Library Progress International
Vol.44 No. 3, Jul-Dec 2024: P.8878-8896

Print version ISSN 0970 1052
Online version ISSN 2320 317X

Original Article

Available online at www.bpasjournals.com

The Intersection of Consumer Behaviour and Emerging Retail Technologies: A Systematic Review of the Forces Shaping Modern Omnichannel Retailing

Snehashis Khan

Research Scholar, IIM Sambalpur, India
phd20snehashikk@iimsambalpur.ac.in

How to cite this article: Snehashis Khan (2024) The Intersection of Consumer Behaviour and Emerging Retail Technologies: A Systematic Review of the Forces Shaping Modern Omnichannel Retailing. *Library Progress International,* 44(3), 8878-8896.

ABSTRACT

This systematic review examines the contemporary landscape of retailing, focusing on the interplay between technological advancements, consumer behaviours, and omnichannel retailing strategies. The study identifies major themes and trends in retail research, including the importance of customer experience, gender disparities in shopping preferences, the role of technology integration, ethical considerations, the impact of augmented reality (AR) and virtual reality (VR), consumer readiness for technology adoption, seamless integration of touchpoints, and the significance of emotional connections. Major findings highlight the crucial role of personalized experiences, transparency in data usage, and the need for retailers to prioritize consumer trust and engagement in their technology implementations.

Keywords: Omnichannel Retailing, Consumer Behaviour, Emerging Retail Technologies, Customer Experience, Technology Integration

INTRODUCTION

The retail landscape is undergoing an evolutionary shift, propelled by technological advancements and evolving consumer behaviour. Traditional models are yielding to digital innovations, challenging retailers to adapt swiftly to meet the dynamic demands of today's consumers. In this current era of rapid technological progress and changing consumer preferences, retail is constantly evolving. Conventional brick-and-mortar stores are morphing into immersive, omnichannel environments seamlessly blending physical and digital realms. Central to this transformation is the intricate interplay between consumer behaviour and technological breakthroughs, dictating how retailers interact with their clientele and distinguish themselves in a fiercely competitive market. Through an exhaustive examination of scholarly research encompassing diverse facets of retailing from consumer behaviour and technological integration to ethical considerations and omnichannel strategies, this study aims to offer a comprehensive insight into the drivers of modern retail.

METHODOLOGY

Research Objective

This systematic literature review is aimed at exploring the intersection of consumer behavior and the emerging retail technologies within the framework of modern omnichannel retailing by analyzing the key factors shaping modern omnichannel retailing. Specifically, this study aims to evaluate the effect of omnichannel strategies and advanced technologies on customer experience, empowerment, and engagement leading to the transition towards Marketing 5.0 within the retail sector.

Search Strategy

The Scopus database was used exclusively for the systematic search. The search string employed was **TITLE-ABS-KEY ("omnichannel retail" OR "omnichannel retailing" OR ("retailing" AND ("technology" OR "metaverse" OR "artificial intelligence" OR "augmented reality" OR "virtual reality" OR "internet of things" OR "Marketing 5.0"))) AND (LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (OA, "all")) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO**

(LANGUAGE, "English")).

Inclusion and Exclusion Criteria

The selected studies needed to focus on the integration of omnichannel practices and at least one of the specified emerging technologies within the retail context. Only peer-reviewed journal articles, categorized as articles ("ar") in the Scopus database, were considered for inclusion. Non-English language publications, duplicates, and studies outside the scope of the retail industry were excluded. Efforts were made to minimize publication bias by focusing on a single comprehensive database (Scopus).

Synthesis of Findings

Synthesis of the extracted data involved identifying patterns, trends, and consistencies across the studies selected from the Scopus database. Thematic analysis was applied to categorize findings related to the impact of omnichannel integration and emerging technologies on customer experiences, empowerment, engagement, and the transition towards Marketing 5.0 in the retail sector. This systematic approach allowed for a comprehensive exploration of the multifaceted dynamics shaping modern omnichannel retailing.

Data Extraction

A total of 282 articles were initially retrieved from the Scopus database. After initial abstract screening based on relevance to this review, 77 articles were subsequently identified. Of these 77 articles, 51 articles were published in A and A* indexed journals of the Australian Business Deans Council (ABDC) approved journal list. These 51 were thus chosen for review.

Table 1: Table of articles reviewed

Sl. No.	***Authors***	***Title***	***Year***	***Journal***
1	Roy S.K., Singh G., & Shabnam S.	Modelling Customer Engagement Behaviour in Smart Retailing	2021	Australasian Journal of Information Systems
2	Thaichon P., Quach S., Barari M., & Nguyen M.	Exploring the Role of Omnichannel Retailing Technologies: Future Research Directions	2023	Australasian Marketing Journal
3	Jocevski M.	Blurring the Lines between Physical and Digital Spaces: Business Model Innovation in Retailing	2020	California Management Review
4	Chen J., & Chang Y.-W.	How smart technology empowers consumers in smart retail stores? The perspective 5of technology readiness and s6ituational factors	2023	Electronic Markets
5	Lee Z.W.Y., Chan T.K.H., Chong A.Y.L., & Thadani D.R.	Customer engagement through omnichannel retailing: The effects of channel integration quality	2019	Industrial Marketing Management
6	Lewis J., Whysall P., & Foster C.	Drivers and technology-related obstacles in moving to multichannel retailing	2014	International Journal of Electronic Commerce
7	Kakaria S., Saffari F., Ramsøy T.Z., & Bigné E.	Cognitive load during planned and unplanned virtual shopping: Evidence from a neurophysiological perspective	2023	International Journal of Information Management
8	Silva S.C., De Cicco R., Vlačić B., & Elmashhara M.G.	Using chatbots in e-retailing – how to mitigate perceived risk and enhance the flow experience	2023	International Journal of Retail and Distribution Management
9	Pantano E., Priporas C.V., & Dennis C.	A new approach to retailing for successful competition in the new smart scenario	2018	

10	Van Kerrebroeck H., Willems K., & Brengman M.	Touching the void: Exploring consumer perspectives on touch-enabling technologies in online retailing	2017	
11	Giroux M., Kim J., Lee J.C., & Park J.	Artificial Intelligence and Declined Guilt: Retailing Morality Comparison Between Human and AI	2022	Journal of Business Ethics
12	(Daisy) Lyu J., Krasonikolakis I., & Vrontis D.	A systematic literature review of store atmosphere in alternative retail commerce channels	2022	Journal of Business Research
13	Cowan K., & Spielmann N.	Perception is reality… How digital retail environments influence brand perceptions through presence	2021	
14	Riegger A.S., Klein J.F., Merfeld K., & Henkel S.	Technology-enabled personalization in retail stores: Understanding drivers and barriers	2021	
15	Cowan K., & Ketron S.	A dual model of product involvement for effective virtual reality: The roles of imagination, co-creation, telepresence, and interactivity	2019	
16	Evanschitzky H., Iyer G.R., Pillai K.G., Kenning P., & Schütte R.	Consumer trial, continuous use, and economic benefits of a retail service innovation: The case of the personal shopping assistant	2015	Journal of Product Innovation Management
17	Grewal D., Benoit S., Noble S.M., Guha A., Ahlbom C.-P., & Nordfält J.	Leveraging In-Store Technology and AI: Increasing Customer and Employee Efficiency and Enhancing their Experiences	2023	Journal of Retailing
18	Heller J., Chylinski M., de Ruyter K., Mahr D., & Keeling D.I.	Let Me Imagine That for You: Transforming the Retail Frontline Through Augmenting Customer Mental Imagery Ability	2019	
19	Davis L., & Aslam U.	Analyzing consumer expectations and experiences of Augmented Reality (AR) apps in the fashion retail sector	2024	Journal of Retailing and Consumer Services
20	Frasquet M., Ieva M., & Mollá-Descals A.	Customer inspiration in retailing: The role of perceived novelty and customer loyalty across offline and online channels	2024	
21	Chekembayeva G., Garaus M., & Schmidt O.	The role of time convenience and (anticipated) emotions in AR mobile retailing application adoption	2023	
22	Alexander B., & Kent A.	Change in technology-enabled omnichannel customer experiences in-store	2022	

23	Pantano E., Viassone M., & Boardman R.	Inclusive or exclusive? Investigating how retail technology can reduce old consumers' barriers to shopping	2022	
24	Tueanrat Y., Papagiannidis S., & Alamanos E.	A conceptual framework of the antecedents of customer journey satisfaction in omnichannel retailing	2021	
25	Ameen N., Tarhini A., & Shah M.H.	A cross cultural study of gender differences in omnichannel retailing contexts	2021	
26	Chong T., Yu T., Keeling D.I., & de Ruyter K.	AI-chatbots on the services frontline addressing the challenges and opportunities of agency	2021	
27	Nikhashemi S.R., Knight H.H., Nusair K., & Liat C.B.	Augmented reality in smart retailing: A (n) (A) Symmetric Approach to continuous intention to use retail brands' mobile AR apps	2021	
28	Poushneh A.	How close do we feel to virtual product to make a purchase decision? Impact of perceived proximity to virtual product and temporal purchase intention	2021	
29	Song C.S., & Kim Y.-K.	Predictors of consumers' willingness to share personal information with fashion sales robots	2021	
30	Pantano E., & Pizzi G.	Forecasting artificial intelligence on online customer assistance: Evidence from chatbot patents analysis	2020	
31	Tyrväinen O., Karjaluoto H., & Saarijärvi H.	Personalization and hedonic motivation in creating customer experiences and loyalty in omnichannel retail	2020	
32	Pizzi G., & Scarpi D.	Privacy threats with retail technologies: A consumer perspective	2020	
33	Pillai R., Sivathanu B., & Dwivedi Y.K.	Shopping intention at AI-powered automated retail stores (AIPARS)	2020	
34	Bonnin G.	The roles of perceived risk, attractiveness of the online store and familiarity with AR in the influence of AR on patronage intention	2020	
35	van Esch P., Arli D., & Gheshlaghi M.H.	Anthropomorphism and augmented reality in the retail environment	2019	
36	Plotkina D., & Saurel H.	Me or just like me? The role of virtual try-on and physical appearance in apparel M-retailing	2019	
37	Roy S.K., Balaji M.S., Quazi A., & Quaddus M.	Predictors of customer acceptance of and resistance to smart technologies in the retail sector	2018	

38	Scholz J., & Duffy K.	We ARe at home: How augmented reality reshapes mobile marketing and consumer-brand relationships	2018	
39	Pantano E.	Engaging consumer through the storefront: Evidences from integrating interactive technologies	2016	
40	Pantano E., & Viassone M.	Engaging consumers on new integrated multichannel retail settings: Challenges for retailers	2015	
41	Verhoef P.C.	Omni-channel retailing: some reflections	2021	Journal of Strategic Marketing
42	Grewal D., Noble S.M., Roggeveen A.L., & Nordfalt J.	The future of in-store technology	2020	Journal of the Academy of Marketing Science
43	Gao F., & Su X.	Omnichannel retail operations with buy-online-and-pick-up-in-store	2017	Management Science
44	Gao F., & Su X.	Online and offline information for omnichannel retailing	2017	Manufacturing and Service Operations Management
45	Trenz M., Veit D.J., & Tan C.-W.	Disentangling the impact of omnichannel integration on consumer behavior in integrated sales channels	2020	MIS Quarterly: Management Information Systems
46	Gatter S., Hüttl-Maack V., & Rauschnabel P.A.	Can augmented reality satisfy consumers' need for touch?	2022	Psychology and Marketing
47	Hilken T., Chylinski M., Keeling D.I., Heller J., & de Ruyter K.	How to strategically choose or combine augmented and virtual reality for improved online experiential retailing	2022	
48	Alesanco-Llorente M., Reinares-Lara E., Pelegrín-Borondo J., & Olarte-Pascual C.	Mobile-assisted showrooming behavior and the (r)evolution of retail: The moderating effect of gender on the adoption of mobile augmented reality	2023	Technological Forecasting and Social Change
49	Roe M., Spanaki K., Ioannou A., Zamani E.D., & Giannakis M.	Drivers and challenges of internet of things diffusion in smart stores: A field exploration	2022	
50	Riegger A.S., Merfeld K., Klein J.F., & Henkel S.	Technology-enabled personalization: Impact of smart technology choice on consumer shopping behavior	2022	
51	Dacko S.G.	Enabling smart retail settings via mobile augmented reality shopping apps	2017	

SUMMARY OF FINDINGS

(Tueanrat, Papagiannidis, & Alamanos, 2021) investigate the multifaceted dynamics influencing customer journey satisfaction in omnichannel retailing, and offer valuable insights into the impact of customer co-creation behaviour, customer response, and customer experiential values. They establish the significance of these factors across various phases of the customer journey, recognizing their varying influence across different customer segments. The research identifies different patterns in customer journeys, shedding light on how these patterns

affect predictors of customer journey satisfaction and aiding in the understanding of diverse customer needs and behaviours. (Ameen, Tarhini, & Shah, 2021) study gender differences in omnichannel shopping experiences among millennial shoppers in modern shopping malls. The study introduces a Gender-Based Shopping Mall Omnichannel Experience Model, which considers various factors such as social interaction, service excellence, convenience, diversity, personalization, aesthetics, privacy, and personal interaction. Through a cross-cultural analysis involving millennial shoppers in both the UK and the UAE, the research provides insights into how cultural variations impact omnichannel shopping behaviours, thereby offering valuable implications for shopping mall management and retailers. (Cowan & Ketron, 2019) introduce a dual model of product involvement within virtual reality (VR) contexts, distinguishing between high and low-involvement situations. Consumer responses are directly influenced in high-involvement contexts that use imagination, co-creation, and telepresence, whereas low-involvement contexts rely on interactivity, which leads to brand engagement and indirectly affects consumer responses. Through an examination of different levels of product involvement within VR, the research sheds light on their impact on consumer attitudes and purchase intentions, categorizing VR typology into product simulations, automated virtual environments, and virtual worlds. (Pantano, Priporas, & Dennis, 2018) introduces the concept of smart retailing, emphasizing the integration of advanced technologies to bolster retail services and innovation management strategies. By addressing the drivers of innovation in retail, particularly consumer needs and technology pull factors, the research underscores the importance of aligning with the evolving retail landscape driven by digital transformation, emphasizing the shift from traditional goods-dominant marketing to service-dominant logic, where consumers actively engage in service co-creation. The study also navigates the risks and benefits associated with retail innovation, discussing economic sustainability and the management of complexities while highlighting potential benefits for firms investing in innovative technology. (Lyu, Krasonikolakis, & Vrontis, 2022) conducts a comprehensive review of the store atmosphere across various retail channels, emphasizing its components, antecedents, and consequences. Categorizing store atmosphere research into brick-and-mortar, electronic, and 3D/virtual retail stores, the study underscores the importance of understanding atmosphere dynamics across diverse channels to adapt to evolving consumer behaviors and technological advancements. (Chong, Yu, Keeling, & de Ruyter, 2021) explores the role of AI-chatbots as frontline service agents in retailing and consumer services, addressing the challenges and opportunities associated with their design and implementation. The paper states that by 2025 there will be a high adoption rate of AI chatbots in the retailing and consumer services field, with its main role being to fulfil customers' needs, improve the service journey, and assist customers as financial advisors. The research admits that consumer resistance and doubt are two of the most important challenges to the large-scale adoption of AI chatbots. To address these problems and increase the users' acceptance of the AI chatbot, the study emphasizes the role of the emotional interface in AI chatbot development. This article traces AI chatbots adoption in the retail and consumer service domains and discusses the challenges and opportunities they present. However, the study finds that consumer resistance and skepticism are still the biggest challenges for the AI chatbots to achieve proper penetration in the market. To resolve these problems and gain emotional acceptance of AI chatbots, the research points at the use of emotional interface during AI chatbot development. (Davis & Aslam, 2024) highlight the significance of user experience and continuous innovation for customer expectations, and emphasize the need for retailers to understand customer expectations and experiences for AR technology to be an effective resource within fashion retailing industry. In this way, they bring to light the issues like too much battery usage, slow performance, crashes, language support, and privacy and they stress how important it is to meet the consumer expectations and usability to increase the customer satisfaction. (van Esch, et al., 2019) examine the presence of anthropomorphism in consumers' perception of augmented reality (AR) in store settings. The study indicates that applying human elements and features in the non-human technology can help to increase customer confidence in the technology and that the customer sentiments are positively affected as a result. (Giroux, Kim, Lee, & Park, 2022) explore the moral behaviours of consumers in retail settings related to check-out interactions with AI checkout and self-checkout machines. They find that consumers have a less moral intention when using AI checkout and self-checkout machines than human checkout where the decrease from this is attributed to the diminished feelings of guilt and the perception of machines as less human. This finding underscores the ethical implications of technological advancements in the retail industry. The paper also emphasizes the impact of technological developments, particularly AI and self-service technologies, on consumer behaviour in retail settings, contributing to a deeper understanding of consumers' reactions toward technologies. They recommend considering humanlike representations of technologies to guide consumer behaviours and

manage the moral implications of technological advancements effectively. (Nikhashemi, Knight, Nusair, & Liat, 2021) investigates the impact of augmented reality (AR) attributes on customer benefit perception, engagement, and behavioural consequences in the context of smart retailing. Through their research, they explore the relationship between AR attributes (quality, novelty, vividness, and interactivity) and customer benefit perception, engagement, and behavioural outcomes. They find significant associations between shopping AR app attributes and customers' hedonic and utilitarian benefits. Additionally, the paper identifies AR customization as a moderating factor, influencing the relationship between AR attributes and customer benefits. (Jocevski, 2020) examines challenges in establishing sustainable omnichannel business models and innovative efforts by retailers to revamp physical retail spaces. The research identifies five key innovation areas crucial for aligning physical retail spaces with omnichannel experiences and business model innovation: in-store technology, sales associate roles, mobile channels, data analytics, and collaborations. Case studies of ASKET, Dustin, and H&M exemplify the pivotal role of physical retail spaces as hubs for omnichannel experiences and business model innovation, providing practical insights for retailers. The paper stresses the importance of restructuring, planning, and training to align with omnichannel strategies. It underscores the significance of leveraging technology, data, and partnerships to support omnichannel retailing and adapt to changing consumer behaviours and technological advancements. (Gatter, Hüttl-Maack, & Rauschnabel, 2022) explore the role of augmented reality (AR) in satisfying consumers' need for touch, particularly among those with a high autotelic need for touch during online shopping, and find that AR compensates for the absence of touch experienced by consumers, offering both utilitarian and hedonic benefits. Notably, consumers with a high autotelic need for touch derive elevated hedonic benefits from AR, resulting in favourable attitudes toward brands, products, and apps. Moreover, the research observes heightened purchase intentions among these consumers when utilizing AR, as AR features simulate touchable product attributes, heightening perceived hedonic benefits and the perceived tangibility of the AR experience. Despite challenges in consumers' pre-assessment of gratification from AR use, potentially hindering adoption intentions, the study underscores AR's efficacy in catering to high-need-for-touch consumers. (Alexander & Kent, 2022) aim to comprehend the shifts in technology-enabled customer experiences over five years, with a focus on in-store technologies and their impact on millennial consumers. They underscore the increasing importance of integrating in-store technologies to augment customer experiences, alongside insights into the evolving relationship between technologies and customer experiences, reflecting changes in consumer preferences and behaviors. (Kakaria, Saffari, Z. Ramsøy, & Bigné, 2023) investigate the influence of virtual reality-assisted retail applications on consumer buying patterns, with a specific focus on the cognitive load experienced during planned and unplanned virtual shopping scenarios. The study finds significant associations between impulsiveness and unplanned expenditure in virtual retail environments, alongside the mediating role of flow experience in the relationship between presence and the desire to prolong virtual store visits. Various factors such as impulsiveness, flow experience, sense of presence, and desire to prolong visits significantly influence store satisfaction, basket-size deviation, and budget deviation in virtual retail settings. (Evanschitzky, Iyer, Pillai, Kenning, & Schütte, 2015) investigated consumer trial, continuous use, and economic benefits of a retail service innovation, the personal shopping assistant (PSA). They found that trust, novelty seeking, and market mavens positively influence the trial, while technology anxiety hinders it. Continuous use is driven by perceived ease of use, albeit reduced by the need for interaction. PSA users tend to spend more during shopping trips, indicating economic benefits for retailers, though the recovery of investments relies on sustained consumer use. (Lee, Chan, Chong, & Thadani, 2019) investigated customer engagement in omnichannel retailing, focusing on the effects of channel integration quality, and found that dimensions of channel integration quality positively influence customer engagement, subsequently impacting word-of-mouth and repurchase intention. The research highlights the importance of channel integration quality in enhancing customer engagement across various retail contexts and product involvement levels. (Frasquet, Ieva, & Mollá-Descals, 2024) studies customer inspiration within omnichannel retailing, emphasizing perceived novelty's role and its impact on loyalty across offline and online channels. The study found that perceived novelty significantly influences customer inspiration, suggesting novel shopping environments and channel integration can inspire customers. This inspiration, in turn, boosts loyalty, with effects observed in both offline and online channels. The study endorses the adoption of cross-channel effects by the omnichannel retailers and making the purchase process parallel to customer inspiration. (Trenz, Veit, & Tan, 2020) sheds light on the impact of omnichannel integration services on consumer behaviour in integrated sales channels and reveals that the omnichannel integration services have a significant effect on consumers'

evaluations, which includes the ease of use, risk perception, and channel preference. (Roe, Spanaki, Ioannou, Zamani, & Giannakis, 2022) studied the considerations and obstacles associated with IoT adoption in smart stores, with a particular emphasis on improving customers' experiences.

The aim of the study was to investigate the IoT adoption hurdles and implications for customer-oriented service delivery. It found that customer expectations and personalized experiences mainly influenced IoT development while challenges such as business expectations, device heterogeneity, usability, security, and privacy remained. The study provided a framework for IoT implementation, and emphasized issues such as security, usability, data privacy, and organizational culture. Regarding IoT security, the study discussed security-cost trade-offs and emphasized the importance of encryption and securing data flows to reduce risks. (Lewis, Whysall, & Foster, 2014) study the drivers and technology-related obstacles in the adoption of multichannel retailing by retailers. They find that customer needs and increasing sales as the main drivers of multichannel retailing adoption. They observe that greater seamlessness of experience across channels enhances customer satisfaction and leads to greater sales revenue. While the retailers are in the process of this transformation, they encounter several obstacles such as resource acquisition, channel integration challenges, outdated infrastructure redesign, employee engagement, financial constraints, and cultural barrier. Thus, retailers should be properly aligned to these emerging trade models that effectively respond to these problems, not forgetting the need for innovation within the sector and the shift of the consumer behaviours. (Dacko, 2017) investigates the possible role of mobile augmented reality (MAR) shopping apps for the development of smart retail settings, with the consumers and businesses as the main actors. The research showed that the MAR app users and organizations made a great contribution, while users expressed high levels of happiness and the value they got from the experience. The implementation of MAR applications brings about great changes in consumer behaviour, and consequently, makeup retailers become more interactive with customers, who then refer to them positively. Additionally, the extra value and the more active participation of shoppers are the benefits shops receive by the implementation of MAR. Nevertheless, the challenges like the privacy concern, the integration with the shopping experience, and the app performance speed are barriers towards the widespread adoption of mobile payments. (Pantano, 2016) analyses the role of interactive technologies in traditional storefront windows as the entry-decision factors in retail environments. The study underscores the significance of storefront design elements, including brightness, colour, price, originality, and product display, in shaping consumer behaviour. It finds that integrating interactive technologies adds utilitarian and hedonic value, attracting consumers and providing a competitive edge over online retailers. (Pantano & Viassone, 2015) investigate how retailers managing multiple channels influence consumer cross-channel free-riding and switching behaviours. The study emphasizes the effectiveness of an integrated environment managed by one retailer in engaging consumers and deterring switching behaviours. The findings indicate that an integrated environment fosters positive emotional reactions among participants and influences perceptions of service quality, satisfaction, attitude, and purchase intention. (Thaichon, Quach, Barari, & Nguyen, 2023) study the evolving landscape of omnichannel retailing, categorizing its progression from traditional retail to technologically-driven integrated channels into four stages (initial, multi-channel, emerging phenomenon, and revolution) and underlining technology's pivotal role in seamless integration across channels. The paper identifies challenges such as technology adoption, customer privacy, and evolving expectations, while also highlighting opportunities for innovation. The study examines technology's relevance, including its impact on value co-destruction and customer privacy. (Pantano & Pizzi, 2020) study the increasing utilization of chatbots in online retailing, propelled by advancements in artificial intelligence (AI) technology, outlining its impact on customer assistance and engagement. They highlight chatbots' role in saving time, streamlining purchase decisions, and enhancing customer interaction in online retail environments. (Poushneh, 2021) studies the influence of perceived proximity to virtual products on purchase intention and explores the role of augmented reality (AR) features in driving consumers' willingness to make purchase decisions. They find that perceived proximity enhances perceived measurement feedback and perceived generality, directly impacting perceived purchase intention shortly. Additionally, perceived generality fully mediates the effect of perceived measurement feedback on purchase intention. (Chen & Chang, 2023) study the empowerment of consumers in smart retail stores through smart technology, focusing on technology readiness and situational factors. Smart retail environments offer innovative, technology-driven shopping experiences marked by convenience and cost-effective products. Situational factors such as entrance convenience, ease of interaction, usefulness, transaction convenience, merchandise price, and quality significantly influence consumer purchase intentions in these environments. The

study indicates that the consumers' technology readiness is deeply related to evaluations of situational factors including optimism, innovativeness, discomfort, and insecurity, and that their readiness for technology strongly affects the benefit and convenience of human-technology interaction being perceived. (Hilken, et al., 2022) examines the AR/VR combination that is used to provide an enhanced online experiential retailing. AR can facilitate the mental imagery of product-oriented scenarios better than VR and leads to higher purchase intention, but VR supports context-oriented scenarios better and develops brand sentiments. (Pantano, Viassone, Boardman, & Dennis, 2022) specifically investigate the influence of retail technologies in store on the ageing consumers. As the study shows, older people may have limited interactions with these technologies, and these interactions may lead to feelings of exclusion and, thus, the autonomy and the overall well-being of these people may be affected. The study recommends the implementation of these technologies that are more intuitive and user-friendly while being tailored to the unique needs and tastes of senior consumers in order to solve the challenges. One of the key lessons is that retailers must be highly personalized in order to make older clients feel more welcomed. (Heller, Chylinski, de Ruyter, Mahr, & Keeling, 2019) study the influence of augmented reality on the frontline retail operations in terms of how it affects customers' mental images and decision-making processes. The result demonstrates a positive association between AR usage and customers' speed of thinking, level of comfort of decision making and in engagement with word-of-mouth communication. Moreover, the effectiveness of AR-enabled retail operations is found to be contingent upon factors such as customer visual processing style and the contextuality of the products being evaluated. (Grewal, et al., 2023) emphasizes the critical importance of considering both customer and employee perspectives when evaluating the impact of digital technology on retailing. They stratify various in-store technologies across two dimensions – whether the technology improves efficiency or enhances the in-store experience, and whether it's customer or employee-centric. (Plotkina & Saurel, 2019) compared the effectiveness of a mobile application featuring a virtual try-on (VTO) tool based on augmented reality (AR) with a traditional m-commerce interface in presenting products related to consumers' appearance, and found that the AR-based VTO tool was perceived as less enjoyable and had a weaker influence on consumers' attitudes and purchase intentions compared to traditional m-commerce interfaces. Consumers viewed traditional interfaces as more convenient and useful. (Alesanco-Llorente, Reinares-Lara, Pelegrín-Borondo, & Olarte-Pascual, 2023) studies mobile-assisted showrooming (MAS) behaviour and the adoption of mobile augmented reality (MAR) in retail, with a focus on gender differences. For men, the cognitive dimension played a predominant role, whereas for women, both cognitive and normative dimensions influenced acceptance. Gender differences were also identified in mobile augmented reality acceptance, with the cognitive dimension of mobile augmented showrooming being more impactful for men and the normative dimension being more influential for women. (Roy, Singh, & Shabnam, 2021) study customer engagement behaviour in smart retailing, focusing on the impact of smart retail technology (SRT) characteristics and meta-UTAUT variables on customer engagement behaviour, aiming to investigate how SRT characteristics such as novelty, effectiveness, and interaction quality, along with meta-UTAUT variables – performance expectancy, effort expectancy, social influence, and facilitating conditions, influence customer engagement behaviour within the retailing context. They find that SRT characteristics significantly influence customers' attitudes and behavioural intentions towards smart retailing, ultimately shaping their engagement behaviour. Specific SRT characteristics – novelty, effectiveness, and interaction quality, were found to play significant roles in influencing customer engagement behaviour. (Gao & Su, 2017) study the implications of implementing the buy-online-and-pick-up-in-store (BOPS) strategy within omnichannel retail operations. The study evaluated customer preferences, identifying the intricate factors driving decisions between in-store, online, and BOPS shopping, and segmented customers based on diverse channel preferences. They also emphasize the dual aspect of incorporating BOPS on store operations and profitability – the trade-off between convenience and profitability. (Verhoef, 2021) observes the rising importance of the digital channel, propelled by shifting consumer preferences and technological advancements. The study also reflects on the COVID-19 pandemic highlighting enduring shifts in shopping behaviour and the future trajectory of physical retailing, alongside the integration of emerging technologies like artificial intelligence and virtual reality into the retail experience. (Gao & Su, 2017) studies the impact and benefits arising from various information mechanisms within the realm of omnichannel retailing, with a specific focus on physical showrooms, virtual showrooms, and availability information, and how these mechanisms influence both retailing operations and consumer decision-making processes. The study finds distinct effects on consumer decision-making and retailer profits attributable to each information mechanism, elucidating potential complementarities and redundancies when these

mechanisms coalesce. The survey also highlights the problems that come with implementing omnichannel strategies, warning merchants to tread carefully when deploying several information mechanisms at the same time to avoid redundancy and ensure operational success. (Cowan, Spielmann, Horn, & Griffart, 2021) investigate the influence of 360-VR versus other media on consumer attitudes and purchase intentions in retail contexts, emphasizing the importance of presence—defined as the psychological experience of "being there." The findings show that 360-VR may receive more positive feedback than low-presence media. Nevertheless, the study also found that the 360-VR can be a source of less pleasant emotions when experienced in-person, thus showing how delicate these relationships can be. While consumer responses are the elements such as mental imagery and product category expertise that determine whether the perceptions and buying intentions are shaped in the direction of digital retail environment. (Tyrväinen, Karjaluoto, & Saarijärvi, 2020) studies the influence of personalization and hedonic motivation on consumers' omnichannel retailing experiences and loyalty levels. The study affirms positive relations between individualization, psychological motives, cognitive and emotional components of the customer experience, and loyalty, which underscores the importance of personalized experiences and psychologically-motivated interactions in promoting customer loyalty in omnichannel retail contexts. (Song & Kim, 2021) explores what determines consumers' willingness to reveal personal information to fashion sales robots, focusing on how service quality, enjoyment, utility, and trust work together to frame consumers' attitudes towards sharing their personal data with AI fashion sales robots. According to the research findings, customers take service quality and satisfaction as the most critical factors that are likely to lead them to share personal information with fashion sales robots. (Roy, Balaji, Quazi, & Quaddus, 2018) explores the factors that influence customer acceptance or avoidance of smart retail technologies. Research suggests that the factors that influence the attitudes and intentions of customers to use smart retail technologies include perceived technology readiness, perceived ease of use, perceived usefulness, system characteristics, superior functionality, perceived adaptiveness, and store reputation. The study also underscores the need for user-friendly technologies and personalized interactions, and the need for retail stores to prioritize simple yet value-adding smart technologies and brand management strategies for fostering customer acceptance. (Pizzi & Scarpi, 2020) study consumer perceived privacy threats associated with retail technologies. They find a direct influence of perceived fairness and hedonism of technology on privacy perceptions, which further influences consumer patronage intention and word-of-mouth referral. The study also finds that retailers' trustworthiness, consumers' personality traits, and perceived benefits of technology are determinants in shaping privacy perceptions and technology acceptance. (Pillai, Sivathanu, & Dwivedi, 2020) studies the determinants influencing consumers' propensity to engage with AI-Powered Automated Retail Stores (AIPARS), and find that innovativeness and optimism positively influence perceived ease and usefulness, while insecurity negatively influence perceived usefulness. Perceived ease of use, perceived usefulness, perceived enjoyment, customization, and interactivity also act as predictors of consumers' intention to shop at AIPARS. (Riegger, Klein, Merfeld, & Henkel, 2021) studies consumer reactions to technology-enabled personalization (TEP) within brick-and-mortar retail stores, and identifies drivers propelling consumer acceptance of TEP – perceived utility, enjoyment, control over personalization, interactive experiences, and seamless integration of technology into the retail landscape. The study also identifies barriers – concerns regarding the exploitation of personal data, misalignment between consumer expectations and personalized interactions, privacy considerations, and a lack of confidence in the technology's efficacy. (Riegger, Merfeld, Klein, & Henkel, 2022) studies the influence of smart devices – customer-owned smartphones and retailer-owned immersive screens, on the delivery and reception of personalized messages within next-generation retail stores. The study finds that personalized messages resonate more profoundly when disseminated through customer-owned smartphones as opposed to retailer-owned immersive screens. The study also highlights the relationship between consumers and smart retail devices, positing that customer acceptance of personalized messages hinges upon the nature of their bond with the device and its integration into their extended self. (Grewal, Noble, Roggeveen, & Nordfalt, 2020) categorizes innovative technologies into four quadrants based on their levels of convenience and social presence with one axis being convenience and the other being social presence. The study posits that technologies offering high levels of convenience and social presence engender more vivid and immersive experiences, thereby amplifying consumer engagement and, ultimately, driving sales. (Chekembayeva, Garaus, & Schmidt, 2023) studies the role of time convenience and emotions in the adoption of augmented reality (AR) mobile retailing applications, and finds a positive correlation between time convenience, emotions, attitudes toward AR apps, and behavioural intentions.

(Bonnin, 2020) studies roles of perceived risk, attractiveness of the online store, and familiarity with augmented reality (AR) in influencing patronage intention within online retailing. The study finds that AR significantly impacts patronage intention in online retailing through hedonic and utilitarian evaluation, with perceived risk and store attractiveness mediating this relationship, and that familiarity with AR moderates the relationship between AR and patronage intention, with higher familiarity reducing perceived risk and increasing patronage intention. (van Kerrebroeck, Willems, & Brengman, 2017) studies consumer perspectives on touch-enabling technologies in online retailing. The findings reveal that touch technologies offer both utilitarian and hedonic value, particularly in the pre-purchase stages of the consumer journey. Findings also indicate that the integration of touch technologies in online retailing potentially caters to hedonically oriented customers and reduces product returns. The study also identifies barriers to consumer acceptance – perceived usefulness, ease of use, and attitude toward the technology. (Silva, de Cicco, Vlačić, & Elmashhara, 2023) studies factors shaping consumers' intention to use chatbots for online shopping, with a focus on mitigating perceived risk and enhancing the flow experience. Findings reveal that trust significantly predicts behavioural intention towards chatbots, playing a vital role in mitigating perceived risk and enhancing the flow experience. (Scholz & Duffy, 2018) study the influence of augmented reality (AR) on consumer-brand relationships and mobile marketing. Findings reveal that integrating branded AR apps into consumers' personal spaces fosters intimate connections between consumers and brands, transcending mere transactional interactions. The study also finds that minor imperfections in AR apps have minimal effects on consumer-brand relationships, highlighting consumer forgiveness and resilience in this regard.

Theory

(Tueanrat, Papagiannidis, & Alamanos, 2021) emphasizes the importance of customer co-creation behaviour, customer response, and customer experiential values throughout the customer journey. (Ameen, Tarhini, & Shah, 2021) delineates the distinct preferences of male and female shoppers in modern shopping malls by integrating factors such as social interaction, service excellence, and personalization. (Cowan & Ketron, 2019) differentiate between high and low-involvement scenarios, elucidating how Virtual Reality (VR) influences consumer responses through imagination, interactivity, and brand engagement mechanisms. Transitioning from goods-dominant marketing to service-dominant logic, (Pantano, Priporas, & Dennis, 2018) underscores the role of consumer needs and digital transformation in smart retailing innovation. (Lyu, Krasonikolakis, & Vrontis, 2022) integrate the Stimulus-Organism-Response (SOR) model, Technology Acceptance Model (TAM), and Pleasure-Arousal-Dominance (PAD) model to explore the impact of store atmosphere on consumer behaviour. Drawing from Social Cognitive Theory, (Chong, Yu, Keeling, & de Ruyter, 2021) analyse how AI chatbots operate in retailing, considering individual decision-making and collective actions. (Davis & Aslam, 2024) employ Social Practice Theory (SPT) alongside SOR, TAM, and PAD models to examine AR apps' usability and store atmosphere effects on consumer behaviour. (van Esch, et al., 2019) study anthropomorphism, augmented reality experiences, and brand attitudes, while (Nikhashemi, Knight, Nusair, & Liat, 2021) apply the Uses and Gratifications Theory (UGT) and Technology Continuance Theory (TCT) to AR shopping apps. Insights from Self-Service Technology (SST) studies and TAM inform (Evanschitzky, Iyer, Pillai, Kenning, & Schütte, 2015) on Personal Shopping Assistant (PSA) adoption. (Frasquet, Ieva, & Mollá-Descals, 2024) use novelty categorization theory and affect transfer theory to explore customer inspiration in omnichannel retailing. (Roe, Spanaki, Ioannou, Zamani, & Giannakis, 2022) apply service-dominant logic and diffusion of innovation theory to IoT technologies in smart stores. (Poushneh, 2021) utilize construal level theory to understand virtual product proximity's influence on purchase intention. (Plotkina & Saurel, 2019) focus on TAM's impact on consumer behaviour regarding technology, while (Alesanco-Llorente, Reinares-Lara, Pelegrín-Borondo, & Olarte-Pascual, 2023) use the Cognitive-Affective-Normative (CAN) model for mobile-assisted showrooming. (Roy, Singh, & Shabnam, 2021) examine customer engagement using the Unified Theory of Acceptance and Use of Technology (UTAUT). (Cowan, Spielmann, Horn, & Griffart, 2021) integrate presence theory and sensory marketing to understand digital retail environments' influence. (Song & Kim, 2021) apply information sharing theory to understand factors influencing personal information disclosure in fashion sales interactions. (Roy, Balaji, Quazi, & Quaddus, 2018) utilize UTAUT to study smart technology acceptance in retail. (Pillai, Sivathanu, & Dwivedi, 2020) integrate the Technology Readiness Acceptance Model (TRAM) with specific variables for AI-Powered Automated Retail Stores (AIPARS). (Riegger, Merfeld, Klein, & Henkel, 2022) adopt assemblage theory to explore technology-enabled personalization in retail. (Chekembayeva, Garaus, & Schmidt, 2023) apply cognitive appraisal theory to understand consumer responses to AR mobile retailing apps. (Silva, de Cicco, Vlačić, &

Elmashhara, 2023) integrate the UTAUT model with trust, perceived risk, and flow to examine chatbot usage intention in online shopping.

Context

(Ameen, Tarhini, & Shah, 2021) analyse gender disparities in omnichannel shopping experiences among millennial consumers across the United Kingdom and the United Arab Emirates. (Davis & Aslam, 2024) scrutinize the rapid evolution of Augmented Reality (AR) technology in the fashion retail domain. (van Esch, et al., 2019) highlight the potential of anthropomorphism for fostering customer relationships in retail, considering regulatory frameworks and health implications associated with AR integration. (Nikhashemi, Knight, Nusair, & Liat, 2021) focus on AR's impact on customer perceptions, engagement, and behaviours within shopping apps. (Evanschitzky, Iyer, Pillai, Kenning, & Schütte, 2015) examine the deployment and advantages of Self-Service Technologies (SSTs) in retail settings. (Pantano, Viassone, Boardman, & Dennis, 2022) address challenges older consumers face in adopting in-store technologies. (Plotkina & Saurel, 2019) investigate the influence of virtual try-on (VTO) tools on consumer attitudes and purchasing decisions. (Song & Kim, 2021) explore American consumers' attitudes toward sharing personal information with fashion sales robots. Meanwhile, a study undertaken in India (Pillai, Sivathanu, & Dwivedi, 2020) analyses consumer behaviour in the context of AI-powered automated Retail Stores (AIPARS) and smart retail technology, with an emphasis on service innovation in the retail business.

Characteristics

(Tyrväinen, Karjaluoto, & Saarijärvi, 2020; van Esch, et al., 2019) highlight the significance of incorporating technology into omnichannel retailing to improve consumer experiences and operational efficiency. This integration makes use of AI, AR, VR, IoT, and chatbots to offer seamless and personalized interactions across online and offline channels (Chong, Yu, Keeling, & de Ruyter, 2021; Pantano & Viassone, 2015). (Chekembayeva, Garaus, & Schmidt, 2023; Silva, de Cicco, Vlačić, & Elmashhara, 2023) investigate consumer behaviors and preferences in omnichannel retail environments, emphasizing convenience, personalization, and the impact of emotions. (Pillai, Sivathanu, & Dwivedi, 2020; Roy, Balaji, Quazi, & Quaddus, 2018) highlight the importance of trust, enjoyment, and perceived utility in increasing customer engagement and adoption of new technologies. AR and VR technologies significantly improve customer experiences and brand engagements in retail contexts (Cowan, Spielmann, Horn, & Griffart, 2021; Heller, Chylinski, de Ruyter, Mahr, & Keeling, 2019). (Bonnin, 2020; Gao & Su, 2017) (Bonnin, 2020; Gao & Su, 2017) investigate how AR/VR technologies promote enhanced engagement, better decision-making processes, and the creation of immersive shopping experiences. (Pizzi & Scarpi, 2020; Giroux, Kim, Lee, & Park, 2022) address the ethical implications and privacy concerns associated with the adoption of new technologies in retail, particularly AI and data-driven strategies. (Silva, de Cicco, Vlačić, & Elmashhara, 2023; Roy, Singh, & Shabnam, 2021) highlight the importance of transparency, trustworthiness, and consumer empowerment in mitigating risks and ensuring responsible use of technology. (Tyrväinen, Karjaluoto, & Saarijärvi, 2020; Lee, Chan, Chong, & Thadani, 2019) highlight the role of personalized experiences, emotional connections, and technology readiness in driving customer engagement and fostering loyalty in omnichannel retailing. (Gao & Su, 2017; Scholz & Duffy, 2018) show how the effective use of technologies such as chatbots, AR, and VR can enhance customer engagement and strengthen brand relationships.

Methodology

(Tueanrat, Papagiannidis, & Alamanos, 2021) employ regression analysis and latent class cluster analysis to explore factors influencing customer journey satisfaction and segment participants based on journey patterns. (Davis & Aslam, 2024) adopt a triangulation qualitative approach, incorporating online reviews, focus groups, and semi-structured interviews to capture diverse perspectives on AR apps in fashion retail across different countries. (Nikhashemi, Knight, Nusair, & Liat, 2021) utilize structural equation modelling (SEM) to understand AR's impact on customer benefit perception and engagement. (Gatter, Hüttl-Maack, & Rauschnabel, 2022) conduct mixed methodologies to explore AR's effect on consumers with a high autotelic need for touch. (Pantano & Pizzi, 2020) employ text mining techniques and bibliometric analysis to identify trends in chatbot technology. (Pantano, Viassone, Boardman, & Dennis, 2022) conduct face-to-face semi-structured interviews to understand older consumers' interactions with in-store technologies. (Roy, Singh, & Shabnam, 2021) use quantitative surveys and Partial Least Squares (PLS) path modelling to analyse the relationship between retailing characteristics and customer engagement behaviour. (Chekembayeva, Garaus, & Schmidt, 2023) employ experimental methods to investigate consumer responses to AR mobile retailing apps. (Scholz & Duffy, 2018) utilize ethnography to delve

into consumer experiences with AR shopping apps.

DISCUSSION

The landscape of modern retailing is undergoing a profound transformation, shaped by technological advancements, and shifting consumer behaviours. The reviewed studies have extensively explored various dimensions of this evolution, shedding light on crucial aspects that influence customer experiences and engagement across the retail journey. (Tueanrat, Papagiannidis, & Alamanos, 2021) underscore the significance of customer co-creation behaviour and experiential values throughout the journey, emphasizing the dynamic nature of interactions between consumers and retailers. (Ameen, Tarhini, & Shah, 2021) examine the nuanced preferences of male and female shoppers, elucidating the role of social interaction and personalization in shaping shopping experiences. (Cowan & Ketron, 2019) differentiate between high and low-involvement scenarios, demonstrating how Virtual Reality (VR) influences consumer responses through imagination and interactivity. As the paradigm shifts from goods-dominant to service-dominant logic, (Pantano, Priporas, & Dennis, 2018) highlight the importance of consumer needs and digital transformation in fostering innovation in smart retailing. (Lyu, Krasonikolakis, & Vrontis, 2022) integrate various models to explore the impact of store atmosphere on consumer behaviour, emphasizing the holistic nature of consumer experiences. (Chong, Yu, Keeling, & de Ruyter, 2021) analyse the operation of AI chatbots in retailing through the lens of Social Cognitive Theory, underscoring the interplay between individual decision-making and collective actions. (Davis & Aslam, 2024; Silva, de Cicco, Vlačić, & Elmashhara, 2023) study the rapid evolution of Augmented Reality (AR) technology and its implications for fashion retail, highlighting the importance of transparency and trustworthiness in mitigating associated risks. (Evanschitzky, Iyer, Pillai, Kenning, & Schütte, 2015) emphasize the deployment of Self-Service Technologies (SSTs) in retail settings, while (Roy, Balaji, Quazi, & Quaddus, 2018) stress the significance of trust and enjoyment in driving consumer engagement with new technologies. The integration of technology into omnichannel retailing, as emphasized by (van Esch, et al., 2019; Tyrväinen, Karjaluoto, & Saarijärvi, 2020) holds immense potential for enhancing customer experiences and operational efficiency. However, ethical considerations and privacy concerns, as addressed by (Giroux, Kim, Lee, & Park, 2022; Pizzi & Scarpi, 2020) necessitate a balanced approach toward technology adoption. In addition, personalized experiences, and emotional bonds are fundamental in enhancing consumer engagement and loyalty (Lee, Chan, Chong, & Thadani, 2019).

As the process of technology integration becomes smoother across multiple retail channels which include online and offline, this factor has been considered critical by the merchants who are hoping to create outstanding consumer experiences and increase operational efficiency. This integration will give the retail an overall retail system that will be not only unified, but also integrated, which will be good for a broad range of consumer interests and behaviours. (Tyrväinen, Karjaluoto, & Saarijärvi, 2020; van Esch, et al., 2019) put technology at the core of omnichannel retailing. They suggest that well-integrated systems create a more convenient experience for consumers, providing a perfect continuity from browsing to buying in the online and offline environments. This would then lead to customer satisfaction and loyalty by delivering unbroken experiences on various channels and streamlining business operations at the back end.

Posit 1: Integrating technology effectively across online and offline channels enhances customer experiences and operational efficiency in omnichannel retailing

Retailers can try to enhance customer experience to business by applying cutting-edge technologies such as AI, AR, VR and IoT, to deliver personalized experiences to customers. These individualized experiences create emotional bonds between customers and brands, leading to higher engagement and brand loyalty. (Pillai, Sivathanu, & Dwivedi, 2020) argue that personalized experiences are key to increasing customer engagement and retention. Retailers can leverage targeted recommendations and personalized interactions across channels by studying customer data and their preferences using AI algorithms. In a similar way, AR and VR technologies are immersive and allow clients to enjoy memorable experiences that they can relate to the business.

Posit 2: Personalized experiences driven by AI, AR, VR, and IoT technologies contribute to increased customer engagement and loyalty

With the increasing use of customer data by retailers to personalize the experience and improve efficiency, maintaining consumer trust through ethical data practices emerges as a vital task. Transparency in data collection, storage, and usage fosters confidence and trust in customers and thus they are more likely to use the retail technologies. (Giroux, Kim, Lee, & Park, 2022; Pizzi & Scarpi, 2020) stress the role of ethical considerations in the deployment of retail technology. Consumers are becoming increasingly apprehensive about privacy and data

security matters, requiring companies to be open and transparent with their data practices. Not managing these issues will lead to mistrust and resistance in consumers and, therefore, will hinder the adoption of retail technologies.

Posit 3: Ethical considerations and transparency in data usage are critical for maintaining consumer trust in retail technology implementations

Through AR and VR, customers are able to engage in realistic and interactive experiences that make them feel more connected with the brands and their products. AR and VR enhance shopping experience by giving shoppers the opportunity to see products in real life settings and interact with virtual surroundings. (Hilken, et al., 2022; Cowan, Spielmann, Horn, & Griffart, 2021) demonstrate that virtual as well as augmented reality (VR and AR) tend to increase consumer attitudes and purchase intentions. They provide the brands with one-of-a-kind and engaging experiences that distinguish them from their competitors, thereby leading to higher consumer loyalty and recommendation.

Posit 4: AR and VR technologies provide immersive experiences that positively influence consumer attitudes, purchase intentions, and brand perceptions

Consumer readiness and willingness to implement new retail technologies are key success drivers of smart retail initiatives. Consumers' trust in the technology, usefulness, and ease of use of the novel retail technologies influence their attitudes and behaviours toward its adoption. (Chen & Chang, 2023; Roy, Balaji, Quazi, & Quaddus, 2018) highlight the fact that consumers' preparedness, or lack thereof, can ultimately shape their experience when dealing with smart retail technologies. Retailers must address consumers' concerns regarding technology reliability, privacy, and ease of use to encourage adoption. By enhancing trust and perceived usefulness, retailers can mitigate resistance to new technologies and promote greater consumer acceptance and engagement.

Posit 5: Consumer readiness for technology adoption, including trust and perceived usefulness, significantly influences their engagement with smart retail technologies

Integrating physical and digital touchpoints seamlessly enables retailers to deliver holistic and cohesive customer experiences that transcend traditional boundaries. By blurring the lines between online and offline channels, retailers can provide convenience, personalization, and consistency throughout the customer journey, ultimately fostering satisfaction and loyalty. (Lee, Chan, Chong, & Thadani, 2019; Gao & Su, 2017; Gao & Su, 2017) highlight the importance of seamless integration in driving customer satisfaction and loyalty. Customers are increasingly seeking effortless interactions with the retailers through their preferred channels that offer seamless integration into their daily lives. Retailers who effectively integrate both the physical and digital interactions can offer more convenience and quality interactions, which in turn leads to increased satisfaction and loyalty among customers.

Posit 6: Seamless integration of physical and digital touchpoints enhances customer experiences and drives customer satisfaction and loyalty

Privacy and data security concerns greatly affect consumers' opinions and the adoption of retail tech. To mitigate the consumers' worries and build trust in retailers' technology implementations, retailers should emphasize transparent data practices and strong security strategies. Research shows that consumers' attitudes as well as the market penetration of retail technologies are influenced by privacy concerns (Silva, de Cicco, Vlačić, & Elmashhara, 2023; Pizzi & Scarpi, 2020). Consumers are increasingly uneasy about sharing personal data due to data breaches and cases of misuse. Retailers that implement clear data process policies and show their customers that they value privacy can allay these fears and help to build trust in their technical offerings.

Posit 7: Privacy concerns and data security considerations impact consumer perceptions and adoption of retail technologies, necessitating transparent data practices

The novelty, effectiveness and quality of interaction offered by smart technologies in retailing have a considerate impact on customer engagement behaviour and attitudes towards technology adoption. People tend to adopt and use technologies that are new and offer novel features, tangible benefits and easy experiences for interaction. (Roy, Singh, & Shabnam, 2021; Gao & Su, 2017; Gao & Su, 2017) argue that retailers who incorporate technology that is innovative and effective to improve customer experience and speed up interactions will boost consumer involvement and acceptance.

Posit 8: Novelty, effectiveness, and interaction quality of smart retail technologies influence customer engagement behaviours and attitudes toward technology adoption

Emotional interactions that evoke positive feelings and build emotional connections between consumers and brands in turn lead to stronger consumer-brand relationships and advocacy. Knowing and meeting the preferences of different groups of people and their demands help retailers turn their clients into loyal customers and advocates. (Tyrväinen, Karjaluoto, & Saarijärvi, 2020; Scholz & Duffy, 2018) emphasize the role of emotional connections as a means of developing consumer-brand relationships and advocacy. The retailers who focus on personalized experience and appreciate their customers emotionally can build long term relationships and win loyalty and advocacy.

Posit 9: Emotional connections facilitated by personalized experiences lead to stronger consumer-brand relationships and advocacy

Omnichannel retail strategies that go beyond mere combining online and offline channels and instead create a seamless shopping experience between different channels are called for. To meet a consumer's expectations of delivering an omnichannel experience retailers should take into account consumer preferences, technical capabilities, and operational challenges. By understanding and properly solving these issues, merchants will be able to deliver coherent and enjoyable experiences that meets the dynamic demands of contemporary consumers. (van Esch, et al., 2019; Lee, Chan, Chong, & Thadani, 2019) underline the difficulties of designing a coherent omnichannel retail strategy. Retailers deal with the different challenges that arise like maintaining warehouse inventory in multiple channels, synchronizing consumer data, and keeping their branding and messages consistent. To address these issues, companies must invest in high-tech infrastructure, data analytics know-how, and operational processes that allow retailers to deliver omnichannel interactions with increased ease.

Posit 10: Adoption of omnichannel retail strategies requires careful consideration of consumer preferences, technological capabilities, and operational challenges to deliver seamless and satisfactory customer experiences.

CONCLUSION

This review gives the readers an in-depth view of the new retailing environment that has emerged from the data gathered by different scholarly works. It explores different dimensions of retail transformation, emphasizing the lively exchange between consumer preferences and the technology. Among the key topics discussed are the role of consumer co-creation behaviour along with the experiential values in the shopping process, the differences between male and female consumers, and the contribution of immersive technologies such as VR and AR. In addition, the analysis examines the transition of the dominant logic from goods to services in retailing, highlighting the critical role of digital transformation that is intended to foster innovation. Ethical considerations, notably data protection and transparency, are variables which shape consumer perception and adoption of retail technologies. The assimilation of technology across the online and physical channels, as well as the personalized experiences powered by AI, AR, VR, and IoT, are thought to be important elements as they help in increasing customer engagement and loyalty. In addition, the report accentuates the significance of uninterrupted omnichannel interactions and emotional connections between customers and companies for the cultivation of lasting partnerships and advocacy. This review delivers meaningful insights for the retailers and the academicians, providing a comprehensive understanding of the complexities that will define the future of retail.

Implications

Academic Implications

There is a need to study the dynamic nature of consumer contacts and co-creation practices as the consumers go through the retail process, with the primary focus on experiential values and personalized experiences. Researchers should also investigate gender disparities in the buying patterns, especially those related to social interaction and personalization, to create tailored marketing strategies. This study also highlights the need to study the hidden aspects of emerging technologies like Virtual Reality (VR) and Augmented Reality (AR) on the consumer behaviour, while simultaneously dealing with the transparency and trustworthiness issues that these technologies raise, for merchants to exploit these technologies successfully. Ethical issues of data usage and privacy concerns that accompany integration of technology should also be studied by researchers with emphasis on open data standards. Researchers should also study the issues and the opportunities that come from the implementation of omnichannel retail strategies with focus on integration of digital and physical touchpoints to improve consumers' experiences, leading to increased customer satisfaction and loyalty.

Practical Implications

Consumer co-creation behaviour should be given a high priority along with evolving experiential values at every

step of the retail process for the sake of positive customer experience. This means involving consumers in the shop activities, as well as utilizing technological devices such as VR and AR to personalize experiences and target specific interests. Identifying the dominant shopping behaviour of the different consumer categories, which include gender differences in the shopping experiences, highlight the role of social contact and personalization in the shaping of retail experiences. Utilizing interactive technologies like Virtual Reality (VR) and Augmented Reality (AR) can lead to higher levels of involvement and should provide brands with the ability to distinguish themselves in a competitive environment. Seamless incorporation of technology across online and offline channels also plays an important part in providing consistent omnichannel experiences. Technology infrastructure, data analytics capability, and operational processes are needed to unify consumer data, and maintain consistency of branding and messaging. Ethical considerations as well as data transparency are some of the important issues that need to be investigated to deal with privacy issues and instil consumer trust.

Limitations

The studies that have been examined here are mostly from the Western context which may limit the transferability of the findings to other cultural and geographical scenarios. In addition, the review focuses mainly on the theoretical literature and does not consider the practical insights and real-world applications of retail technologies.

Future Research Directions

Future research should investigate the nuances of the interactions of new technologies, evolving consumer behaviours, and the constantly changing retail environment. Subsequently, a future study may consider the far-reaching effects of consumer co-creation behaviour and the experiential values throughout the omnichannel retail journey, considering how these dynamics develop over time and circumstances that are different. The role of emerging technologies, such as Virtual Reality (VR) and Augmented Reality (AR), in inducing the changes in the response of customers and their engagement is a subject that requires further research, namely, in high- and low-involvement situations, but also, ethical implications should be considered. Research might also investigate how to integrate user interface technology into omnichannel shopping, examining how better integration across online and offline channels can improve customer experiences and operational efficiency. The body of literature would also benefit from a better understanding of the role of trust, openness, and privacy in consumer views and adoption of retail technology, especially as retailers offer personalized experiences and exploit consumer data.

1. REFERENCES

[1] Alesanco-Llorente, M., Reinares-Lara, E., Pelegrín-Borondo, J., & Olarte-Pascual, C. (2023). Mobile-assisted showrooming behavior and the (r)evolution of retail: The moderating effect of gender on the adoption of mobile augmented reality. *Technological Forecasting and Social Change*.

[2] Alexander, B., & Kent, A. (2022). Change in technology-enabled omnichannel customer experiences in-store. *Journal of Retailing and Consumer Services*.

[3] Ameen, N., Tarhini, A., & Shah, M. (2021). A cross cultural study of gender differences in omnichannel retailing contexts. *Journal of Retailing and Consumer Services*.

[4] Bonnin, G. (2020). The roles of perceived risk, attractiveness of the online store and familiarity with AR in the influence of AR on patronage intention. *Journal of Retailing and Consumer Services*.

[5] Chekembayeva, G., Garaus, M., & Schmidt, O. (2023). The role of time convenience and (anticipated) emotions in AR mobile retailing application adoption. *Journal of Retailing and Consumer Services*.

[6] Chen, J., & Chang, Y. (2023). How smart technology empowers consumers in smart retail stores? The perspective of technology readiness and situational factors. *Electronic Markets*.

[7] Chong, T., Yu, T., Keeling, D., & de Ruyter, K. (2021). AI-chatbots on the services frontline addressing the challenges and opportunities of agency. *Journal of Retailing and Consumer Services*.

[8] Cowan, K., & Ketron, S. (2019). A dual model of product involvement for effective virtual reality: The roles of imagination, co-creation, telepresence, and interactivity. *Journal of Business Research*.

[9] Cowan, K., Spielmann, N., Horn, E., & Griffart, C. (2021). Perception is reality… How digital retail environments influence brand perceptions through presence. *Journal of Business Research*.

[10] Dacko, S. (2017). Enabling smart retail settings via mobile augmented reality shopping apps. *Technological Forecasting and Social Change*.

[11] Davis, L., & Aslam, U. (2024). Analyzing consumer expectations and experiences of Augmented Reality (AR) apps in the fashion retail sector. *Journal of Retailing and Consumer Services*.

[12] Evanschitzky, H., Iyer, G., Pillai, K., Kenning, P., & Schütte, R. (2015). Consumer trial, continuous use, and economic benefits of a retail service innovation: The case of the personal shopping assistant. *Journal of Product Innovation Management*.

[13] Frasquet, M., Ieva, M., & Mollá-Descals, A. (2024). Customer inspiration in retailing: The role of perceived novelty and customer loyalty across offline and online channels. *Journal of Retailing and Consumer Services*.

[14] Gao, F., & Su, X. (2017). Omnichannel retail operations with buy-online-and-pick-up-in-store. *Management Science*.

[15] Gao, F., & Su, X. (2017). Online and offline information for omnichannel retailing. *Manufacturing and Service Operations Management*.

[16] Gatter, S., Hüttl-Maack, V., & Rauschnabel, P. (2022). Can augmented reality satisfy consumers' need for touch? *Psychology and Marketing*.

[17] Giroux, M., Kim, J., Lee, J., & Park, J. (2022). Artificial Intelligence and Declined Guilt: Retailing Morality Comparison Between Human and AI. *Journal of Business Ethics*.

[18] Grewal, D., Benoit, S., Noble, S., Guha, A., Ahlbom, C.-P., & Nordfält, J. (2023). Leveraging In-Store Technology and AI: Increasing Customer and Employee Efficiency and Enhancing their Experiences. *Journal of Retailing*.

[19] Grewal, D., Noble, S., Roggeveen, A., & Nordfalt, J. (2020). The future of in-store technology. *Journal of the Academy of Marketing Science*.

[20] Heller, J., Chylinski, M., de Ruyter, K., Mahr, D., & Keeling, D. (2019). Let Me Imagine That for You: Transforming the Retail Frontline Through Augmenting Customer Mental Imagery Ability. *Journal of Retailing*.

[21] Hilken, T., Chylinski, M., Keeling, D., Heller, J., de Ruyter, K., & Mahr, D. (2022). How to strategically choose or combine augmented and virtual reality for improved online experiential retailing. *Psychology and Marketing*.

[22] Jocevski, M. (2020). Blurring the Lines between Physical and Digital Spaces: Business Model Innovation in Retailing. *California Management Review*.

[23] Kakaria, S., Saffari, F., Z. Ramsøy, T., & Bigné, E. (2023). Cognitive load during planned and unplanned virtual shopping: Evidence from a neurophysiological perspective. *International Journal of Information Management*.

[24] Lee, Z., Chan, T., Chong, A., & Thadani, D. (2019). Customer engagement through omnichannel retailing: The effects of channel integration quality. *Industrial Marketing Management*.

[25] Lewis, J., Whysall, P., & Foster, C. (2014). Drivers and technology-related obstacles in moving to multichannel retailing. *International Journal of Electronic Commerce*.

[26] Lyu, J., Krasonikolakis, I., & Vrontis, D. (2022). A systematic literature review of store atmosphere in alternative retail commerce channels. *Journal of Business Research*.

[27] Nikhashemi, S., Knight, H., Nusair, K., & Liat, C. (2021). Augmented reality in smart retailing: A (n) (A) Symmetric Approach to continuous intention to use retail brands' mobile AR apps. *Journal of Retailing and Consumer Services*.

[28] Pantano, E. (2016). Engaging consumer through the storefront: Evidences from integrating interactive technologies. *Journal of Retailing and Consumer Services*.

[29] Pantano, E., & Pizzi, G. (2020). Forecasting artificial intelligence on online customer assistance: Evidence from chatbot patents analysis. *Journal of Retailing and Consumer Services*.

[30] Pantano, E., & Viassone, M. (2015). Engaging consumers on new integrated multichannel retail settings: Challenges for retailers. *Journal of Retailing and Consumer Services*.

[31] Pantano, E., Priporas, C., & Dennis, C. (2018). A new approach to retailing for successful competition in the new smart scenario. *International Journal of Retail and Distribution Management*.

[32] Pantano, E., Viassone, M., Boardman, R., & Dennis, C. (2022). Inclusive or exclusive? Investigating how retail technology can reduce old consumers' barriers to shopping. *Journal of Retailing and Consumer Services*.

[33] Pillai, R., Sivathanu, B., & Dwivedi, Y. (2020). Shopping intention at AI-powered automated retail stores (AIPARS). *Journal of Retailing and Consumer Services*.

[34] Pizzi, G., & Scarpi, D. (2020). Privacy threats with retail technologies: A consumer perspective. *Journal of Retailing and Consumer Services*.

[35] Plotkina, D., & Saurel, H. (2019). Me or just like me? The role of virtual try-on and physical appearance in apparel M-retailing. *Journal of Retailing and Consumer Services*.

[36] Poushneh, A. (2021). How close do we feel to virtual product to make a purchase decision? Impact of perceived proximity to virtual product and temporal purchase intention. *Journal of Retailing and Consumer Services*.

[37] Riegger, A., Klein, J., Merfeld, K., & Henkel, S. (2021). Technology-enabled personalization in retail stores: Understanding drivers and barriers. *Journal of Business Research*.

[38] Riegger, A., Merfeld, K., Klein, J., & Henkel, S. (2022). Technology-enabled personalization: Impact of smart technology choice on consumer shopping behavior. *Technological Forecasting and Social Change*.

[39] Roe, M., Spanaki, K., Ioannou, A., Zamani, E., & Giannakis, M. (2022). Drivers and challenges of internet of things diffusion in smart stores: A field exploration. *Technological Forecasting and Social Change*.

[40] Roy, S., Balaji, M., Quazi, A., & Quaddus, M. (2018). Predictors of customer acceptance of and resistance to smart technologies in the retail sector. *Journal of Retailing and Consumer Services*.

[41] Roy, S., Singh, G., & Shabnam, S. (2021). Modelling Customer Engagement Behaviour in Smart Retailing. *Australasian Journal of Information Systems*.

[42] Scholz, J., & Duffy, K. (2018). We ARe at home: How augmented reality reshapes mobile marketing and consumer-brand relationships. *Journal of Retailing and Consumer Services*.

[43] Silva, S., de Cicco, R., Vlačić, B., & Elmashhara, M. (2023). Using chatbots in e-retailing – how to mitigate perceived risk and enhance the flow experience. *International Journal of Retail and Distribution Management*.

[44] Song, C., & Kim, Y. (2021). Predictors of consumers' willingness to share personal information with fashion sales robots. *Journal of Retailing and Consumer Services*.

[45] Thaichon, P., Quach, S., Barari, M., & Nguyen, M. (2023). Exploring the Role of Omnichannel Retailing Technologies: Future Research Directions. *Australasian Marketing Journal*.

[46] Trenz, M., Veit, D., & Tan, C. (2020). Disentangling the impact of omnichannel integration on consumer behavior in integrated sales channels. *MIS Quarterly*.

[47] Tueanrat, Y., Papagiannidis, S., & Alamanos, E. (2021). A conceptual framework of the antecedents of customer journey satisfaction in omnichannel retailing. *Journal of Retailing and Consumer Services*.

[48] Tyrväinen, O., Karjaluoto, H., & Saarijärvi, H. (2020). Personalization and hedonic motivation in creating customer experiences and loyalty in omnichannel retail. *Journal of Retailing and Consumer Services*.

[49] van Esch, P., Arli, D., Gheshlaghi, M., Andonopoulos, V., von der Heidt, T., & Northey, G. (2019). Anthropomorphism and augmented reality in the retail environment. *Journal of Retailing and Consumer Services*.

[50] van Kerrebroeck, H., Willems, K., & Brengman, M. (2017). Touching the void: Exploring consumer perspectives on touch-enabling technologies in online retailing. *International Journal of Retail and Distribution Management*.

[51] Verhoef, P. (2021). Omni-channel retailing: some reflections. *Journal of Strategic Marketing*.