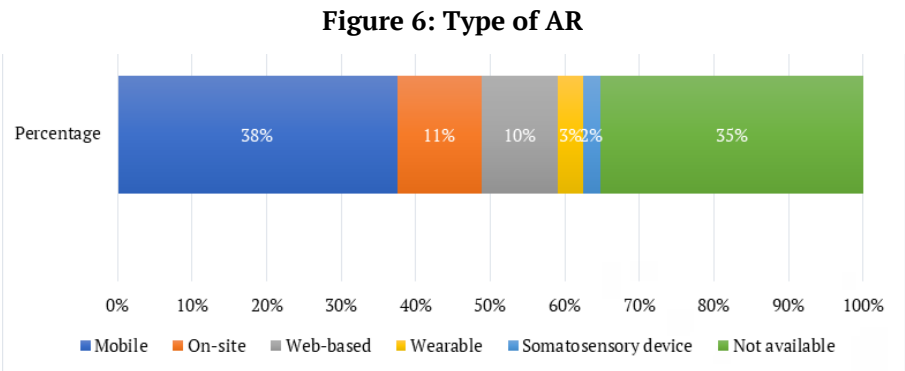
**Figure 5: Bibliographic data Map of co-occurrence analysis based on authors' keywords.**



After running the search in VOSviewer, five clusters were formed. From these we can highlight Customer Experience and Augmented Reality as representatives of their clusters (red and blue respectively), and in the middle of the map, validating not only their co-occurrence, but also the importance of these keywords in the analyzed articles. The results show that AR and customer experience are related to not only the technology, but also the journey, and all the stages that a customer goes through when interacting with the process of buying a certain product.

**AR Relevant Metrics**

Figure 6 presents the distribution of AR types for the selected literature.



Note. Papers may have mentioned more than one type. AR technologies are typically installed on stationary,

mobile, or wearable devices (i.e., mirrors, smartphones, and glasses respectively) (Rauschnabel et al., 2018). Other authors have also documented the usage of web-based (i.e., virtual try-on) and somatosensory devices (i.e., Kinect by Microsoft) (Du et al., 2022). Firstly, the results show that mobile technology is in fact the dominant AR type. The studies in 33 articles (38%) use mobile AR as their research context. On-site AR follows suit, the studies in 10 articles (11%) use mobile AR as the research context. Thirdly, web-based technologies are found. The studies in 9 journal articles (10%) use web-based AR. wearable AR (3%) and Somatosensory devices (2%) were rare. Lastly, no clear AR type is claimed in 31 journal articles (35%).

The results show that now AR has many instances in which it can be used, and it's not limited to one context. Table 6 presents an overview of studies investigating the effects of consumers when using AR in different retail contexts.

**Table 6: Customer Journey using AR in marketing settings summary**

CONTEXT	RELATIONSHIP AR AND THE CUSTOMER JOURNEY	REFERENCES
Fashion	The potential value generation of NFTs from premium enterprises (NFT shoes from RTFKT studio and NFT couture garment from The Fabricant) remains low among typical customers. Despite their good perception, the challenges to adoption are interoperability, poor customer interaction with the metaverse, technological acceptability, and environmental and social concerns. Because of the novelty associated with NFTs, value-generating potential is expanding but remains mostly restricted to marketing and promotion for luxury firms.	(Alexander & Bellandi, 2022)
Cosmetic	Using AR-enabled virtual make-up try-ons enhances the customer experience, influencing positive purchase behavior in Gen Z women due to the positive perception of their body image and self-esteem.	(Ameen et al., 2022)
Food and Beverages	Explores flow theory, in which individuals often enter a state where they are completely switched off to the outside world and become engrossed in an activity that makes them feel like they are encountering a natural and highly enjoyable out of body experience (flow is related to interactivity, novelty, vividness, and enjoyment). The 249 participants were exposed to a shopping experience with AR, while the 251 participants in the control group were supposed to have the same experience without AR. It was shown that an AR shopping experience is more satisfactory for the customer than a regular shopping experience, especially for pre-purchase.	(Brannon Barhorst et al., 2021)
Food and Beverages	The use of AR menus (which virtually place the food before ordering) improves a customer's dining experience by increasing food literacy and knowledge (the intellectual dimension) during the contemplation stage (pre-purchase), providing a highly sensorial experience (purchase), and improving consumers' call food well-being (leading to positive post-consumption behaviors).	(Batat, 2021)
Cosmetic	The use of AR applications in online beauty platforms has a beneficial impact on consumer satisfaction, which leads to a company's customers' ongoing intent to purchase the brand. This impact was discovered among forward-thinking consumers who embrace such technology while purchasing beauty goods online.	(Butt et al., 2022)
Travel and Tourism	The use of AR allows brands to create a personalized customer experience across different touchpoints during the buying process. Hyper-targeted advertising (pre-purchase) such as content and recommendations in the travel and tourism sectors influence positively the preference and purchase intention.	(Chaudhary et al., 2022)
Food and Beverages	The customer experience is directly related to the effectiveness of the AR marketing activity (continuance intention, purchase intention, and customer engagement). Eight factors influence the user's experience with AR applications. Perceived usefulness, Interactivity, Vividness, Novelty, Sense experience, Feel-experience, Act-experience, and Relate experience are all factors to consider.	(Chen et al., 2022)
Food and Beverages	Focuses on the ARRA app and its relationship with the user (in the retail food chain), studying the impact that AR has on the consumer's online shopping experience. There hasn't been much research on AR in a physical store setting (only three studies), and most of them use prototype AR under simulation in a laboratory. I am mainly interested in improving the current customer experience that a person can have with augmented reality retail applications.	(Chiu et al., 2021)
Fashion	Augmented reality marketing has a positive impact on their customers by closing the bridge of contextual relations, showing the product and the intended use context, here the content is digitalized and seen as a physical product through a hologram, showing how the product is, and reducing the time in which the customer decides on buying a certain product or not.	(Chylinski et al., 2020)
Fashion	AR mobile applications provide a helpful experience when shopping in large stores. Customers frequently feel lost when shopping in big stores. Thanks to the developed mobile application, users can easily locate themselves in the store.	(Cruz et al., 2019)
Fashion	AR tools were considered efficient by customers' pre-purchasing supports and to be purchased without assistance, thus enhancing the functional dimension (brand trust and security) in the use of fully immersive technologies. On the contrary, the emotional dimension of the augmented brand experience, linked to sharing information with other consumers or linked to entertainment, was considered less important by the participants of both the treatment group and the control group in co-creating brand added value.	(Cuomo et al., 2020)
Online services	In a retail context, adopting mobile augmented reality apps is positively associated with providing experiential value to consumers in their shopping as well as value to retailers. Extrinsic value is created by the utilitarian benefit of efficiency. Intrinsic value is created by the aesthetics and playfulness of apps. Other findings suggest that purchase satisfaction gets a predominant view on MAR shopping apps.	(Dacko, 2017)
Food and Beverages	HMD devices have the potential to grow exponentially within a short period of time in terms of retail sales. Engagement, engrossment, and total immersion will increase the quality of user satisfaction during the use of WMR devices.	(Dehghani et al., 2020)
Furniture and Home	Presenting foods (such as desserts) in AR has a positive effect on purchase (the average amount of money spent on dessert was higher than the control group) as it improves desirability. Also, the pre-purchase AR menu reported greater post-consumption enjoyment than those in the control group.	(Fritz et al., 2022)
Cosmetic, Furniture and Home	When it comes to consumers' autotelic demand for touch while interacting with AR content, those with a higher autotelic need for touch enjoy greater hedonic advantages than those with a lower autotelic need for touch. These hedonic benefits also result in more favorable marketing results, such as increased brand, product, and app attitude (pre-purchase), and purchase intention.	(Gatter et al., 2022)
Travel and Tourism	The novelty primarily influences the use of on-site AR technology for the check-in and check-out operations. And the feasibility of removing the human interaction of the hotel's receptionist in order to concentrate on promotion for the hotel in question. More technological advances should be used in "pre-arrival experiences" and "post-arrival experiences," where tourists will "face advanced robots through augmented reality glasses as inspiration, communication, sales channels, and means for collecting information about tourists' needs and interests."	(Golja & Paulišić, 2021)
Travel and Tourism	According to the survey, people primarily use ICTs to gather information; for other purposes, the percentage of individuals who utilized AR or 360 films was quite low; ICTs are also used to better grasp the cultural offer.	(Guo et al., 2021)
Fashion	The research reveals that utilitarian considerations have a favorable and direct influence on the two dimensions of customer experience. Hedonic benefits appeared to generate a positive experience with the retailer's mobile application and are likely to generate favorable rational and emotional responses; findings confirm that they affect purchase intention in the affective and cognitive dimensions of experience, with a stronger effect for the connective dimension over the affective dimension.	(Hamouda, 2021)
Furniture and Home	The application of augmented reality (AR) in retail frontline operations improves both the offline and online consumer experience. Customers are more inclined to (i) select a product; (ii) select a pricier product; (iii) be more committed to making the purchase by improving their odds of receiving the product; and (iv) be willing to spend more money overall.	(Hausmann & Schubbauer, 2021)
Food and Beverages	Customer/Shopper Journey: AR/VR/MR devices are especially significant in the pre-transaction phase, allowing customers to explore and test items or services in 3D in real time; in the transaction phase, it augments beyond the physical and enables payment. A virtual cash register, for example, allows the consumer to electronically authorize a purchase. With this technology, the customer experience flows smoothly from pre-transaction to post-transaction; in the post-transaction phase, AR, VR, and MR updates improve consumer consumption.	(Heller et al., 2019)
Furniture and Home	To improve relations with the consumer, use AR devices to monitor the self-body state in real time. Via the AR try-on system, consumers with high body surveillance may obtain a synchronous feeling of body ownership control, giving them more control over how they view themselves, which impacts their purchase decision since it provides them a sense of competency in their experience.	(Hoyer et al., 2020)
Fashion	Flow mediates the enhancement of site- and application-related reactions (application attitude, quantity of application-related thoughts, intention to use it again, and desire to tell people about it). Good emotional responses to the application and behavioral intents in terms of revisiting and recommending, particularly for the AR app with virtual try-on. Yet, it has a deleterious impact on cognitive responses.	(Huang et al., 2019)
Furniture and Home	AR opens up new opportunities for luxury firms in the context of the client experience, going beyond the just utilitarian. Two distinct approaches were explored: customized customization (the consideration phase, also known as the pre-purchase phase) and effortless continuation (not bound to a specific journey phase)	(Javornik et al., 2021)
Furniture and Home	Using genuine AR shopping scenarios improves the sensory brand app experience and indirectly boosts the sense of presence during the purchase stage; AR also has a direct effect on attitudes toward technology through interaction but has no direct effect on behavioral intention (willingness to shop).	(J. H. Kim et al., 2023)

Furniture and Home	When offline retailers use smart retail technology, the overall satisfaction of the customer rises, and the perceived risk decreases while satisfaction grows. Contact with these devices was critical to these outcomes. Pre-purchase, purchase, and post-purchase (consumption experience).	(Y. Kim, 2021)
Fashion	Each facet of the digital kiosk consumer experience (sensorial, pragmatic, cognitive, and social) has a substantial effect on shopping value and self-mental imagery. They emphasize the strongest effects, as well as the quasi-generalized mediating function of these values and self-mental imagery in the relationships between experience components and behavioral intentions.	(Lao et al., 2021)
Travel and Tourism	The try-on phase allows potential visitors to get valuable 'try-before-you-buy' experiences. According to the findings of the study, watching genuine materials produces a stronger sensation of presence than viewing digital contents. It demonstrates that when a person has a clear picture of how a room will look, they are more inclined to book it. It performs better with VR headsets, but it also does well with smartphones.	(Orús et al., 2021)
Online services	QR codes; (a) company/association data; (b) use and introduction of QR-codes; (c) use and introduction of mobile applications; (d) utility of QR-codes and mobile applications across the three stages of the consumer journey; and (e) evaluation of consumer experience and implications for the value of 'Made in Italy' products. Pre-purchase: to positively influence the buyer's purchasing intention; to avoid international falsification.	(Penco et al., 2021)
Footwear	Non-location-specific and product-oriented Augmented Reality (AR) apps (i.e., virtual try-on) obtain higher ratings, leading consumers to see the brand as more interesting, honest, competent, and smart. Furthermore, users' sentiments toward the AR app are influenced by the app's fun and enjoyment. Moreover, AR apps increase brand personality perceptions among more inventive and adventure-seeking customers.	(Plotkina et al., 2022)
Online services	In an online retailing setting, AR applications on the customer experience stimulate spontaneous purchase and a good attitude of customers toward purchasing (purchasing). The results are explained by a greater perceived ease of use, perceived utility, and perceived quality of the online retail technology website.	(Rajagopal, 2022)
Furniture and Home	When using 5G for AR technologies, particularly for spatial audio and cultural heritage applications, a higher quality of Internet access provides a positive quality of experience to users, making the experience more enjoyable when leveraging many advantages of the 5G architecture, such as guaranteeing almost real-time sound spatialization as a function of users' movements for the most generic client device.	(Rinaldi et al., 2021)
Footwear	Augmented reality (AR) purchasing solutions have a diverse influence on the customer experience across different consumer categories of varying sizes, which are supported by distinct characteristics. Customers are not all the same. The segments with a more positive attitude toward AR had better experience value and decision confidence (purchase), as well as lower perceived information overload.	(Romano et al., 2022)
Footwear	The use of cutting-edge technological developments, such as augmented reality, on footwear online stores improves the customer experience on websites (E-commerce - pre-purchase) by better exploring dimensions such as merchandise, reliability, customer service, privacy and security, customization, and connectedness; low-price segment brands outperform high-price segment brands on these indicators.	(Silva et al., 2023)
Travel and Tourism	Utilizing data from 62 undergraduate students at a US institution revealed that AR marketing through the AR mobile app built for this specific study had a favorable influence on the customers' entertainment, education, and escapism experiences.	(Sung, 2021)
Cosmetic	Utilizing data from an international cosmetics shop, they discover that air usage on the retailer's mobile app relates to increased sales for less popular brands, goods with a narrower appeal, and more costly products. AR has a greater impact on customers who are new to the online channel or product category, implying that the sales rise is due to online channel adoption and category expansion. These findings suggest that a car is most successful when there is a significant level of product-related uncertainty. This study focused mostly on the initial phase of the customer journey, particularly try-on.	(Tan et al., 2022)
Furniture and Home	Telepresence and customer experience are measured. Pre-purchase: According to reports, AR advertising has more marketing technology and click-through than traditional web ads, generate good brand attitudes, and increase purchase inclinations. Purchase: AR is changing retailers into showrooms and aiding planned purchases by letting buyers locate things in the store via reverse image search (such as via apps by Home Depot and IKEA). Several applications (e.g., Ikea Place, Amazon AR View) enable users to place things in their homes using smartphones or an interactive showroom that provides an immersive HMD-based experience. Post-purchase: VR and AR applications can improve the post-purchase experience and evaluation by offering additional contextual information or re-enacting the consuming process.	(Wedel et al., 2020)
Food and Beverages	An AR application for product shelf selection on a smartphone shown that AR approaches improve user experiences and raise buy intent by increasing product attribute search efficiency and minimizing cognitive load throughout the purchase process.	(Wu et al., 2022)
Furniture and Home	The focus group was instructed to imagine a product and all the steps of the purchasing process, after which they were shown a video of an AR tech wearable and tried on the software. It seems 'like in-store and online connection because if you don't want to walk outside, you simply take it like... it's actually an in-store vibe, it's sort of the same thing,' according to participants. It has a good relationship with the participant. (A mobile app that lets consumers test things in real time; wearable technology that can choose items off a rack and display them on an augmented mannequin.)	(Ylilehto et al., 2021)
Eye-wear	AR-based product displays enhance purchase intentions both directly and indirectly via affective responses and, as a result, cognitive and behavioral responses, albeit this effect is dependent on the technical implementation of AR features and customers' AR knowledge, among other factors.	(Zanger et al., 2022)
Eye-wear, Cosmetic, Furniture and Home	The impact of AR-based product display on the consumer experience varies depending on whether the product is hedonistic or utilitarian. For hedonic items, perceived odors and spatial presence are both parallel mediating factors that boost online shop appeal, but only the mediation impact of spatial presence improves online store attractiveness for utilitarian products.	(M. Zhang et al., 2023)
Fashion	Marketers must broaden their technology gadgets with garments try-on to cater to diverse body shapes to have and leave a positive impression on the customer. This would have a significantly good impact on the client.	(X. Zhang, 2021)
Fashion	Discusses how technologies (VR, AR, etc.) have an involvement in the customer journey through his telepresence; the paper introduced digital value propositions as a new approach to investigating the transformative effects of digital technologies on customer experience in the retail sector, it bridges the knowledge gap between digitalization and consumption theory, and it demonstrates how digital technology adds value to consumption elements.	(Ziaie et al., 2021)

LIMITATIONS AND FUTURE RESEARCH

This article opens a path, not only through its limitations but providing ideas for future research in AR and Customer Journey. As with any research, this study has faced limitations. Most importantly, the current research focuses on the usage of the WoS database, other collecting databases for articles (e.g., Scopus, Google Scholar) could be used by other researchers to investigate further in this area. Keyword selection is another limitation present in this bibliometric review, there were some exceptions where not only they mentioned AR, but VR and MR as well, as it is seen in Hoyer et. Al. (2020), therefore a larger sample of keywords is necessary now, as this area of research is still in its early stages of development; further research can be made in the future when more articles on this topic are published. Moving forward, this article will shed light on the potential knowledge in the field that prospective authors can consider as future directions and inspiration for their journey through the academy.

CONCLUSIONS

This article tries to provide a quantitative approach to the link between Augmented Reality and Customer Journey research, which has been represented in 86 publications published in the Web of Science core index during the last ten years (2013- 2023). Consequently, general findings reveal that current research is gaining traction and is predicted to continue



to increase in the future. Authors such as Chylinski, De Ruyter, Heller, Hilken, Keeling, and Mahr were major influences in this field of research, according to VOSviewer, while Flavian, Lemon, and Verhoef supplied the essential background for Customer Journey; nevertheless, Pantano, Dacko, and McLean work alongside this trains of thought with their own influence in digital marketing.

The results of this bibliometric review contribute to several strands of the literature, especially for marketing and the influence that new technologies currently have in the market, easier access for customer to certain products, through the usage of try-on AR-mobile apps to see how an item (clothing) can look on them before they buy it. The findings contribute to the AR marketing and online retailing literature by showing how this technological advancement has positive effects on the customer journey.

To the best of our knowledge, this paper is the first to provide an extended recompilation of the relationship between the use of Augmented Reality features throughout the customer journey, especially in the current context of technological advancement that we have in the 21st century. Results suggest that AR technologies have a positive impact in the Customer Experience of the customer, therefore nurturing and benefiting the customer journey where AR becomes a mediator between retailer and customer interactions.



## REFERENCES

- Alexander, B., & Bellandi, N. (2022). Limited or limitless? Exploring the potential of NFTs on value creation in luxury fashion. [www.bethanalexander.com](http://www.bethanalexander.com)
- Ameen, N., Cheah, J. H., & Kumar, S. (2022). It's all part of the customer journey: The impact of augmented reality, chatbots, and social media on the body image and self-esteem of Generation Z female consumers. *Psychology and Marketing*, 39(11), 2110–2129. <https://doi.org/10.1002/mar.21715>
- Azuma, R. T. (1997). A Survey of Augmented Reality. *Presence: Teleoperators and Virtual Environments*, 6(4), 355–385. <https://doi.org/10.1162/pres.1997.6.4.355>
- Azuma, R. T. (2019). The road to ubiquitous consumer augmented reality systems. *Human Behavior and Emerging Technologies*, 1(1), 26–32. <https://doi.org/10.1002/hbe2.113>
- Barhorst, J., McLean, G., Shah, E., & Mack, R. (2021). Blending the real world and the virtual world: Exploring the role of flow in augmented reality experiences. *Journal of Business Research*, 122(September 2019), 423–436. <https://doi.org/10.1016/j.jbusres.2020.08.041>
- Batat, W. (2021). How augmented reality (AR) is transforming the restaurant sector: Investigating the impact of “Le Petit Chef” on customers’ dining experiences. *Technological Forecasting and Social Change*, 172. <https://doi.org/10.1016/j.techfore.2021.121013>
- Berman, B. (2020). Paths to Purchase: The Seven Steps of Customer Purchase Journey Mapping.
- Brannon Barhorst, J., McLean, G., Shah, E., & Mack, R. (2021). Blending the real world and the virtual world: Exploring the role of flow in augmented reality experiences. *Journal of Business Research*, 122, 423–436. <https://doi.org/10.1016/j.jbusres.2020.08.041>
- Broilo, P. L., Espartel, L. B., & Basso, K. (2016). Pre-purchase information search: too many sources to choose. *Journal of Research in Interactive Marketing*, 10(3), 193–211. <https://doi.org/10.1108/TRIM-07-2015-0048>
- Butt, A., Ahmad, H., Muzaffar, A., Ali, F., & Shafique, N. (2022). WOW, the make-up AR app is impressive: a comparative study between China and South Korea. *Journal of Services Marketing*, 36(1), 73–88. <https://doi.org/10.1108/JSM-12-2020-0508>
- Chandra P Jain, S. S., & Nanda Kumar P Jain, K. S. (2018). Exploring Factors Influencing Organizational Adoption Of Augmented Reality In E-commerce: Empirical Analysis Using Technology-organization-environment Model. In *Journal of Electronic Commerce Research* (Vol. 19).
- Chaudhary, P., Kiran, P., Kate, N., & Pandey, S. (2022). Experiential tourism – role and application of micro-targeting in enhancing customer experience, engagement and loyalty. *Journal of Information and Optimization Sciences*, 43(6), 1463–1473. <https://doi.org/10.1080/02522667.2022.2139929>
- Chen, S. C., Chou, T. H., Hongsuchon, T., Ruangkanjanases, A., Kittikowit, S., & Lee, T. C. (2022). The mediation effect of marketing activities toward augmented reality: the perspective of extended customer experience. *Journal of Hospitality and Tourism Technology*, 13(3), 461–480. <https://doi.org/10.1108/JHTT-03-2021-0093>

- Chiu, C. L., Ho, H. C., Yu, T., Liu, Y., & Mo, Y. (2021). Exploring information technology success of Augmented Reality Retail Applications in retail food chain. *Journal of Retailing and Consumer Services*, 61. <https://doi.org/10.1016/j.jretconser.2021.102561>
- Chylinski, M., Heller, J., Hilken, T., Keeling, D. I., Mahr, D., & de Ruyter, K. (2020). Augmented reality marketing: A technology-enabled approach to situated customer experience. *Australasian Marketing Journal*, 28(4), 374–384. <https://doi.org/10.1016/j.ausmj.2020.04.004>
- Cruz, E., Orts-Escolano, S., Gomez-Donoso, F., Rizo, C., Rangel, J. C., Mora, H., & Cazorla, M. (2019). An augmented reality application for improving shopping experience in large retail stores. *Virtual Reality*, 23(3), 281–291. <https://doi.org/10.1007/s10055-018-0338-3>
- Cuomo, M. T., Tortora, D., Festa, G., Ceruti, F., & Metallo, G. (2020). Managing omni-customer brand experience via augmented reality: A qualitative investigation in the Italian fashion retailing system. *Qualitative Market Research*, 23(3), 427–445. <https://doi.org/10.1108/QMR-11-2017-0142>
- Dacko, S. G. (2017). Enabling smart retail settings via mobile augmented reality shopping apps. *Technological Forecasting and Social Change*, 124, 243–256. <https://doi.org/10.1016/j.techfore.2016.09.032>
- de Battisti, F., & Salini, S. (2013). Robust analysis of bibliometric data. *Statistical Methods & Applications*, 22(2), 269–283. <https://doi.org/10.1007/s10260-012-0217-0>
- Dehghani, M., Lee, S. H. (Mark), & Mashatan, A. (2020). Touching holograms with windows mixed reality: Renovating the consumer retailing services. *Technology in Society*, 63. <https://doi.org/10.1016/j.techsoc.2020.101394>
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- Du, Z., Liu, J., & Wang, T. (2022). Augmented Reality Marketing: A Systematic Literature Review and an Agenda for Future Inquiry. In *Frontiers in Psychology* (Vol. 13). Frontiers Media S.A. <https://doi.org/10.3389/fpsyg.2022.925963>
- Flavián, C., Ibáñez-Sánchez, S., & Orús, C. (2019). The impact of virtual, augmented and mixed reality technologies on the customer experience. *Journal of Business Research*, 100, 547–560. <https://doi.org/10.1016/j.jbusres.2018.10.050>
- Følstad, A., & Kvale, K. (2018). Customer journeys: a systematic literature review. In *Journal of Service Theory and Practice* (Vol. 28, Issue 2, pp. 196–227). Emerald Group Holdings Ltd. <https://doi.org/10.1108/JSTP-11-2014-0261>
- Fritz, W., Hadi, R., & Stephen, A. (2022). From tablet to table: How augmented reality influences food desirability. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-022-00919-x>
- Gatter, S., Hüttl-Maack, V., & Rauschnabel, P. A. (2022). Can augmented reality satisfy consumers' need for touch? *Psychology and Marketing*, 39(3), 508–523. <https://doi.org/10.1002/mar.21618>
- Golja, T., & Paulišić, M. (2021). Managing-technology enhanced tourist experience: The case of scattered hotels in istria. *Management (Croatia)*, 26(1), 63–95. <https://doi.org/10.30924/MJCMI.26.1.5>

- Guo, K., Fan, A., Lehto, X., & Day, J. (2021). Immersive Digital Tourism: The Role of Multisensory Cues in Digital Museum Experiences. *Journal of Hospitality and Tourism Research*. <https://doi.org/10.1177/10963480211030319>
- Hamouda, M. (2021). Purchase intention through mobile applications: a customer experience lens. *International Journal of Retail and Distribution Management*, 49(10), 1464–1480. <https://doi.org/10.1108/IJRDM-09-2020-0369>
- Hausmann, A., & Schuhbauer, S. (2021). The role of information and communication technologies in cultural tourists' journeys: the case of a World Heritage Site. *Journal of Heritage Tourism*, 16(6), 669–683. <https://doi.org/10.1080/1743873X.2020.1819300>
- Heller, J., Chylinski, M., de Ruyter, K., Mahr, D., & Keeling, D. I. (2019). Let Me Imagine That for You: Transforming the Retail Frontline Through Augmenting Customer Mental Imagery Ability. *Journal of Retailing*, 95(2), 94–114. <https://doi.org/10.1016/j.jretai.2019.03.005>
- Heller, J., Mahr, D., de Ruyter, K., Schaap, E., Hilken, T., Keeling, D. I., Chylinski, M., Flavián, C., Jung, T., & Rauschnabel, P. A. (2023). An interdisciplinary Co-authorship networking perspective on AR and human behavior: Taking stock and moving ahead. *Computers in Human Behavior*, 143, 107697. <https://doi.org/10.1016/j.chb.2023.107697>
- Hilken, T., Heller, J., Chylinski, M., Keeling, D. I., Mahr, D., & de Ruyter, K. (2018). Making omnichannel an augmented reality: the current and future state of the art. In *Journal of Research in Interactive Marketing* (Vol. 12, Issue 4, pp. 509–523). Emerald Group Holdings Ltd. <https://doi.org/10.1108/JRIM-01-2018-0023>
- Hollebeek, L. D., Clark, M. K., Andreassen, T. W., Sigurdsson, V., & Smith, D. (2020). Virtual reality through the customer journey: Framework and propositions. *Journal of Retailing and Consumer Services*, 55. <https://doi.org/10.1016/j.jretconser.2020.102056>
- Hoyer, W. D., Kroschke, M., Schmitt, B., Kraume, K., & Shankar, V. (2020). Transforming the Customer Experience Through New Technologies. *Journal of Interactive Marketing*, 51, 57–71. <https://doi.org/10.1016/j.intmar.2020.04.001>
- Huang, T. L., Mathews, S., & Chou, C. Y. (2019). Enhancing online rapport experience via augmented reality. *Journal of Services Marketing*, 31(7), 851–865. <https://doi.org/10.1108/JSM-12-2018-0366>
- Javornik, A. (2016). 'It's an illusion, but it looks real!' Consumer affective, cognitive and behavioural responses to augmented reality applications. *Journal of Marketing Management*, 32(9–10), 987–1011. <https://doi.org/10.1080/0267257X.2016.1174726>
- Javornik, A., Duffy, K., Rokka, J., Scholz, J., Nobbs, K., Motala, A., & Goldenberg, A. (2021). Strategic approaches to augmented reality deployment by luxury brands. *Journal of Business Research*, 136, 284–292. <https://doi.org/10.1016/j.jbusres.2021.07.040>
- Kim, J. H., Kim, M., Park, M., & Yoo, J. (2023). Immersive interactive technologies and virtual shopping experiences: Differences in consumer perceptions between augmented reality (AR) and virtual reality (VR). *Telematics and Informatics*, 77. <https://doi.org/10.1016/j.tele.2022.101936>

- Kim, Y. (2021). Revitalization of offline fashion stores: Exploring strategies to improve the smart retailing experience by applying mobile technology. *Sustainability (Switzerland)*, 13(6). <https://doi.org/10.3390/su13063434>
- Kumar, A., & Anjaly, B. (2017). How to measure post-purchase customer experience in online retailing? A scale development study. *International Journal of Retail and Distribution Management*, 45(12), 1277–1297. <https://doi.org/10.1108/IJRDM-01-2017-0002>
- Lao, A., Vlad, M., & Martin, A. (2021). Exploring how digital kiosk customer experience enhances shopping value, self-mental imagery and behavioral responses. *International Journal of Retail and Distribution Management*, 49(7), 817–845. <https://doi.org/10.1108/IJRDM-09-2020-0357>
- Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), 69–96. <https://doi.org/10.1509/jm.15.0420>
- Llanos-Herrera, G. R., & Merigo, J. M. (2019). Overview of brand personality research with bibliometric indicators. *Kybernetes*, 48(3), 546–569. <https://doi.org/10.1108/K-02-2018-0051>
- Meyer, C., & Schwager, A. (2007). Understanding Customer Experience. [www.gethuman.com](http://www.gethuman.com)
- Milgram, P., & Kishino, F. (1994). A TAXONOMY OF MIXED REALITY VISUAL DISPLAYS. In *IEICE Transactions on Information Systems (Issue 12)*. [http://vered.rose.utoronto.ca/people/paul\\_dir/IEICE94/ieice.html](http://vered.rose.utoronto.ca/people/paul_dir/IEICE94/ieice.html)
- Mishra, R., Singh, R. K., & Koles, B. (2021). Consumer decision-making in omnichannel retailing: Literature review and future research agenda. In *International Journal of Consumer Studies* (Vol. 45, Issue 2, pp. 147–174). Blackwell Publishing Ltd. <https://doi.org/10.1111/ijcs.12617>
- Orús, C., Ibáñez-Sánchez, S., & Flavián, C. (2021). Enhancing the customer experience with virtual and augmented reality: The impact of content and device type. *International Journal of Hospitality Management*, 98. <https://doi.org/10.1016/j.ijhm.2021.103019>
- Parise, S., Guinan, P. J., & Kafka, R. (2016). Solving the crisis of immediacy: How digital technology can transform the customer experience. *Business Horizons*, 59(4), 411–420. <https://doi.org/10.1016/j.bushor.2016.03.004>
- Paul, J., Lim, W. M., O’Cass, A., Hao, A. W., & Bresciani, S. (2021). Scientific procedures and rationales for systematic literature reviews (SPAR-4-SLR). *International Journal of Consumer Studies*. <https://doi.org/10.1111/ijcs.12695>
- Penco, L., Serravalle, F., Profumo, G., & Viassone, M. (2021). Mobile augmented reality as an internationalization tool in the “Made In Italy” food and beverage industry. *Journal of Management and Governance*, 25(4), 1179–1209. <https://doi.org/10.1007/s10997-020-09526-w>
- Pillai, S. G., Haldorai, K., Seo, W. S., & Kim, W. G. (2021). COVID-19 and hospitality 5.0: Redefining hospitality operations. *International Journal of Hospitality Management*, 94. <https://doi.org/10.1016/j.ijhm.2021.102869>
- Pine, J., & Gilmore, J. H. (1998). Welcome to the Experience Economy. *Harvard Business Review*, 76(4), 97–105.
- Plotkina, D., Dinsmore, J., & Racat, M. (2022). Improving service brand personality with augmented reality marketing. *Journal of Services Marketing*, 36(6), 781–799. <https://doi.org/10.1108/JSM-12-2020-0519>

- Pritchard, A. (1969). "Statistical Bibliography or Bibliometrics?" *Journal of Documentation*, 25(4), 348–349.
- Rajagopal. (2022). Impact of retailing technology during business shutdown. *Marketing Intelligence and Planning*, 40(4), 441–459. <https://doi.org/10.1108/MIP-08-2021-0255>
- Rauschnabel, P. A., Babin, B. J., tom Dieck, M. C., Krey, N., & Jung, T. (2022). What is augmented reality marketing? Its definition, complexity, and future. In *Journal of Business Research* (Vol. 142, pp. 1140–1150). Elsevier Inc. <https://doi.org/10.1016/j.jbusres.2021.12.084>
- Rauschnabel, P. A., He, J., & Ro, Y. K. (2018). Antecedents to the adoption of augmented reality smart glasses: A closer look at privacy risks. *Journal of Business Research*, 92, 374–384. <https://doi.org/10.1016/j.jbusres.2018.08.008>
- Rinaldi, C., Franchi, F., Marotta, A., Graziosi, F., & Centofanti, C. (2021). On the Exploitation of 5G Multi-Access Edge Computing for Spatial Audio in Cultural Heritage Applications. *IEEE Access*, 9, 155197–155206. <https://doi.org/10.1109/ACCESS.2021.3128786>
- Romano, B., Sands, S., & Pallant, J. I. (2022). Virtual shopping: segmenting consumer attitudes towards augmented reality as a shopping tool. *International Journal of Retail and Distribution Management*. <https://doi.org/10.1108/IJRDM-10-2021-0493>
- Roy, S. K., Balaji, M. S., Sadeque, S., Nguyen, B., & Melewar, T. C. (2017). Constituents and consequences of smart customer experience in retailing. *Technological Forecasting and Social Change*, 124, 257–270. <https://doi.org/10.1016/j.techfore.2016.09.022>
- Schmitt, B. (1999). Experiential Marketing. *Journal of Marketing Management*, 15(1–3), 53–67. <https://doi.org/10.1362/026725799784870496>
- Scholz, J., & Smith, A. N. (2016). Augmented reality: Designing immersive experiences that maximize consumer engagement. *Business Horizons*, 59(2), 149–161. <https://doi.org/10.1016/j.bushor.2015.10.003>
- Silva, S. C., Dias, J. C., & Braga, B. (2023). How footwear companies can use online CX to WOW customers. *International Journal of Retail and Distribution Management*. <https://doi.org/10.1108/IJRDM-05-2022-0150>
- Sung, E. (Christine). (2021). The effects of augmented reality mobile app advertising: Viral marketing via shared social experience. *Journal of Business Research*, 122, 75–87. <https://doi.org/10.1016/j.jbusres.2020.08.034>
- Tan, Y. C., Chandukala, S. R., & Reddy, S. K. (2022). Augmented Reality in Retail and Its Impact on Sales. *Journal of Marketing*, 86(1), 48–66. <https://doi.org/10.1177/0022242921995449>
- Tueanrat, Y., Papagiannidis, S., & Alamanos, E. (2021). Going on a journey: A review of the customer journey literature. In *Journal of Business Research* (Vol. 125, pp. 336–353). Elsevier Inc. <https://doi.org/10.1016/j.jbusres.2020.12.028>
- van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. <https://doi.org/10.1007/s11192-009-0146-3>

- Wedel, M., Bigné, E., & Zhang, J. (2020). Virtual and augmented reality: Advancing research in consumer marketing. *International Journal of Research in Marketing*, 37(3), 443–465. <https://doi.org/10.1016/j.ijresmar.2020.04.004>
- Wu, J., Zhang, D., Liu, T., Yang, H. H., Wang, Y., Yao, H., & Zhao, S. (2022). Usability Evaluation of Augmented Reality: A Neuro-Information-Systems Study. *Journal of Visualized Experiments*, 2022(189). <https://doi.org/10.3791/64667>
- Ylilehto, M., Komulainen, H., & Ulkuniemi, P. (2021). The critical factors shaping customer shopping experiences with innovative technologies. *Baltic Journal of Management*, 16(5), 661–680. <https://doi.org/10.1108/BJM-02-2021-0049>
- Yung, R., & Khoo-Lattimore, C. (2019). New realities: a systematic literature review on virtual reality and augmented reality in tourism research. *Current Issues in Tourism*, 22(17), 2056–2081. <https://doi.org/10.1080/13683500.2017.1417359>
- Zanger, V., Meißner, M., & Rauschnabel, P. A. (2022). Beyond the gimmick: How affective responses drive brand attitudes and intentions in augmented reality marketing. *Psychology and Marketing*, 39(7), 1285–1301. <https://doi.org/10.1002/mar.21641>
- Zhang, M., Li, Y., Li, Y., & Ren, X. (2023). Beyond presence: Creating attractive online retailing stores through the cool AR technology. *International Journal of Consumer Studies*. <https://doi.org/10.1111/ijcs.12894>
- Zhang, X. (2021). New Retail Marketing Strategy Combining Virtual Reality and 5G Mobile Communication. *Mathematical Problems in Engineering*, 2021. <https://doi.org/10.1155/2021/6632701>
- Ziaie, A., ShamiZanjani, M., & Manian, A. (2021). Systematic review of digital value propositions in the retail sector: New approach for digital experience study. *Electronic Commerce Research and Applications*, 47. <https://doi.org/10.1016/j.eelerap.2021.101053>