

An explorative Impact Analysis of Digitalization in Automotive Customer Journey and Retail Experience

A Master's Thesis submitted for the degree of
“Master of Business Administration”

supervised by
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Affidavit

I, **KARLA ANDREA TENA OCHOA**, hereby declare

1. that I am the sole author of the present Master's Thesis, "AN EXPLORATIVE IMPACT ANALYSIS OF DIGITALIZATION IN AUTOMOTIVE CUSTOMER JOURNEY AND RETAIL EXPERIENCE", 119 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and
2. that I have not prior to this date submitted this Master's Thesis as an examination paper in any form in Austria or abroad.

Vienna, 17.03.2023

Signature

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Abstract

Customer Journey in the Automotive Industry remained essentially unchanged for decades. Customers, however, are getting used to memorable digital interactions when purchasing or interacting with brands such as the ones in fashion industry as a front runner in digitalization. The current business model in automotive industry works through third party dealership sales, allowing a heterogeneous customer journey throughout its markets. For this reason, an explorative analysis of digitalization is needed, moreover a benchmark with a referent in retail and digitalization would be relevant, to compare and set a clear outlook of where automotive stands, evaluate use cases and think of applications for automotive; this benchmark would be the fashion industry. This thesis aims to primarily explore and describe the current digital innovations in the customer journey and retail experiences in automotive industry, to find out which are the phygital¹ experiences integrated, especially in the early stages of the customer journey. For this research an explorative approach was taken into consideration. The methodical approach for the theoretical part was integrative, mainly focused on sources from scientific journals, books and papers. For solving the primary aim and give an overview of the status and latest published innovations in both observed industries, applied research was carried out. To benchmark properly, the ten most valuable brands of automotive and fashion industry (according to Brand Finance, 2022) were analyzed under the same search key terms, for example: brand + digitalization, brand + digital retail, brand + phygital experience; special relevance was given to the most recent results.

The main findings showed that automotive is aiming for an omnichannel experience in the customer journey, however despite having nearly the same channels as fashion, in automotive they still work isolated or fulfilling different purposes. For this integration, a shift in the business model towards direct sales is already happening in some markets and in others, a higher integration with dealer systems. The relevance of unique experiences in retail is also gaining importance. A clear trend on pop-up shops, VR and AR integration, presence in Metaverse and overall increasing convenience for the customer is key. Most of the current digital innovations in Automotive are focused on hedonic purposes and relegating the utilitarian component, something that fashion has prioritized more.

All in all, it can be observed that most of the technologies are present in both industries, but the use cases and integrations from fashion can be used to learn and apply in automotive. Further research can focus on a concrete market for use cases and integrations locally.

¹ *Phygital*” refers to the blending of digital experiences with physical ones through unique and often interactive experiences for the user, sometimes requiring real-time interactions with a person—through chat, call centers, or remote advice. (McKinsey, 2021)

Dedication

First and foremost, to God, my parents, my sister, and my brother, who have been supporting me throughout the way and despite the distance. To Ximena, Carlos and Sascha for the support at work while handling university assignments and lectures. To all my colleagues from the MBA for making this a valuable experience and allowing me to learn from their perspectives, markets, and experiences. To Dr. Schumacher for the support, guidance, and encouragement throughout this writing process.

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1 Introduction

The automotive industry is undergoing massive changes nowadays; from production, the different propulsion systems to business models, every single OEM is being revolutionized. This industry has always been fast evolving and is one of the leading industries in digitalization. This can be noted in the manufacturing processes and in the products as well, however, focusing on the sales experience and the initial phases of customer journey itself, there might be considerable room for improvement.

Covid-19 Crisis in 2020 showed customer pain points and pushed all industries into shifting faster to omnichannel strategies where customers could have access to any product in any channel they would want to. According to McKinsey's Digital Sentiment Survey 2021², during that year, there was a growth of approximately 20% fully digital users in various industries across regions. McKinsey's Digital Sentiment Survey in 2022³ showed that there is an expected growth in offline experiences in the upcoming months, these results don't mean that digital users will stop interacting on digital and online platforms, but suggesting instead, the rising importance of the so called "phygital"⁴ experiences.

Customer behavior changes, expectations, and the fast trends in digitalization are revolutionizing and, in some cases, even disrupting the way in which the automotive industry is working but it is not the only one. To have a deeper look into the main changes, this thesis analyzes the most recent innovations in the early stages of the customer journey and retail experience in the Automotive Industry while comparing to the fashion industry. Fashion is like automotive industry, because they both fulfill a basic need (dressing or mobility) but give an extra value added to the consumer. Fashion clothing allows the customer to express themselves and can be personalized, just like a car. Fashion is also a relevant benchmark industry because customers in general are in close contact and often interacting with it. It is a fast-adapting industry, not only in products, but also in reshaping the sales channels and experiences. In both industries, there are some brands and products aimed for mass consumption and some others for a more exclusive target. When talking about premium/ luxury cars and premium/luxury fashion, they are not usually impulsive choices, because they require significant investment, however there is still an important emotional involvement as well. Purchasing both types of goods, provides a sense of status, belonging and fulfillment which are in the top two levels of Maslow's pyramid of needs⁵.

² McKinsey, 2021

³ McKinsey, 2022

⁴ "Phygital" refers to the blending of digital experiences with physical ones through unique and often interactive experiences for the user, sometimes requiring real-time interactions with a person—through chat, call centers, or remote advice. (McKinsey, 2021)

⁵ Acevedo, 2018

Consumer interest in the luxury category has been on a growing trend. As reported by Bain⁶, luxury cars are the biggest portion of the luxury market and reached in 2021 \$551 billion, around 9% more than 2020. According to this same study, personal luxury goods are also on a growing trend with the same customer demographics, the generations Y and Z, and will represent 70% of global luxury purchases. These brands, like automotive ones, used to be primarily sold in physical retail stores, but due to the consumer changes, are also adapting to online channels with an omnichannel approach but also adapting the “phygital” experiences to enhance in store experience.

1.1 Area of research

To define the area of research for this thesis, the classification of Web of Science⁷ was considered. From the five categories, Arts & Humanities, Life Sciences & Biomedicine, Physical Sciences, Social Sciences and Technology, the most suitable for this research is Social Sciences. The area of research of this thesis is mainly within the field of social sciences⁸. For a more detailed classification, the topics considered, mainly fall into Business and Economy and Cultural studies Categories. The main research, theories and addressed within this broad area of research include: customer journey, digitalization, retail transformation, automotive industry, while benchmarking same concepts within the fashion retail industry. The aim of the theoretical approach is to provide a general understanding on what is a customer journey, the stages, the main drivers to decide, some cultural aspects as well as an overview of digitalization, trends, technologies, and strategies. Furthermore, complementing with applied research on current trends, the aim is to give a broad outlook of what is currently being implemented or in the digital landscape of automotive and fashion industries.

1.2 Problem definition and research question

Buying a car is a time-consuming purchase experience⁹. It is often considered like a not a very enjoyable nor easy process and it usually comes accompanied with many questions and a considerable amount of money invested. On the other hand, purchasing fashion goods, in general, provides a smooth, fast, easy and convenient experience¹⁰. In some cases, it even predicts or foresees possible forthcoming transactions, making the whole process much easier. On both industries, there is a wide price and product range according to the customer's

⁶ Bain & Company, 2021; Bain & Company, 2022

⁷ Web of Science, 2022

⁸ Web of Science, 2022

⁹ Skier, 2017

¹⁰ McKinsey & Company, 2021

needs and wishes, however, are the purchase touchpoints, technologies, and customer interactions of automotive and fashion industries that different?

With these premises in mind, three key questions triggered the research for this thesis:

- a) What is currently disrupting the customer journey and retail experiences in automotive industry?
- b) Are there any phygital experiences integrated in the early stages of the customer journey?
- c) What is going on in other industries, like fashion, and how can automotive learn from it?

Explorative Analysis of the Digitalization of the Automotive Customer Journey and Retail Experience, is the title of this thesis, and as it states, the aim of this thesis is to provide a deeper understanding and outlook of current digitalization trends and technologies in the automotive retail and understand the preferences of customers in this changing environment. This study will show what Automotive brands are developing in different markets and how business models are being disrupted to serve the customer in the best possible way. At the same time, this research is expected to deliver insights from a benchmark industry, fashion retail, to find opportunities that would enhance the automotive retail experience.

Knowing how the customer interacts with a brand or product in the different stages of a decision is called “Customer Journey”. A customer journey map is a visual story of how the customers interaction with brands. In general, it comprises customer personas, a purchase journey, touchpoints and an analysis of customers’ actions, goals, needs, emotional state and opportunities for the brand¹¹. The purchase journey has different phases or names of them, depending on the author, but essentially, they describe the same. This thesis will refer to the following 5: Awareness, Consideration, Purchase/Decision, Retention, and Advocacy¹².

In the consideration phase, regardless of the good or service being evaluated, there is a level of involvement from the customer prior to making the purchase decision. This level of involvement is often divided into low or high¹³. Low-involvement purchases are less rational purchases that can be consumed more often and “passively”, while high involvement usually requires deeper thought and rationalization. These purchases tend to involve a higher investment and careful consideration. Translating into a simple situation, buying a Zara T-shirt and buying a car, fall into different levels of customer involvement, despite this difference, it doesn’t mean that high involvement products can only be purchased in physical retailers.

¹¹ Clinehens, 2020

¹² LaFleur, 2022

¹³ Kotler, 1994; Baker, 2016

When Tesla arrived in the market, it challenged the industry not only with the product, but with the retail experience as well. The American brand offers online sales, custom product and even financing options in one website. It can be paid with apple pay or inserting a credit card, paying a 250-dollar non-refundable order fee and that is all it takes¹⁴. After that, the customer has enough time to upload the financing documents and follow the rest of the steps from the comfort of their computer or phone.

Traditional automotive players like Mercedes-Benz, BMW, Audi, Volvo, Stellantis, amongst others, are working on online configurators and online stores. As we speak, there are pilot markets with new business models implemented¹⁵ each manufacturer has a different approach or minor variations according to markets and product complexity but mostly focusing on direct sales. As relevant as the online channels might be, there is still substantial research that backs the importance of a physical location for high involvement purchases¹⁶.

In fashion retail, especially after the pandemic, it has been proven that people are returning to stores, however they don't want just to buy, but to experience something different¹⁷. Fast fashion brands and luxury brands are observing this need and reacting to it. Deriving from the customer journey in both automotive and luxury fashion industry and the digitalization trends, this thesis aims to explain the current situation in the automotive industry and foresee possible integrations and trends from the fashion industry that could potentially be adapted.

1.3 Thesis structure

To understand the structure of this thesis, it is important to know that the first chapter is mainly focused on the research purpose, structure, and methodology. The second chapter addresses theories regarding digitalization and the main customer journey phases. Since the purpose of this research focuses on analyzing Automotive Industry, the third chapter portrays current state of the art customer journey process. The following fourth chapter contains research joining the two main topics: Digitalization and trends in the customer journey, this structure leads to the fifth chapter in which an empirical web-based search was carried out. The purpose of the fifth chapter is to analyze a benchmark industry: fashion and compare it to automotive in the latest retail & sales channel innovations. The technologies and disruptions found are explained in a descriptive way. Chapter six is focused on summarizing and clustering the diverse technologies and findings, to find clear trends, usages and purposes of the disruptions, technologies and changes. On chapter seventh, a deep dive into these trends will be made,

¹⁴ TESLA, 2022

¹⁵ Sehoon, et al., 2022

¹⁶ Zhang, et al., 2021

¹⁷ Scand IT, 2022

alongside the main concepts reviewed in the theoretical chapters. Finally, the thesis closes with a conclusions and reflection chapter, acknowledging the trends that could be found and referring once again to the results, discrepancies to what was expected vs what was found and some ideas on possible further research. Overall, the thesis would be covering a mix of theory and applied examples of practices already being implemented in the different industries.

1.4 Methodical approach and expected results.

Automotive, like every other industry, is evolving and being pushed to digitalize and to innovate towards what it is offered to the customer. The purpose of this study is to explore and describe what the automotive industry is doing and benchmark it with a fast-evolving industry: fashion.

This thesis is of explorative and constructive nature, it aims to explain what digitalization and customer journey stand for. At the same time, it seeks to give an overview of the current status and latest published innovations in both observed industries.

The approach of the given thesis is based on theory and recent research around digitalization, business models, customer, behavior, and consumption preferences. This will set a basis to thoroughly analyze the current automotive and retail landscape. The focus is on the years 2020-2023, especially regarding new technologies and transformation, to gather the most recent innovations that have taken place in retail for these two industries.

As this is applied research, real examples will be observed and analyzed to make a hypothesis on the trends and disruptors that are most likely going to be widespread as the next standard automotive retail experience.

The expected result would be to identify current and possible future digital trends impacting the customer journey and experience. The aim is to find what the customers are currently using in their day to day interactions with fashion, that would be expected to be implemented in other industries like automotive.

For this research the method to solve the research questions, was to firstly gather relevant theories and then research 10 top fashion brands and 10 top players in automotive industry. Having the brands in mind, same research terms would be done on public search engines to find news or brand statements about their most recent innovations in retail. After explaining and understanding them, a summary and classification of them was made to analyze and explain the findings, while contributing with ideas that could be applied for automotive.

This research is limited to publicly available information. Most company announcements and media coverage focus on early stages of the customer journey (awareness, consideration, and purchase), so innovations in the retention and advocacy stages might not be extensively

mentioned due to lack of publicly available data and therefore lack of information to make trends and assumptions.

2 Literature Research and Analysis

2.1 Methodical Approach to Literature Research

To gather the most relevant literature for this study, the methodical approach to literature research will be integrative. In this paper, not all articles including the terms, digitalization, customer journey, automotive industry, or fashion retail industry will be considered, but different perspectives will be observed. Books, journals, magazines, and papers will be considered for this thesis and specially for the latest trends, the most recent online sources will be reviewed.

The search strategy will include as main key terms: Customer journey, digitalization, automotive industry, retail industry, fashion industry, sales channels. The search will be conducted on EBSCO Host mainly and consulting scientific journals and papers. A secondary support literature research will be carried out online on open search engines to gather information about what the brands are currently doing and publishing. For this applied search on current innovations, 10 fashion brands and 10 automotive brands are considered. Each of them will have same research key term criteria to make sure the most relevant data will be found and the same principles are covered for each, The search terms are: Brand+ Digital Retail; Brand + Digitalization; Brand + Point of sale; Brand + Phygital Experience; Brand + Innovative Store; Brand + Innovative Showroom; Brand + VR; Brand + AR; Brand + Mobile Devices; Brand + Metaverse; Brand + NFTs.

If an innovation was not clearly explained in a first article found with this key terms, additional research was made for clarification purposes.

2.2 Findings Digitalization

Digitalization is considered, by some, to be the 4th industrial revolution¹⁸, it is a phenomenon that is currently being witnessed and experienced. Businesses must transform and transition to the new reality based on what technology is now offering. This revolution proposes blurred boundaries between physical and digital worlds. For this change, most companies have already identified the benefits in process and financial optimization that technology might bring if they incorporate it properly, others have found the customer experience benefits that might

¹⁸ Nogalski & Bula, 2021

be achieved as well. Digital transformation is the overall process outcome of digitalization across an entire organization.¹⁹

2.2.1 Digitization vs. Digitalization

As previously mentioned, digitalization is an enabler to achieving digital transformation. For this, it is important to note and differentiate two terms that usually get misused. Digitization and Digitalization are two terms that are often used interchangeable but have different meanings. Digitization is transforming an analog document into a digital one.²⁰ A simple example is scanning a photo or a physical document to have a digital file. Digitalization is more complex since it implies using digital technologies to disrupt and change a current business model. Digitalization provides tools to improve the way the business is running and create value adding activities.²¹ Digitalization requires new ways of thinking since its use will unlock different ways of approaching the business and will transform it. It is important to note that while some technologies might be new, it is not restrictive to it, the innovation and disruption in digitalization comes from new combinations.²²

2.2.2 Strategic Characteristics in the Digital Age

Whether the idea is to implement a single digitalization project or attempt a complete digital transformation within an organization, any digitalization effort requires resources allocated to reach a successful implementation. There are 5 domains of digital transformation that should be investigated before implementing the strategy for such a change: Customers, Competition, Data, Innovation and Value.²³

In the digital age that we are currently living in, customers are no longer expecting one way communication and believing purely what the brands say. Customers are now part of a connected network, where they exchange communication, they review and influence others to buy from a brand and the challenge is to keep them loyal, engaged and make them advocates.

Competitors are no longer companies within the same industry, but from any other industry. Companies have acknowledged the need of cooperation between competitors to further develop because digital disruptions from other industries catch up.

¹⁹ SAP, 2022

²⁰ SAP, 2022

²¹ SAP, 2022

²² Hausberg, et al., 2019

²³ Rogers, 2016

Data is perhaps one of the aspects with the most significant changes. It used to be difficult to generate data and store it, now the difficulty relies in classifying it and generating value out of it. Innovation used to be a long and expensive cycle in companies. Lots of prototyping and assumptions were included, with data and newer technologies allow continuous testing, decisions based on data and rapid prototyping.

Value, final but not least important aspect. Companies should understand and create value differently, they should constantly observe customers' needs and adjust rapidly to stay ahead. Long lasting business models are no longer the trend. The following table, summarizes the main changes on each of the previously mentioned aspects.²⁴

Table 2: Changes in Strategic Characteristics from the Analog to the Digital Age²⁵

	From Analog	To Digital Age
Customers	<ul style="list-style-type: none"> • Customers as mass market. • Communications are broadcast to customers. • Firm is the key influencer. • Marketing to persuade purchase. • One-way value flows. • Economies of scale (firm). 	<ul style="list-style-type: none"> • Customers as dynamic network. • Communications are two-way. • Customers are the key influencer. • Marketing to inspire purchase, loyalty and advocacy. • Reciprocal value flows • Economies of value (customer)
Competition	<ul style="list-style-type: none"> • Competition within defined industries • Clear distinctions between partners and rivals. • Competition is a zero-sum game. • Key assets are held inside the firm. • Products with unique features and benefits. • A few dominant competitors per category 	<ul style="list-style-type: none"> • Competition across fluid industries. • Blurred distinctions between partners and rivals. • Competitors cooperate in key areas. • Key assets reside in outside networks • Platforms with partners who exchange value • Winner-takes-all due to network effects.

²⁴ Rogers, 2016

²⁵ Rogers, 2016

<p>Data</p>	<ul style="list-style-type: none"> • Data is expensive to generate in firm. • Challenge of data storing and managing it. • Firms use only of structured data. • Data is managed in operational silos. • Data is a tool for optimizing processes. 	<ul style="list-style-type: none"> • Data is continuously generated everywhere. • Challenge of data is turning it into valuable information. • Unstructured data is increasingly usable and valuable. • Value of data is in connecting it across silos. • Data is a key intangible asset for value creation.
<p>Innovation</p>	<ul style="list-style-type: none"> • Decisions made based on intuition and seniority. • Testing ideas is expensive, slow and difficult. • Experiments conducted infrequently. By experts. • Challenge of innovation is to find the right solution. • Failure is avoided at all costs. • Focus is on finished products. 	<ul style="list-style-type: none"> • Decisions made based on testing and validating. • Testing ideas is cheap, fast and easy. • Experiments conducted constantly by everyone. • Challenge of innovation is to solve the right problem. • Failures are learned from, easily and cheaply. • Focus on minimum viable prototypes and iteration after launch.
<p>Value</p>	<ul style="list-style-type: none"> • Value proposition defined by industry. • Execute your current value proposition. • Optimize your business model as long as possible. • Judgement changes by how it impacts your current business. • Market success allows for complacency. 	<ul style="list-style-type: none"> • Value proposition defined by changing customer needs. • Uncover the next opportunity for customer value. • Evolve before you must, to stay ahead of the curve. • Judgement changes by how it could create your next business. • Only the paranoid survives.

2.2.3 Business Models

Digitalization is helping companies to gain or maintain competitiveness in an ever-changing environment. With customers' expectations being set high by player's like Amazon, that changed the way e-commerce and retail used to be, fundamental changes on how businesses work and what they offer to customers, are being pushed to rapidly be implemented. "A business model, describes how an organization creates, communicates, and captures value" (SAP Insights, 2022) ²⁶. Digitalization allows to create new combination in a cybernetic-physical-human network that generates value.²⁷ Adding a new technology is an enabler to transform, but just by adding it to an existing process, it won't necessarily add value, therefore the business model which a company uses must be rethought.²⁸ It explains the factors for a company's success. A business model can be mapped by answering four questions and nine aspects²⁹:

- 1) What? Answered by the business' value proposition.
- 2) How? Answered with the key activities, key partners, and key resources with which the company provides its main product/service.
- 3) To Whom? Answering which customer segments will be targeted, through which channels and how will the customer relationship will be.
- 4) How much? Will it cost to produce or deliver the product/service. And how much will the company earn and from which revenue sources.

To have a visual, the interconnection of these four questions and nine aspects, the following picture can be considered as an illustration.

²⁶ SAP Insights, 2022

²⁷ Brzóka & Knop, 2021

²⁸ Schumacher, 2022

²⁹ Osterwalder & Pingueur, 2010

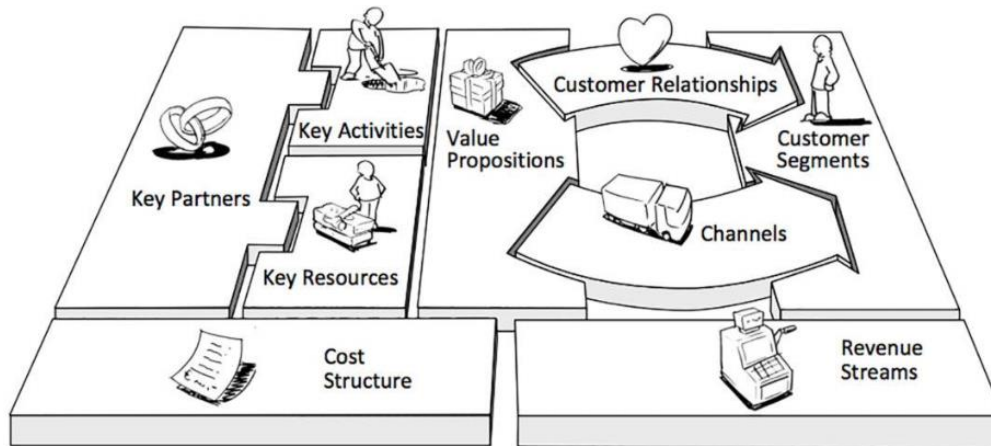


Figure 2: Business Model³⁰

It is important to keep in mind alongside these 9 aspects, the previously mentioned 5 assumptions of the digital age (Customers, Competition, Data, Innovation and Value) to make the right choices. For transforming a traditional business model into a new digital business model, digital enablers must be incorporated into the answers of the previously mentioned questions.

Examples can be observed in the following table:

Table 2: Digital Enablers to the Business Model Aspects³¹

Aspects	Digital Enablers
Value Proposition	<ul style="list-style-type: none"> • Networked products • Digital add-ons (additional services) • X as service • Digital total solutions
Key Partners	<ul style="list-style-type: none"> • Cooperation with software providers and IT operators • Targeted search for start-ups • Competence development with training providers • Solution development with research partners
Key Activities	<ul style="list-style-type: none"> • Smart production • Digital services

³⁰ Institute for Innovation, Design and Engineering, FHS St. Gallen

³¹ Source: Self creation based on Schumacher

Key Resources	<ul style="list-style-type: none"> • Data analytics • ICT • Software solutions • Networked machines • Data scientists
Customer Segments	<ul style="list-style-type: none"> • High individualization • Customer anonymization • Users of shared services • Rating community
Customer Relationships	<ul style="list-style-type: none"> • Digital lock in • Customer self service
Channels	<ul style="list-style-type: none"> • Platforms • Apps • Objects-Self-service • Communicating products
Cost structure	<ul style="list-style-type: none"> • License costs and operating costs for digital and online resources.
Revenue streams	<ul style="list-style-type: none"> • Scalable revenues when retrieving digitally augmentable content and services Pay per X (e.g. piece, available hour)

2.2.4 Trend Radar

The look for the newest and upcoming technological trends, is something that most companies are always monitoring. Weather with dedicated resources or via consultants, most firms are up to date in this field. Some general megatrends can be observed from sources like The Zukunft Institute in Germany or Gartner. Consulting Firms like Deloitte or future specialist also post yearly about the biggest trends in the upcoming year. They usually publish general megatrends and from those trends, companies build their own radars according to the ones they consider most relevant for their sectors or industries. Companies like BMW in automotive or Zalando in fashion have theirs published for the open public to consult. Observing these trends, guesses on how the business models and customer journey can be affected can be made.

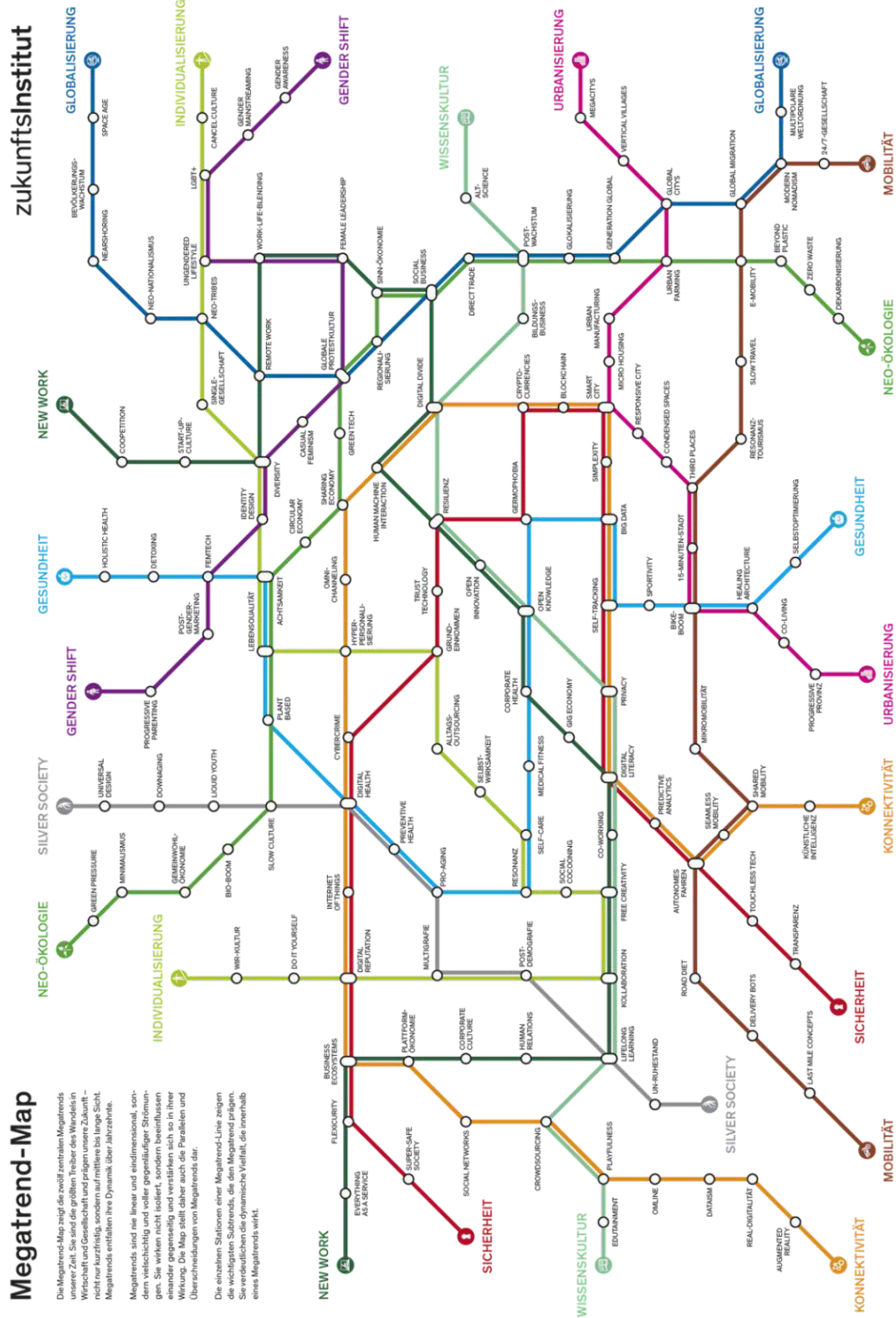


Figure 2: Megatrend-Map³²

³² ZukunftsInstitut, 2022



Figure 3: Top Strategic Technology Trends 2023³³

³³ Gartner, 2022

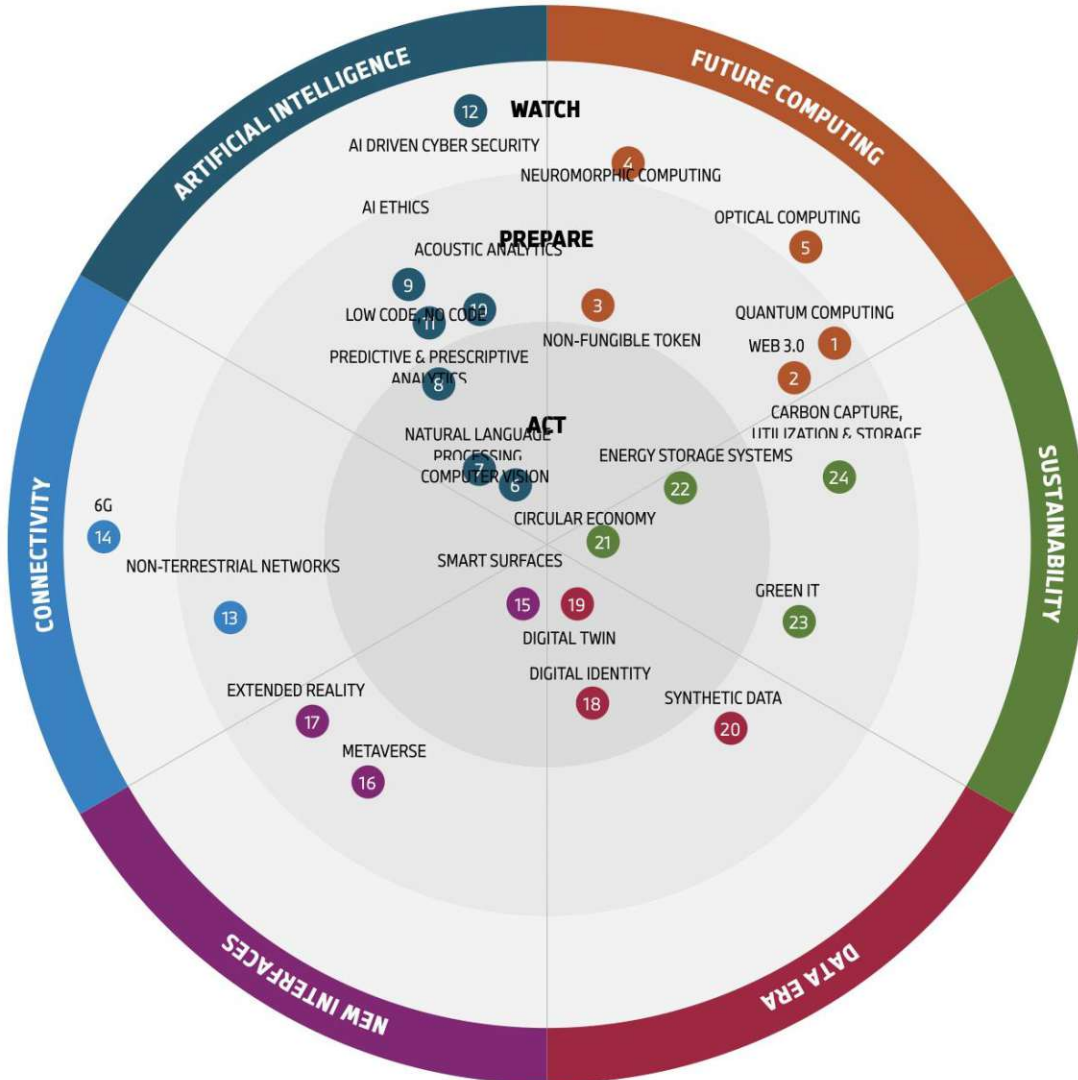


Figure 4: BMW Technology Radar³⁴

From the BMW Technology Radar, some interesting trends that apply for potential innovations in the Retail Landscape are in the “New Interfaces” part. The three of them: Metaverse, Extended Reality and Smart Surfaces would be relevant. Two of these are still in preparation phase, meaning that the rollout is not there yet, although they are relevant in the technology specter for the company.

³⁴ BMW Group, 2022

Zalando Tech Radar

2022.10

Databases

ADOPT

- 1. AWS DynamoDB
- 2. AWS S3
- 3. Elasticsearch
- 4. elcd
- 5. Exasol
- 6. PostgreSQL
- 7. Redis

TRIAL

- 8. Amazon Redshift
- 9. Druid
- 10. HDFS

ASSESS

- 11. Amazon MemoryDB
- 12. Amazon SageMaker Feature Store
- 13. RocksDB

HOLD

- 14. Aerospike
- 15. Apache Cassandra
- 16. Couchbase
- 17. Couchbase
- 18. Hazelcast
- 19. HBase
- 20. Memcached
- 21. MongoDB
- 22. MySQL
- 23. Oracle DB
- 24. SAP
- 25. ZooKeeper

Infrastructure

ADOPT

- 45. Amazon SageMaker
- 46. AWS CloudFormation
- 47. AWS CloudFront
- 48. Docker
- 49. Kubernetes
- 50. OpenTracing
- 51. Skipper

TRIAL

- 52. AWS Lambda

ASSESS

- 53. Slurm
- 54. WebAssembly

HOLD

- 55. STUPS
- 56. ZMON

Data Management

ADOPT

- 26. Airflow
- 27. AWS EMR
- 28. AWS Kinesis
- 29. AWS SNS
- 30. AWS SQS
- 31. Databricks
- 32. Kafka
- 33. Nakaut
- 34. Spark

TRIAL

- 35. Flink
- 36. Google BigQuery
- 37. Presto
- 38. RabbitMQ

ASSESS

- 39. AWS Athena
- 40. AWS Glue
- 41. dbt

HOLD

- 42. AWS Data Pipeline
- 43. Yagrap
- 44. YARRR

Languages

ADOPT

- 57. Go
- 58. GraphQL
- 59. Java
- 60. JavaScript
- 61. Kotlin
- 62. OpenAPI (Swagger)
- 63. Python
- 64. Scala
- 65. Swift
- 66. TypeScript

TRIAL

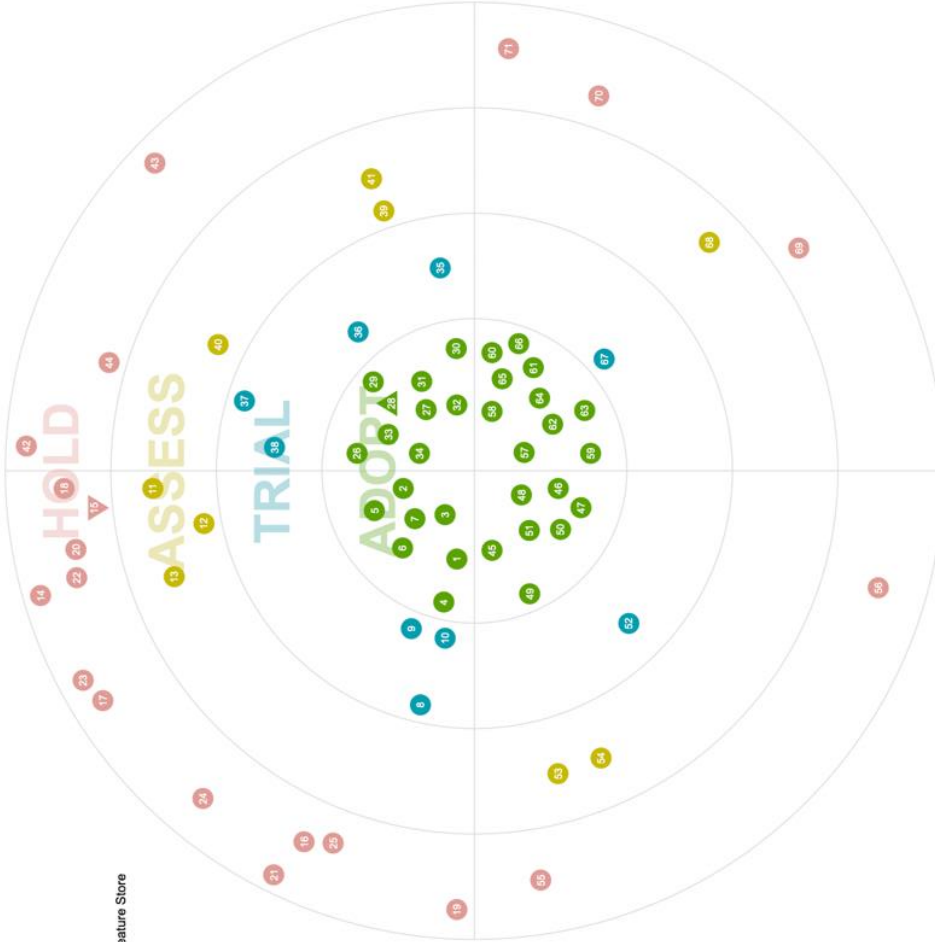
- 67. Dart

ASSESS

- 68. R

HOLD

- 69. Clojure
- 70. Haskell
- 71. Rust



▲ moved up ▼ moved down

Figure 5: Zalando Tech Radar³⁵

³⁵ Zalando, 2022

Zalando's approach also shows which technologies are ready to be adopted and which ones are still on hold or watch phases. Zalando is selling fashion products, however what they care to develop is an optimal ecommerce that gathers customer data and can reach them in the best moment possible. Seeing that one of the aspects they are monitoring is languages, it can be observed that they are putting special interest in talking and communicating actively to the customers regardless of the language in which they speak.

Another company sharing their technology and trends radar is DHL. It is important to mention a logistics player as well, since any physical product must be delivered. Whether it is a B2C or B2B interaction, digital and technological trends that impact logistics, will certainly impact industries like the automotive or the fashion.

It is important to highlight again, that while some technologies might be more relevant (in a short period of time) for fashion and automotive, like metaverse, it might not be the case in logistics. That, however, doesn't exclude it from their radar, because at some point it might be relevant for them as well. Data, on the other hand, is something seen in all three of them and with high relevance in the short time.



Figure 6: The Logistics Trend Radar³⁶

³⁶ DHL, 2022

2.3 Findings Customer Journey

Customer Journey is not a new term; however, it has increasingly gained importance. Newcastle University published the paper “Going on a Journey: A review of the customer Journey” which includes exhaustive research on this term, from the first usage until the most recent literature available in 2021. According to this research, 1991 was the year in which this term was firstly used. However, referring to what we currently consider being a Customer Journey, it goes back to 1999. It is in the last ten years, that most of the literature and research around the topic has been done, booming from 2020 onwards.³⁷

What is Customer Journey?

There is not a single answer when it comes to definitions, they vary depending on the angle it is being observed from. It is important to note that the term and methodology of the customer journey does not come from a scientific background but form an applied design-thinking framework, which makes it an evolving and inconsistent term.

a) Customer Journey is the entirety of experiences and actions that a customer goes through when interacting with a company and its brand. How a customer becomes aware of the brand, the way a customer interacts with it, and the experience a customer creates of the interaction.³⁸

b) *The term customer journey commonly refers to a process or sequence that a customer goes through to access or use an offering of a company* (Tuernat, et.al. 2021: 1)

c) A series of touchpoints, that involve every activity, event or interaction that take part in the delivery of a product or service.³⁹

d) The customer journey is the process, which maps and explains the customer experience and how it is formed. This journey enables the understanding of how customer goals, expectations and behaviors change over time.⁴⁰

All in all, these definitions require to stand in the customer’s shoes and experience a product or service from their standpoint. To do so, it is common to have so called, customer journey maps, as visual representations of all stages and touchpoints a customer has throughout the entire journey. The visualizations and analysis of customer journeys are referred to in literature

³⁷ Tuernrat, et al., 2021

³⁸ Ilari Kantola, et al., 2020

³⁹ Patrício, et al., 2011

⁴⁰ Tuernrat, et al., 2021

sometimes as linear start-to-end journey, some other as open-ended⁴¹ customer journeys. This highly depends on whether the focus is on a one-time result or purchase or if the idea is to focus on retention and localization.

2.3.1 Phases of the Customer Journey

As it is a journey, commonly there are some stages considered throughout the whole process.

Pre-service, service, and post-service (Pre-purchase, purchase, and post-purchase) are a suggested simple classification of the customer journey stages.⁴² Most recently, these 3 phases have been used as a base, but in the applied customer journey mapping, a further detail into 5 phases is commonly mentioned:

Awareness, Consideration, Purchase/Decision, Retention, Advocacy⁴³

In the following image, both classification of stages can be easily observed.



Figure 7: Phases of the customer Journey⁴⁴

According to the needs that the customer has on each stage/phase of the journey, the brand must provide information of a certain kind and in different channels or touchpoints for the customer to interact with them.

1) Awareness: The customer is searching for information to solve a need or problem. At this stage, the customer might not know who will solve his/her needs yet, so this will potentially be the first impression they have from the brand. This is the most important stage, because

⁴¹ Følstad & Kvale, 2018

⁴² Jia, et al., 2022

⁴³ LaFleur, 2022

⁴⁴ Source: LaFleur, 2022

customers know that a brand exists and then decide if they it and would like to know more about the brand/product/service or not.

2) Consideration: The moment to prove that a brand/product/service is the best option to solve the need or the problem. The brand will be compared, analyzed, researched, and asked about.

3) Purchase: the customer is ready to buy; will they buy your product or service? How hard or easy is it for the customer to complete the purchase? Is it a seamless and clear process?

4) Retention: A recurrent customer is cheaper and easier to retain if you care about his/her entire journey. At this stage, it is decided if the brand will be able to keep them. Here is where all the actions to keep them engaged with the brand happen. It is important to build trust and to make sure they have an experience they want to repeat.

5) Advocacy: Keeping and having a loyal customer is one thing, but making sure they speak the word with others, requires an outstanding experience with the brand. The must be truly happy and feel like you care about the, listen to them, respect them, and surprise them.

It is common to see in literature that customer stages are also referred, as stages in the Sales Funnel⁴⁵. In this classification, the customer is in the Top of the funnel (TOFU), Middle of funnel (MOFU), or bottom of the funnel (BOFU). These three funnel stages translate into: Awareness, Evaluation and Conversion; the first three customer journey stages. These are some of the most common approaches to name the stages and can be interchangeably found throughout literature and applied in the day-to-day business life.

Once the stages of a standard customer journey are clear, the correct mapping of the activities, and so-called *touchpoints*, can be done to further analyze the interactions, experiences and improvements can be performed as well.

2.3.2 Overview of the current automotive customer journey

The automotive industry has been working on a dealer-based business model for several years. The dealers are independent entrepreneurs that serve as mediators between OEM's and customers. Depending on the brands that the dealer sells, their strategy and the country in which they are running their business, they have either a push or pull sales strategy. This strategy is directly linked to how the OEM's production is built on.

When a brand is manufacturing vehicles in a Build to Stock strategy (BTS), it is said that they "push" their products to the customer. In these cases, the dealer is required to forecast which models and which configurations the customer is likely going to buy. They place orders to the

⁴⁵ Sales funnel

OEM, have them in their stock and then push those sales to the market. With this strategy, the dealer has the possibility to deliver almost immediately if the customer chooses an available stock car. There is risk, however, that the given car is not what the customer is looking for, in these cases, discounts usually play a relevant role to move that inventory.

Some other OEMs, especially premium and luxury brands, have a manufacturing strategy of Build to Order (BTO). This in sales is viewed as a pull strategy, because in these cases dealers order the cars only when the customer has ordered the car according to his/her wishes. The customer will wait a couple of months before getting the vehicle, but from a dealer's perspective, it requires almost no stock investment and almost no risk. Premium brands with a wide variety and personalization options usually run BTO strategy in most markets, while mass produced brands usually run BTO.

As previously mentioned, dealers are considered independent entrepreneurs, and therefore they are free to set prices and discounts (based on a suggested price list given by the OEM). In most cases, they have their own websites and social media channels, and they send own communication to customers. In general, they follow a set of brand design and point of sale minimum guidelines set by OEM's, however the room to maneuver is still very wide. When it comes to communication and marketing strategies, the brands give some recommendations on key moments to contact the customer. What is set on the guidelines is considered as the "standard customer journey", however whatever each dealer decides to implement, increases the complexity of the customer journey, and makes it more difficult for the brand to measure and standardize.

Considering a meta-view, an automotive customer journey could be structured as follows:

- 1) Awareness: The customer is looking for a mobility solution. They may or may not have a clear idea of what type of vehicle or mobility provider. While scrolling on social media, they might encounter publicity about cars, SUVs, motorcycles, shared mobility services amongst others. They might see different brands and models on the street, on display at a shopping mall, outside of a concert or a sports event. They might hear a radio commercial or watch an ad while going to the movies. They talk to people they know and hear about some options that they are taking into consideration. The potential customer goes to the supermarket and sees a car magazine, decides to buy it, and later have a look at it.
- 2) Consideration: The customer has made up his/her mind. They are looking for a car, but there are still plenty of brands and models to choose from. They use the online browser, get into the different websites to gather information. They pick a few models, get into

YouTube, watch videos of people reviewing the cars, they log once again on the different brand or dealers' websites.

- If the OEM strategy is BTS: They choose a vehicle according to available specifications, leave their contact data on the website to book a test drive. They decide to visit the dealerships to see the vehicles up close and in person. The customer arrives at the dealership, gets salesperson assigned. They say which car they are interested in. The salesman explains all about the car, they say which combinations are possible, which ones they have for immediate delivery or might be incoming within a couple of weeks. They may receive a financial offer, or even a discount or benefit if they choose the car on display or a certain color. If there is high stock on a similar product or slightly more expensive, they might try to push it to the customer via discounts or attractive financing to convince him/her. The customer goes home to think about it, watches a movie and sees their car on screen but in a different color, he/she remembers the one with discount was not on that color. On the weekend, the customer attends a football match and sees that the car he wants to buy is on display outside of the stadium, he likes that the brand is related to other of his interests.
- If the OEM strategy is BTO: They configure a vehicle according to their taste and leave their contact data on the website to book a test drive. They decide to visit the dealerships to see the vehicles up close and in person. The customer arrives at the dealership, gets salesperson assigned. They say which car they are interested in. The salesman explains all about the car. They sit and configure a car according to the customer's wishes and a possible delivery date is given within 3 months' time approximately. They may receive a financial offer or guarantee and services optional to this deal. The customer goes home to think about it, watches a movie and sees their car on screen but in a different color. They visit a friend who owns a different car but from one of the brands, recommends it. On the weekend, the customer attends a golf championship event and sees that the car he wants to buy is on display in the commercial areas near to the green and is the "hole in one price", he likes that the brand is related to other of his interests.

- 3) Purchase BTS: the customer is ready to buy the car. He/she gets into the dealer, decides that if they will get one of the stock cars, they want a higher discount and winter

tires included. They receive a financing option and decide to sign the contract as well with the captive finance company. They receive the car within a week.

- Purchase BTO: the customer is ready to buy the car. He/she gets into the dealer, configures the car and gives a booking fee. They receive a financing option and decide to sign the contract as well with the captive finance company. They receive the car within 3 months.
- 4) Retention: After two and a half years of leasing contract and a pleasant experience with the vehicle and services at the dealer. The customer attended a couple of brand events, received birthday messages, and was contacted 6 months before the end of contract by the financing company. They instruct about the end of term and approach the customer with loyal customer benefits for a renewal and new lease. The customer is satisfied with it and decides to configure (in BTO) and sign a new vehicle for another 3 years. If it was BTS they visit and choose another car for the upcoming lease.
 - 5) Advocacy: The customer is at a family dinner and one of the cousins mentions that he wants to buy a car, the customer without thinking about it recommends the experience with the brand and even offers support in case he needs it. The customer is so happy with his/her experience with the brand, that even posts about it on social media.

The phases were explained non-exhaustively and very broadly speaking because each brand might have touchpoints in different channels, with different tools at different stages. Also, each customer interacts with them in a distinct way and emotions are triggered. Dealers can also increase the number of touchpoints. By giving more or less options, they can improve or worsen the experience. Customer journeys of a same brand differ between countries as well, and even particular products might have specific journey strategies, like most recently EV models.

From this brief description, it can be observed that it is complex and very variable. To have a visual, non-exhaustive representation of the journey, Figure 8 shows an allocation of the general touchpoints that occur throughout the customer journey.

The creation of this visual, is an important contribution, that allows to allocate the main five stages and observe the separation on physical and digital interactions. Above the stages, the

main digital touchpoints can be seen. Below the stages, the most common physical touchpoints are mentioned.

Some of the physical ones, can already be found in the digital side as well. It is important to note, that when we want to evaluate possible digital integrations, the physical touchpoints should be in focus. These ones give enormous opportunities to think about possible functionalities and integrations of digital tools to enable a real omnichannel journey.

In some brands and markets, the path towards an omnichannel journey, is already happening, nevertheless, it is important to have them clearly identified and to find links to try to blur the division between physical and digital.

The current separation in this figure, allows to brainstorm about possibilities, technologies, and processes taking place in the physical touchpoints and how the experience can be improved.

For further research and application, each of the touchpoints can be isolated and thought from a digital perspective to challenge a phygital integration in the stage and touchpoint. There might be multiple possible integrations that can be analyzed in detail to select the best possible option.

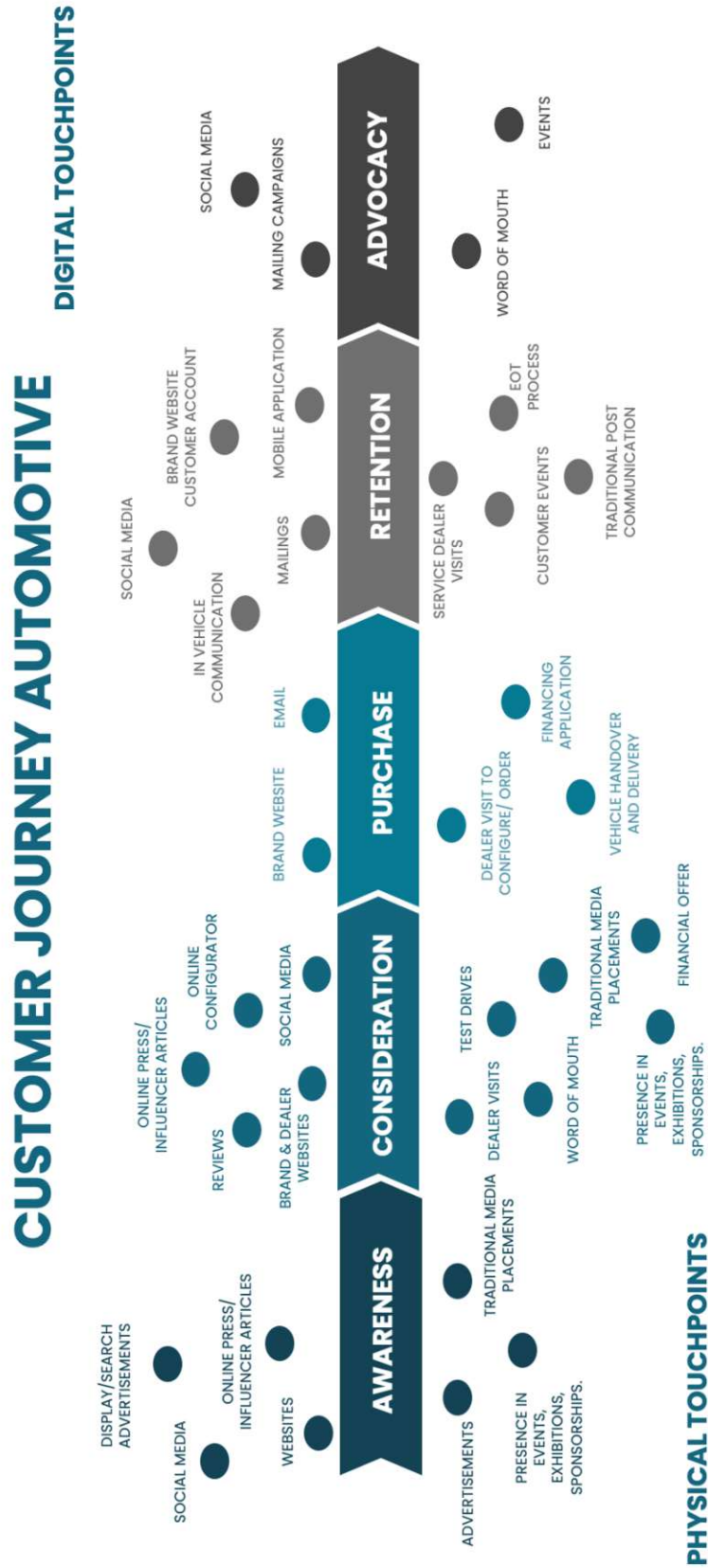


Figure 8: Automotive Customer Journey Touchpoints Representation⁴⁶

⁴⁶ Self-creation

2.3.3 The Customer

Customer journey has a key term in the name that should be addressed. The customer.

Customers are people, and as such, they cannot be treated in a homogeneous way. Each society has a cultural background and motivations that drive them to purchasing or interacting with a certain brand, product, or service. Some of the aspects that should be observed are the role of culture, purchase classifications according to motivations, perception, and customer experience.

The role of culture in the customer journey

Customer journeys are not a fixed formula and are usually not replicated around the world, because there are cultural differences that should be taken into consideration if an optimal result is expected. Customers in Asia vs customers in Europe or customers in America, are driven by different factors and that is related to their specific culture and context. Culture is the lens through which each person understands the world.⁴⁷

Just like the purchase classifications, customer perception towards brands is shaped through emotional and cognitive assessment of experiences. The customer is going to evaluate if the need is being covered on the cognitive level, but also how he/she is feeling while fulfilling it.⁴⁸

The perception that the brand builds on the awareness early stage, is likely to be considered in the last part of the consideration stage to decide if there will be a conversion or not. The complexity of these responses relies on the fact that individuals have different motivations, goals, social and cultural contexts, and brands must be aware of that.⁴⁹

To understand a bit more about this complexity, the Hofstede Centre⁵⁰ has published six dimensions of national culture, called 6-D Model©. The dimensions mentioned are: Power Distance, Individualism/Collectivism, Masculinity/Femininity, Uncertainty Avoidance, Long-/Short-Term orientation and Indulgence. In this model, the higher the score, the more presence of that dimension, and those aspects should help brands shape their customer journey and brand experiences for this customer.

- Power Distance: How do cultures accept hierarchy and inequality vs how people strive for equality and demand justification to social differences.

⁴⁷ McCracken, 1986

⁴⁸ Tuernrat, et al., 2021

⁴⁹ Tuernrat, et al., 2021

⁵⁰ Hofstede Insights, 2022

- Individualism-Collectivism: How the mindset is oriented to independence vs a group oriented.
- Masculinity/ Femininity: It is toughness versus tenderness. Masculine aspects refer to heroism and success as material rewards. Femininity values cooperation and caring about others.
- Uncertainty avoidance: How much are people willing to try new things or remain within the “safe” parameters of previously known things and experiences.
- Long/short term orientation: Time horizon measurement. How likely a society is going to be embracing change, how much they value traditions and savings vs living in the moment and for the immediate experience.
- Indulgence: Like the previous one, how much societies live in the impulse of the moment or restrain from certain things.

Understanding these characteristics, will allow brands to adapt customer journey experiences and communication accordingly. To name a few examples: If a country has low uncertainty avoidance, they will be looking for new and innovative experiences. A brand that can successfully integrate that, will find success in that society. Societies like the US and China for example, will value novelty, innovative technology, and experiences, in contrast some European countries will be cautious and not so willing to try something they haven't before. In collectivist cultures, the experiences built around the brand should focus on the family as well, or in their community or something that brings a sense of belonging, whereas in individualist countries, it should be focused on a single person's unique moment, experience, and feelings. Something that stands out. In countries with high power distance, including authorities, highly ranked people's opinions would matter to validate a brand or product. Long-term oriented cultures don't like hard selling, so their customer journeys are built on trust instead of immediate purchases and hard sell techniques. In countries with low indulgence, you should not focus the customer journey into leisure, but into how a certain product will help them on a rational productive aspect. Whereas in high indulgence, it is all about the experience and the emotions.

Each culture is a combination of the different dimensions, and therefore global brands should take their “master” customer journey and communication strategies and adapt them to local expectations to succeed.

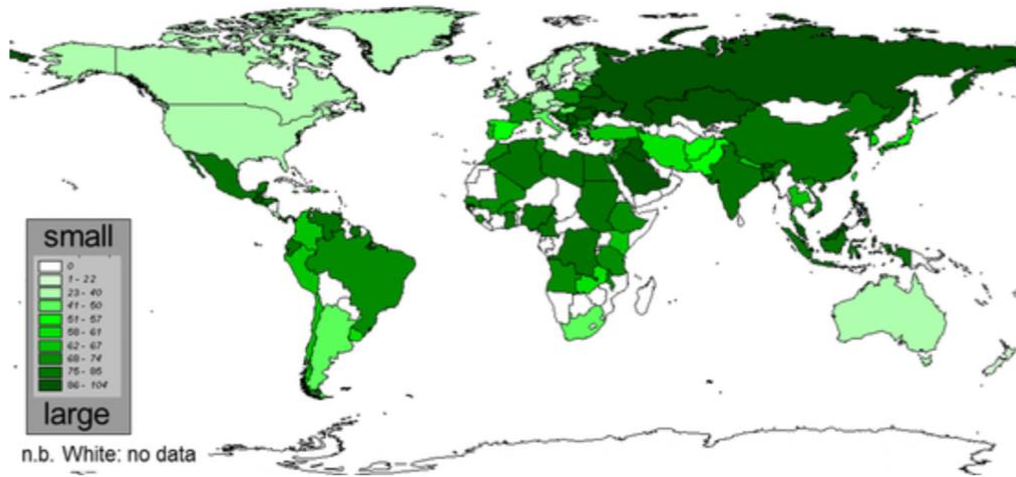


Figure 9: Power Distance World map⁵¹

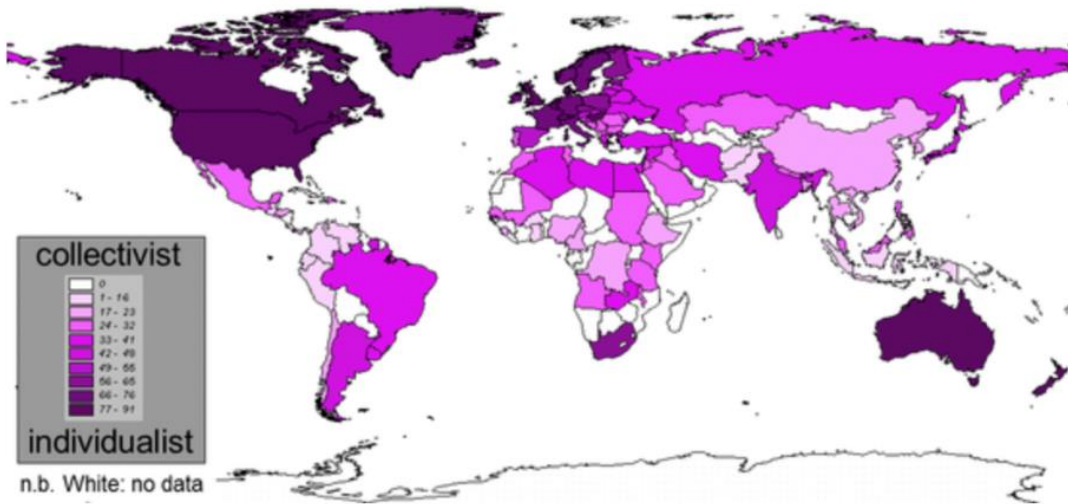


Figure 10: Collectivism-Individualism World map⁵²

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The approved original version of this thesis is available in print at TU Wien Bibliothek.

⁵¹ Geert Hofstede, 2022

⁵² Geert Hofstede, 2022

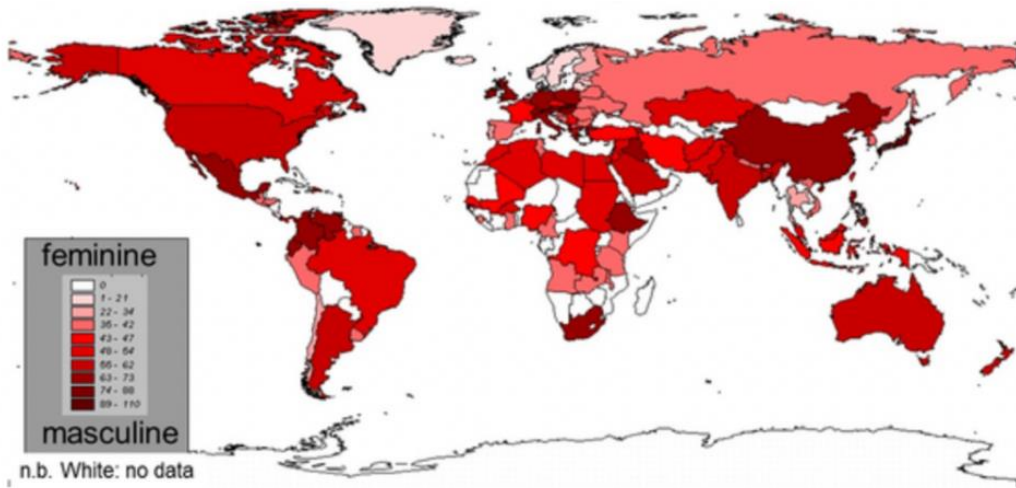


Figure 11: Femininity-Masculinity World map⁵³

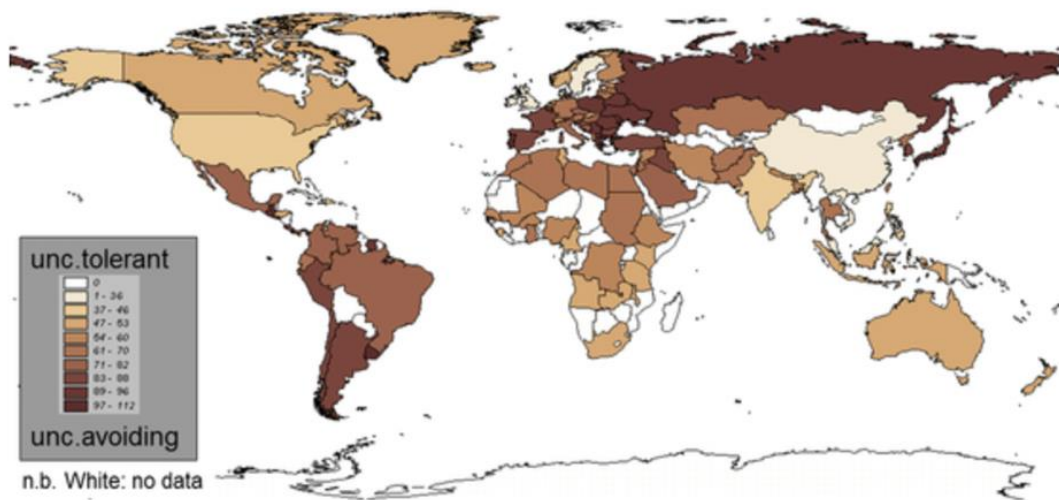


Figure 12: Uncertainty Avoidance World map⁵⁴

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⁵³ Geert Hofstede, 2022

⁵⁴ Geert Hofstede, 2022

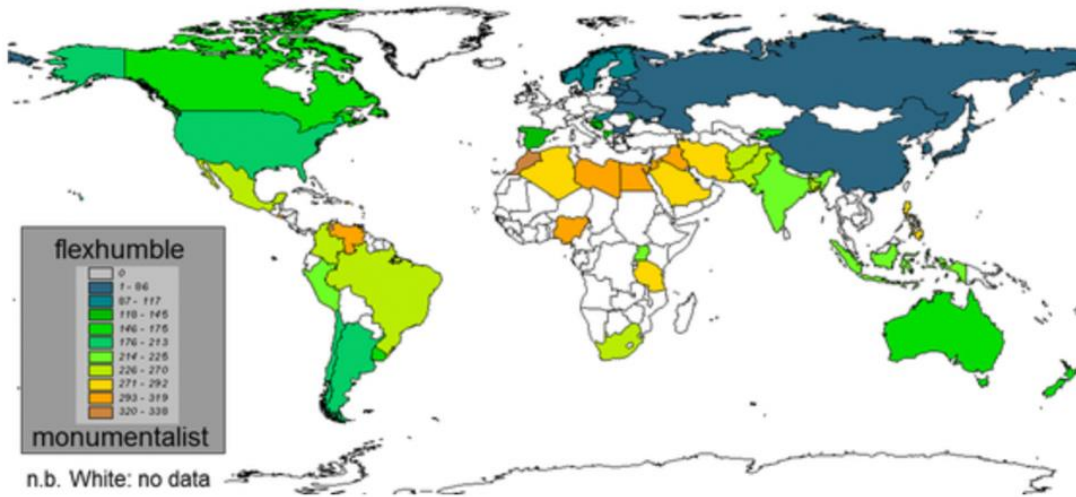


Figure 13: Short-term orientation (Monumentalism)- Long-term orientation (Flexhumility) World map⁵⁵

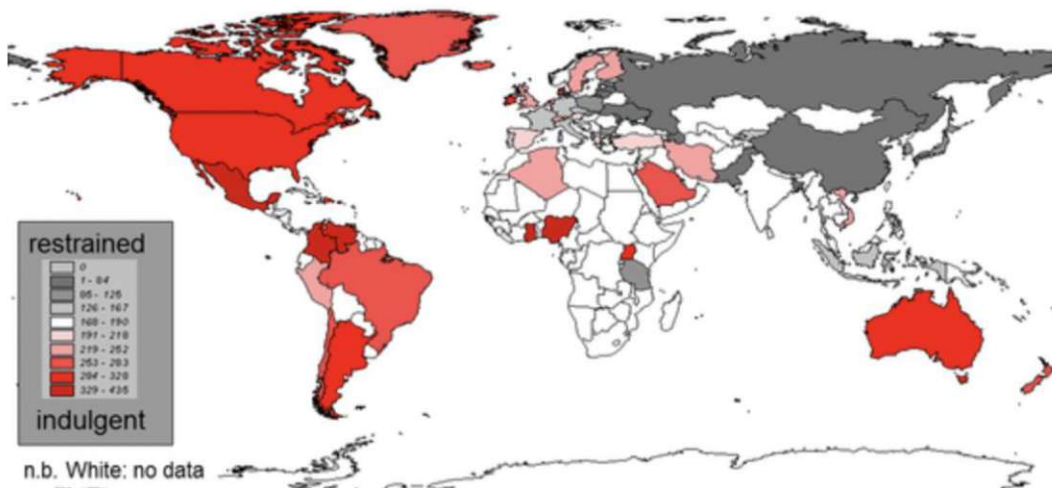


Figure 14: Indulgence- Restraint World map⁵⁶

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⁵⁵ Geert Hofstede, 2022

⁵⁶ Geert Hofstede, 2022

Purchase classification & motivators

Cultural differences and the understanding of them, will also help brands understand the rationale of people from a certain society and to predict if they are more likely to engage in Utilitarian or Hedonic purchases.⁵⁷

Utilitarian purchases are purpose oriented and mainly related to the search experience. Hedonic purchases emphasize on the attitudes towards a brand based on emotional attachment, excitement, enjoyment and need for surprise⁵⁸. It is important to note that they are not mutually exclusive but complementing each other. A car would have an utilitarian dimension, for the need of mobility, however the brand, design and driving experience would be part of the hedonic dimension.⁵⁹ It is important to understand this, since there must be a balance between the rational content given to the customer to fulfill utilitarian needs and emotional attachment to fulfill the hedonic dimension throughout the customer journey. The channels through which the customer reaches out for information, also vary depending on the objective of the purchase. If it is utilitarian, they will use search engines and review sites; they will also surf through different sites to search best price or availability. In the case of a hedonic purchase the customer looks for surprise, adventure, fun, and variety through the shopping experience⁶⁰, these emotions add to the fulfillment of the purchase and add up value. Adding this experience to hedonic purchases, reduces time in searching and comparing but strengthens the bond with the brand or product.

In the automotive industry, product technology is very high and differentiation with rational arguments is starting to get low, more so in the premium segment brands, so increasing emotional differentiation through hedonic dimension could be very influential to achieve conversion.

Aside from this classification, the type of purchase is an important term to be considered as well: high involvement or low involvement purchase. As previously reviewed, low-involvement purchases are less rational purchases that can be consumed more often and “passively”, while high involvement usually requires deeper thought and rationalization. These purchases tend to involve a higher investment and careful consideration.⁶¹ Combining these aspects, we can come into the conclusion that a premium/luxury passenger car for a private customer, would result in a Hedonic, High Involvement purchase. At the same time a mass-produced passenger car, could be an utilitarian, high involvement purchase or if the customer is a fleet company, it

⁵⁷ Vieira, 2018

⁵⁸ Babin, Darden, & Griffin, 1994

⁵⁹ Vieira, 2018

⁶⁰ Vieira, 2018

⁶¹ Kotler, 1994

might be utilitarian low involvement. As it can be observed it all goes down to which product and which customer will be the target and therefore the customer journey they follow, should consider these variables, to be designed accordingly.

2.3.4 Customer Journey translated into Customer Experience

Customer Journey Mapping allows us to observe in a nutshell the different general stages and interactions that the customer has with a brand. This can be enriched into further analysis by adding the emotions and customer experience during the process. Each stage and touchpoint have either a positive, neutral, or negative emotion resulting out of the interaction.

“The outcome of a Customer Journey is Customer Experience. It is the impression that a company gives to its customers through the touchpoints and different stages of a Customer Journey, resulting in how the customer thinks of a brand. (Ilari Kantola, Nazir, & Salminen, 2020: 200)”⁶²

In this case, not only the stages, but also the grading of the experience and services are to be included. Experiences are graded by considering multidimensional responses to the brand’s service. It is not only filled with rational cognitive aspects, but also emotional, sensorial, behavioral, and relational.⁶³ When talking about customer experience and delivering optimal customer satisfaction, there are two drivers that help achieve it: product or service quality and interaction quality; the latter referring to all interactions throughout the journey.⁶⁴

The customer experience journey can consider a single service cycle; however, recent literature suggests that more than one services cycle should be considered since 1st experience vs subsequent ones might differ. Customers have the tendency to adapt or modify their perceptions towards a brand at every touchpoint with which they interact, and those subsequent customer experiences are built on previous experiences; for that reason, customer journeys should be built with a long-term vision.

When speaking about customer satisfaction there are some important aspects to consider in critical touchpoints: service satisfaction, failure, and recovery stream.⁶⁵ With customer satisfaction, the expectations and the service are aligned and therefore the aim is to reach an optimal relationship with the customer.⁶⁶ This is a living KPI that should be often measured, as it will be critical for the performance: it will lead to positive reviews, word of mouth, retention

⁶² Ilari Kantola, Nazir, & Salminen, 2020: 200

⁶³ Lemon & Verhoef, 2016

⁶⁴ Aichner & Gruber, 2017

⁶⁵ Tuernrat, et al., 2021

⁶⁶ Lee, et al., 2017

and therefore resulting in profitability.⁶⁷ Satisfaction or dissatisfaction are built from touchpoints and can also be damaged or even destroyed in a single touchpoint.

Service failure and recovery is as important as customer satisfaction in all the touchpoints. Failures might happen at any stage of the journey and can cause tensions with the customers but depending on how the brand reacts to solving them and supporting the customer, the attitude of the customer will be influenced⁶⁸. A negative experience can be turned in to a positive one, if there is a well-planned, fast recovery strategy that makes the customer feel supported, impressed, and even foster loyalty.⁶⁹

Customers 'expectation levels towards brands are constantly changing and adjusting, that is why brands must constantly monitor the journey and the experience at each stage to make sure the customers stay with the brand. If the brand has successfully built an emotional bond with its customers and they have been related for a while, it won't be as easy for a bad experience to make them switch to a competitor's brand, however customers (Depending on the culture) might be more volatile than others and a single bad experience could be enough to terminate their relationship with the brand.⁷⁰

In order to recover from bad service or service failures, there should be customer experience tracking patterns, ideally three types: Past, present and potential oriented.⁷¹ Past patterns involve recent experiences, and the intention is to track for improvement. These are ideally after the completion of something of a particular task, for example: Store visit, or store purchase by sending a survey to rate the transaction. Present patterns track current relationships and aim for continuous interactions. Supermarkets run surveys through their apps to ask about general experiences on their visits, products variety, prices, ranges but does not necessarily go after the completion of a transaction. Potential patterns are usually isolated efforts to explore what could be done, what the customer trends and expectations are. It is important to track and consider in the future strategies of the company.

As it can be observed, customer experience is a comprehensive aspect of the journey and what will ultimately lead towards loyalty and advocacy in a customer or what will terminate the relationship with the brand.

For the purpose of this thesis, very little open information could be found, therefore touchpoints evaluating customer experience and the digital integrations in retention and advocacy moments, could not be researched in depth.

⁶⁷ Tuernrat, et al., 2021

⁶⁸ Lemon & Verhoef, 2016

⁶⁹ Palmer & Bejou, 2016

⁷⁰ Palmer & Bejou, 2016

⁷¹ Meyer & Schwager, 2007

3 State of the Art

The digitalization trend in automotive, had a clear tone set that shifted into enabling omnichannel sales. As it could be observed on chapter two, in the section 2.3.2 *Overview of the current automotive customer journey*, the customer journey in automotive industry, in many cases, has a clear division between physical and digital touchpoints. However, it is already starting to transform and integrate the different touchpoints into a seamless experience.

The shift towards customer centricity, enabling convenience, integration, and transparency throughout the purchase path is the current state of the art. This aim is already normal in other industries. Features like, searching through picture, browsing online, saving products, configuring, continuing in store, getting a consultation call, purchasing, getting the delivery or picking it up are mostly standard. Almost everything that is done on a website or mobile device, can be connected to the experience in store and vice versa.

To enable omnichannel sales, it is required that the brands step closer to the process, and either decide to own or integrate the channels, platforms and in general the touchpoints. Separate channels won't work in an omnichannel strategy, but connected, they can gather insights from the customer data directly and deliver options, products, and experiences according to their expectations.

The first step that most brands took was into shifting the website catalogue approach into something more interactive in which customers can configure their vehicles. A second step that is allowing a level of omnichannel experience is the live dealership inventory that can be browsed and reserved. The latest step that is available in some but not yet available in all manufacturers, is:

- Online browsing and configuring: Vehicle selection, configuration, saving.
- Consultation: Taking the previously made configuration either at the retailer or online and consult online or in person.
- Interactive learning: AR applications that would allow the customer to learn interactively at the dealership about the product and its features.
- Purchase & Financing: Interchangeably enabled to be done either online or at the dealer.
- Delivery or Pick-up: the handover is once again possible directly at a desired address or at a dealership.

One visualization of this omnichannel journey, has been published by Volkswagen, on their vision of how they will be enabling sales. As it is observed in their simplified vision, all stages are present online and offline, and the customer can switch from one to another in a smooth way and according to their wishes.

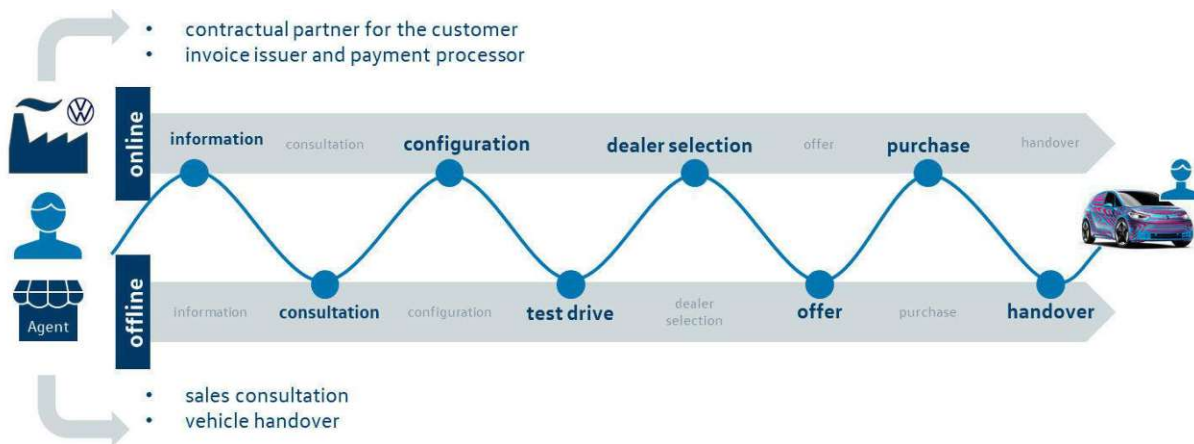


Figure 15: ID Sales Family Volkswagen⁷²

Implementing an online sales channel that is connected to what happens in the physical retail, allows brands to gather further customer data insights on behavior and preferences. Moreover, it allows OEMs to place the customer in the center of the activities and ideally improve their experience by being more in control of what is being offered to them.

Due to regulatory frameworks that protect the current dealership business model in some markets, there are two main important trends towards enabling a fully digitalized automotive customer journey: **direct sales & online sales.**

Direct sales

The first approach is towards direct sales. It is not a new approach anymore since it has proven its success by TESLA. It has revolutionized the traditional manufacturers’ business model and the dealership function as well. There might be different approaches regarding the payment schemes from the OEM towards the dealership, but addressing exclusively what affects the customer, the answers to the essential business model questions in a direct sales model, it would look like this:

⁷² Volkswagen AG, 2020

- What is being sold? Vehicles
- How are they being sold? Through the manufacturer's website platform or in their point of sales.
- To whom are they being sold? To the end customer
- In how much? In the price set by the manufacturer, covering costs and desired margin. Discounts, if any, are centrally controlled.

To summarize, the main changes are in the how and the how much. With the direct sales business model, there is essentially no intermediary and that allows the OEMs to set prices and discounts centrally. The customer will know the price beforehand and there will be no room for negotiation.

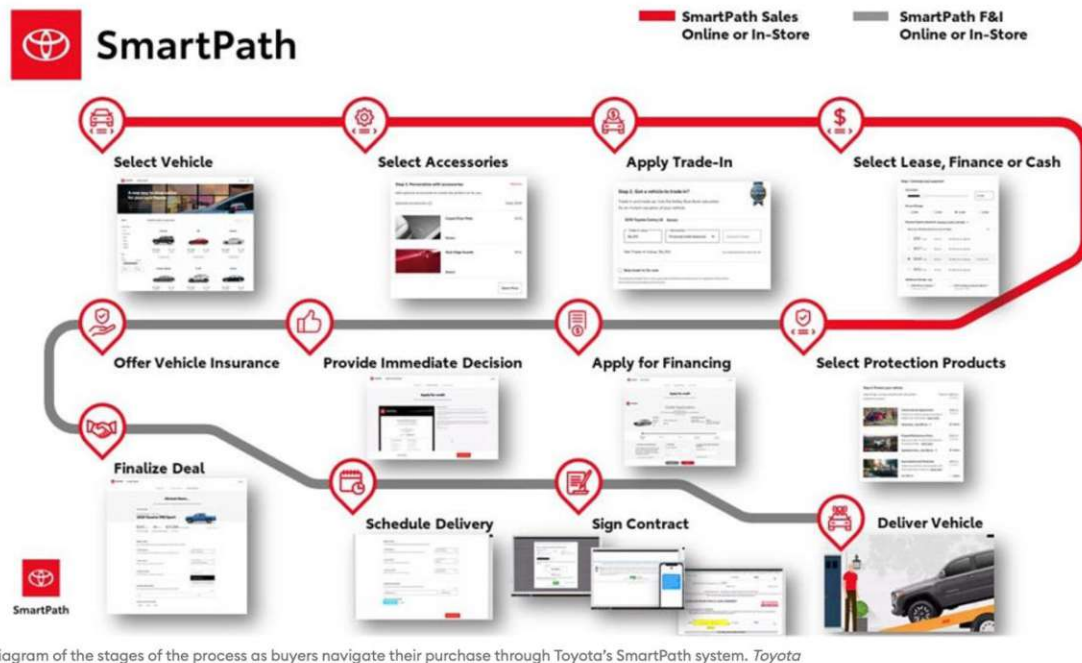
This model works on the Build to Order scheme, since the customer is allowed to select the car exactly like they wish it. With this model, dealerships will mostly turn into agents, that will still support the customer in the ordering process if they want. The agent will hand over the car and will also stay responsible to service the cars and perform the aftersales activities. This model is a central part of the "new" digitalized customer journey, in which the customer can choose to complete a full purchase online or in a hybrid way.

This business model, however beneficial it may seem to be for the customer, cannot be implemented all around the globe since there are technological but most importantly, legislative restrictions in certain markets, like, for example, the United States.

Online sales

This second path is being used by existing OEMs in markets like the US, where dealerships are protected. Brands like Toyota⁷³, are enabling a type of marketplace, in which all dealers upload their inventory, and the customer can select a location, see the available vehicles, apply for financing, and complete the purchase. The whole sales path can be done online if the customer wishes, or they can change from platforms. This is considered state of the art as well, because while still respecting the dealership's autonomy, the customer can seamlessly change from online to physical. Some brands enabled the possibility to show the inventory, but not allowing yet to conclude the transaction online.

⁷³ Toyota, 2022

Figure 16: Toyota Smart Path⁷⁴

4 Digitalization trends in the customer journey

When speaking about digitalizing the customer journey, a comprehensive analysis of the touchpoints and channel strategy must be carefully observed. It is not enough to implement technology, but to implement it where the customer would appreciate it most.

4.1 Touchpoints

To map a customer journey, first one should consider the touchpoints involved in each of the stages. A touchpoint is an interaction of the customer with the brand, and more than just a channel, each touchpoint includes cognitive, emotional, behavioral, sensorial, and social components. The more touchpoints, the more complex and wider a customer journey becomes.⁷⁵

It is important to highlight, that touchpoints are quite varied and can be classified in different ways. On the most basic classification, brands can differentiate between physical and digital or online and offline touchpoints.⁷⁶ Digital touchpoints have increased in number and relevance specially in the recent years with the fast-evolving digitalization. All possible touchpoints in

⁷⁴ Toyota, 2021

⁷⁵ Aichner & Gruber, 2017

⁷⁶ Santos & Martins Goncalves, 2022

each stage must be listed. It is not expected that every customer interacts with all of them, since in some stages there are multiple possible touchpoints, but the customer can choose between them.⁷⁷

As an important consideration, brands and researchers must keep in mind, that while some touchpoints throughout the journey are controlled or influenced by them, some others can be out of their hands.⁷⁸ The touchpoints and interactions can be direct or indirect and they both influence the customer experience.⁷⁹ Direct contact usually considers the touchpoints planned by the brand in the customer journey, mostly on the purchasing, and service stages. Indirect is mostly unplanned, this can happen in the previous stages when the customer is researching, analyzing and haven't yet converted. They are prompt or vulnerable to interact with criticism, news, reports, word-of-mouth recommendations, social media reviews amongst others.

Another classification proposal, includes four types of touchpoints⁸⁰:

- Company-created: touchpoints planned by the brand: advertising, news releases, brochures, packages, and stores design and promotional materials.
- Intrinsic: Interactions needed during conversion. This includes employees, brand representatives and even packaging or product location. This comes intrinsically to the product consumption.
- Unexpected: non anticipated interactions like reviews, news, or word of mouth.
- Customer initiated: interactions that occur when the customer proactively approaches the brand. Usually asking or complaining about the product or service.

Touchpoints have a distinct value; each one is more or less critical in the customer journey and some influence more than other in the overall customer experience. Therefore, it is important to have all considered in the customer journey mapping, but the ones in the critical path, should also be properly identified.⁸¹ It is also suggested that touchpoints should be prioritized considering certain criteria⁸²: (1) impact on brand loyalty, (2) ability of the company to influence the touchpoint experience, (3) cost of making each contact a positive experience, (4) extent to which contacts can be used to gather customer data, and (5) extent to which contacts are appropriate for carrying additional messages. This classification should be able to help optimize and develop the customer journey to improve the overall experience. This classification is particular to each industry and maybe even brand.

⁷⁷ Santos & Martins Goncalves, 2022

⁷⁸ Baxendale, et al., 2015

⁷⁹ Meyer & Schwager, 2007

⁸⁰ Aoki, et al., 2019

⁸¹ Meyer & Schwager, 2007

⁸² Duncan, 2005

4.2 Channel Strategy

As previously discussed, the channels through which the customer interacts in the customer journey, regardless of if they are referring to online or offline touchpoints, are key to shaping the process and the experience.

Customers behavior is not homogeneous, and the channel choice is quite varied. Each customer would have a particular reason to use one or multiple channels.⁸³ Customers look for a certain value when choosing a channel, for example: why should a customer go to a clothing store physically vs online? Do they want to try the clothes first? Do they need them immediately? Do they want to see the color and quality in real life? Is there something special about the store? Or they prefer to buy from home, have no urgency to get the product on the same day and already trust what they are buying. Risk and fear to the unknown, are other factors that the customer take into consideration, as they prefer using familiar channels they trust and that create less friction in their interactions.⁸⁴

In the era of digitalization, the complexity and channel options for the customer, tends to be quite varied. This gives the customer to create a journey of their own, however the aim is to have a seamless experience across channels.⁸⁵

Stores

Nowadays we have different types of stores coexisting: physical stores, ecommerce, digital marketplaces... all of them playing as channels to sell and distribute various products. To decide through which one to sell, is key for the business strategy. Nowadays the trend is to have multiple of them coexisting, so that customers can choose through which they want to interact. It is common, but it is not a rule, some businesses have still decided to exist only in one of the ecosystems.

Physical Stores

Physical stores are what is known as a traditional brick and mortar retail store. They sell products of a distinct brand or multiband, the customer can go in, see the products, touch, try out, ask questions. Physical stores give multi-sensory purchase experience to the customers. High involvement purchases usually require this, since the physical space would allow them to be in close contact with the product. Physical stores allow customers to have “experiential learning”, it is tangible, concrete and will trigger emotions in them.⁸⁶ Physical stores require a

⁸³ Gao, et al., 2019

⁸⁴ Anderl, et al., 2016

⁸⁵ Gao, et al., 2019

⁸⁶ Journal of Marketing retrieved from Berkley.

considerable investment in real state, inventory, and personnel, nevertheless some products, especially high involvement purchases usually benefit from being sold in a physical store.

Online Stores

Online stores are the digital channel in which the customers can browse products and buy conveniently from the comfort of their homes or mobile devices 24/7. These stores can be owned by the brand (ecommerce) or can be marketplaces⁸⁷ (Like Amazon). They represent a good business opportunity for brands because the cost of the online store, compared to the physical retail, is significantly less. Although it has gained popularity, there are still some clients that do not trust online payments and shipments, but this number is decreasing.

Multichannel strategy

Multichannel strategy refers to brands that have different touchpoints to complete a transaction, for example a website, an app, and a physical store. A multichannel strategy allows the customer to use each of them separately. Whatever the customer does on the website, will be independent to the actions on the app or in store.⁸⁸

Omnichannel strategy

This is the ideal strategy for brands in the era of digitalization. They aim to give a seamless experience throughout channels and that their interactions are related to one another. A person might be browsing through the website because it was most convenient at the time, and then switch to the app while still saving the customer's preferences. Omnichannel allows shopping experience between devices. The smooth journey has to allow communication between channels throughout the lifecycle. The customer should think of all channels as if they were one.⁸⁹

Phygital Experience

Phygital is the bridge between physical and digital worlds. Although some publications refer to it as a synonym of omnichannel strategy, it is more of an enhancement or improvement of what omnichannel proposes. In addition to the smooth interaction between channels that omnichannel offers (focused mainly on e-commerce and purchase)⁹⁰, phygital aims to propose experiences that give symbolic, social and identity based advantages.

Successful Phygital strategies need to be: ICE (Instant, connecting and engaging)⁹¹.

⁸⁷ *Marketplace: Platforms that allow multiple brands or individuals sellers to commercialize their products through them.* (LOGICSERVE NEWS DESK, 2021)

⁸⁸ Beck and Rygl, 2015

⁸⁹ Pangarkar, et al., 2022

⁹⁰ Pangarkar, et al., 2022

⁹¹ Ventoniemi, 2023

Instant: Ready to serve the customer needs in the moment they need them.

Connected: Relationship between customer and brand must be reciprocal. Another thing that should be connected is the online and in store experience, it should be aligned. Physical and digital shopping must be connected as well, aspects of both must be present on either channel.

Engaging: Convenient and fun experiences, if it is not noticed... it is not engaging.

4.3 Technological trends shaping customer experience.

As previously seen in the Digitalization chapter, there are Technological trends radars which help identify the biggest trends and see in which developing stages they are. It is also important to remember that for each industry, different technologies might be more relevant to shape the customer experience. For this chapter, the main technologies concerning Automotive and Fashion retail will be covered.

Augmented Reality (AR)

Augmented Reality (AR) is a technology that is known for a few years now. Per definition, AR is a technology that utilizes information from the real-world, like physical objects and gets integrated to enhancements like text, audio, graphics, video or other sorts of information.⁹²

Some common examples of the use of this technology are: Filters to alter a person in a picture (Like snapchat or Instagram), Museum applications to show how the furniture used to be, virtual try outs of sunglasses or makeup, mobile applications to place furniture in a room, and many more.

The key in this technology, is that there is a physical factor.

Virtual Reality (VR)

Virtual Reality, opposed to AR, has no physical factor. The technology and the entire simulation takes place in a virtual space. In VR people place themselves in a virtual world through a device, usually headsets.⁹³

Common usage of this technology is training through simulations, like aviation, healthcare, automotive, military. Some other uses are recreational, live videogames.

One of the technologies with most hype currently.

⁹² Gartner, 2022

⁹³ SAP, 2022

Metaverse

A metaverse (because it is not a single entity) is a “collective virtual shared space”⁹⁴.

It is important to know that it is still being developed and it is made of a group of technologies in an emerging phase. The promise of these technologies is a further level of interaction between physical and virtual worlds. It was developed at first as a gaming environment, however it is shifting into a world of possibilities and various industries are finding use in it.

Some examples of the use of this technology are: trainings for employees in hazardous environments, customer supports, virtual workspaces, amongst others.

NFTs

Non fungible tokens are digital assets based on blockchain technology.⁹⁵ They are unique and are linked to digital art, music, or clothing and other tokenized goods like vehicles or properties. Because of the blockchain technology, the assets of the NFT are verified and cannot be replicated.⁹⁶ The Hype around NFTs started in 2021 and has increasingly gained popularity and at the same time, gained followers and active buyers as well.

Mobile Devices and Applications

Mobile devices and applications are no longer a new trend, but what the user considers standard technologies. An APP is a program that can be installed in a mobile device, it usually has integrations with phone functionalities like camera, music, phone, or GPS. Depending on the app, they can work online or offline as well.⁹⁷ Apps are developed by companies and usually, serve the purpose as a link between channels to enhance the experience and lead to the Omnichannel strategy most brands want to achieve.

This “standard” technology is still not 100% mastered by all brands, however customers expect it.

A good example is social media, which started as web-based platforms and then created the apps for convenience. Now both, regardless of where the user accesses them, contain the same information. This example can be applied to banking, airlines, fashion, automotive and almost every industry.

Payment Systems

For any transaction, there must be a payment. Traditionally speaking, it was done through exchange of goods, then through cash currency, then through credit or debit cards. Although

⁹⁴ Gartner, 2022

⁹⁵ Gartner, 2021

⁹⁶ Gartner, 2021

⁹⁷ BBC News, 2011

the money principle is the same (Excluding for now cryptocurrencies), in retail there have been disruptions in the payment or check out systems.

a) Kiosks

The presence of self service kiosks is gaining increasing relevance. In restaurants like McDonalds it is a standard. Customers have the choice to line up in the usual counter or simply select on the kiosk, order and pay.

b) Self-Check-Out

Similar to the kiosk, it is fulfilling the self-service approach. Customers visit a supermarket or retail store, pick up the goods and proceed to scan and pay for themselves without interacting with other people.

Companies using it are for example IKEA, Zara, Walmart, Billa amongst many others.

c) Just walk out

A technology presented by Amazon on their supermarket in Seattle, it proposes that the customer gets everything they need without bothering to get in line and pay. Amazon utilized the most advanced machine learning, computer vision and AI technologies. Works by scanning a QR with an App and then getting followed by these technologies throughout the premise. At the end, the customer just exits the store.⁹⁸

5 Digital Experience Benchmark

Observing and exploring the digital innovations of an industry, without comparing what is going on in the environment, especially in other industries, would be of little added value. If an entire industry changes slowly or is not changing at all, while ignoring external impulses, it might be missing important opportunities. Keeping this thought in mind, and after reviewing what is being used currently in the Automotive Industry, its customer journey and what the technology trends are showing as relevant for the fashion and Automotive Industry, in this chapter, the most innovative introductions for the fashion Industry in the retail landscape will be analyzed. The aim is to observe the trends that are being enabled or potentialized by digital technologies. The regular initiatives that already existed in their retail environment, are excluded.

⁹⁸ Schmidt-Jacobsen, 2022

5.1 Definition of the benchmark

Fashion industry has been paired in the past with automotive industry for design collaborations in interior or exterior design of the vehicles. Cars have also been seen as a symbol of status or a fashion accessory. We can consider it a benchmark industry because even though it sells “basic” consumption goods, it changes very rapidly due to trends and customer demands. Automotive, on the other hand, is quite conservative in the retail and product changes had longer lifecycles. That has been changing recently since the appearance of new competitors that challenged the business model.

In fashion retail, there have been many competitors and disruptions as well, therefore for finding the most innovative digital experiences, an online search on fashion and digitalization and retail was done through search engines. To cover the most representative brands, the top ten, based on their brand value⁹⁹, will be analyzed in depth. Additionally, examples of brands with innovations that appear from brand and media coverage will be included as well.

5.2 Innovations In Fashion Retail

Nike

The American sportswear brand is pushing digitalization and innovation in its retail stores. They have three special flagship stores in United States, China and France called “Houses of Innovation”¹⁰⁰. The concept is a big store that has not only the biggest assortment of sneakers for the customers to choose from, but also special experiential areas to attract people to visit the store. It is a truly phygital retailer, because the customer has to possibility to enhance the physical experience by using various devices.

There some main innovations can be observed:

- a) Nike by You: This is the customization lab in store, The customer has the chance to do it as well in the online store, however in one of these 3 stores, they can do it directly there with the help of experts. Depending on the design complexity it can be ready in a couple of hours or 7 days later.
- b) Nike App Features in store:
 - a. Shop the look: Customers can scan a mannequin and check all that it is wearing. Verify size availability and request them to be sent to the fitting room.
 - b. Scan to try: Customers scan an item and have it delivered to a fitting room without having to carry it around the store.

⁹⁹ Brand Finance, 2022

¹⁰⁰ Nike, 2022

- c. Instant checkout: App remembers can scan and pay from the app and skip the line.
- d. Experiences: This feature is not only in store, but everywhere. It gives opportunities for members to participate in sports and connect with other members. Events can take place online in livestream sessions or in person.
- c) Instant Checkout Stations: Placed throughout the store so that customers can self-checkout themselves.
- d) Nike Speed Shop: The section created via customer data in the area and shopping patterns. They put the most bough items in New York or Paris for example, and customers can do instant checkout. Also, if the browsed and shopped online, they can reserve items via phone and can pick them up from an in-store locker on the same day.
- e) Nike Expert Studio: Can book the service through app or in store and it is a one-on one personal shopper service to find the right items and work on a personal look.
- f) Gamification: This is not a permanent feature but was used when opening and in certain campaigns to test products. With *Reactland*, an activation for sneakers in store, 48% of the players converted to purchase, according to the company’s report.¹⁰¹
- g) Metaverse & NFTs: To complete the brand universe, Nike has also decided to join Metaverse. “Nikeland¹⁰²” is in Roblox where users can buy shoes, clothes, and accessories for their avatars. These items can be worn in different environments of Roblox. The store has already had 7 million visitors in five months. The brand purchased the studio RTFKT (artifact) to design, create and commercialize Non-Fungible Tokens.¹⁰³ They released CrytoKicks Dunk Genesis collection which can be customized.¹⁰⁴

Table 3: Nike Technology summary¹⁰⁵

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X		X	X	X	X	X

¹⁰¹ Retail Focus, 2022

¹⁰² Bastian, 2022

¹⁰³ Wired, 2022

¹⁰⁴ Forbes, 2022

¹⁰⁵ Self Creation

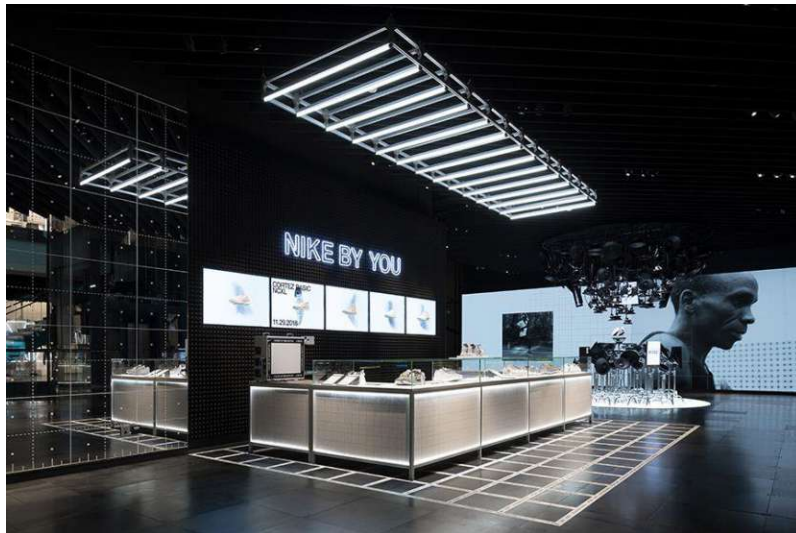


Figure 17: Nike House Of Innovation¹⁰⁶

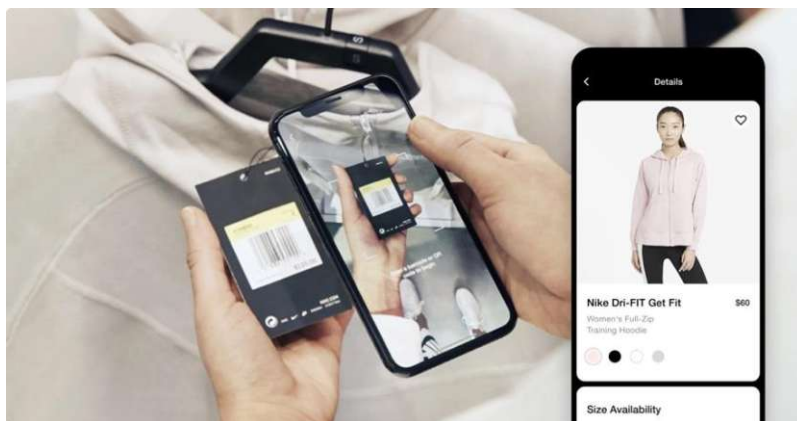


Figure 18: Nike App Functionality¹⁰⁷

Louis Vuitton

A brand of the multinational conglomerate LVMH Moët Hennessy Louis Vuitton. The digitalization efforts for the brand are big, they have even launched a yearly start-up competition focused on 7 main pillars for the brand¹⁰⁸: 3D/Virtual Product Experience & Metaverse, Employee Experience & CSR, Media & Brand Awareness, Omnichannel & Retail, Operations & Manufacturing Excellence, Sustainability. From the online screening and monitoring of the media releases, spokespersons from the company stand firm on the importance on personal and physical shopping.

¹⁰⁶ Nike, 2022

¹⁰⁷ Nike, 2022

¹⁰⁸ LVMH, 2022

Jean Jacques Guiony, chief financial officer of LVMH, told CNBC that the customer experience in-store cannot be replicated online. He still believed that online would be a complementary experience to what could be offered in person.¹⁰⁹

Ian Rogers, Chief Digital Officer thinks that luxury shopping is not something that will become self-serve on the internet. Customers from this sector expect a high level of service, regardless of the channel and therefore their digital strategy focuses on investing in remote customer support.¹¹⁰

The Omnichannel & Retail vertical from their contest, is very well aligned to the focus mentioned by the executives. The most recent winners consisted of:

- a) A company focused on translation of language for enhancing the chat tools for the ecommerce channel.
- b) A tool for enhanced video presentation for remote sales of watches and jewelry.
- c) Workforce management software, for handling personnel.
- d) AI for identifying originals vs fake products.

Louis Vuitton does offer online experience and ecommerce. Their focus is to offer exceptional customer service remotely via different tools, but for the purpose of this section, highlighting “phygital” experience in-store, there were no highlights to be mentioned.

From what it can be observed, the brand will reinforce the efforts on customer service in the online channel and continue to build up unique experiences in store.

In the traditional channels, technologies are mostly used for marketing and engagement purposes, but the retail highlight of the brand is on art collaborations, exclusive pop-up stores and personal service, one-on-one consultations to their customers.

In an online article from High Snobiety, an interview of Louis Vuitton’s chairman and chief executive Michael Burke, was cited saying that: *“It’s not about taking what we did in Paris and replicating it in Tokyo... what we have to be involved with goes way beyond commercial, it’s cultural,”* *“The objective is engaging with your clients in every single city. They’re demanding a Vuitton point of view on their city.”*¹¹¹

¹⁰⁹ Retail Wire, 2021

¹¹⁰ Wired, 2018

¹¹¹ High Snobiety, 2021

There are some articles mentioning brand activations for campaigns with the use of AR, like an activation campaign in 2021 with Zooom with Friends outside of the store in Paris¹¹² or an APP with AR experience for the most recent collaboration with Yayoi Kusama.¹¹³

Metaverse & NFTs:

Through a videogame, the French brand first joined metaverse. It is called “Louis the Game”¹¹⁴: and had the challenge to find 200 candles throughout eight worlds. They could earn NFTs as rewards while playing, these tokens cannot be sold.

Table 4: Louis Vuitton Technology Summary¹¹⁵

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X		X	X	X	X	



Figure 19: Louis Vuitton Zooom AR¹¹⁶

¹¹² Visualise, 2021
¹¹³ Google Play, 2023
¹¹⁴ Ticket Fairy, 2022
¹¹⁵ Self Creation
¹¹⁶ Louis Vuitton, 2021

Gucci

The Italian luxury fashion brand was one of the first ones to embrace online sales through eCommerce. Like other luxury players, the features of online customer service through chat or email and “find in store” features were the most basic to be included. Today there are some more integrations between the website, App, and physical store¹¹⁷:

- a) Personal shopper appointments (can be virtual or in person).
- b) Buy online/ app and pick-up in store.
- c) AR virtual try on¹¹⁸: the Ace sneaker¹¹⁹ range can be tried on using the mobile device and afterwards purchased. Recently launched for rings and bracelets as well with 3D engagement, to put in different lighting, surfaces, and textures. It has also a size calculator for being more accurate. This feature is mainly aimed for the online sales, nevertheless, digital supporting physical.
- d) Cryptocurrency¹²⁰: They are accepting already crypto payments in the US.
- e) AI¹²¹: Support in the salesfloor to give accurate data in real-time on available colors and sizes, also information about the customer’s past purchases, for more accurate suggestions.
- f) Interactive displays¹²²: In some stores there are interactive displays showing collections and products. The customer can choose from the tablet and see the product on bigger screens.
- g) Product Kiosks¹²³: To browse the options, colors and availability.
- h) Interactive mirrors¹²⁴: To engage with the customer on site.
- i) VR experiences: Like other brands, VR was used as marketing tool for time-specific campaigns linking physical rewards.
- j) Metaverse & NFTs: One of the fashion brands who pioneered in Metaverse¹²⁵. The brand is active on Roblox and launched digital-only sneakers to be worn by avatars. They have also created Gucci Town in Zepeto environment, where users can buy digital goods. They can also have creative experiences, play mini games, visit the café and

¹¹⁷ Gucci, 2022

¹¹⁸ KIVISENSE, 2022

¹¹⁹ Luxury Facts, 2019

¹²⁰ Bitcoin, 2022

¹²¹ AI Data Analytics Network, 2022

¹²² August, 2014

¹²³ August, 2014

¹²⁴ August, 2014

¹²⁵ Gucci, 2022

interact. They also launched a crypto art gallery to exhibit works of various artists.¹²⁶ They recently had a collaboration with Superplastic, called SU PERGUCCI¹²⁷, a very limited NFT thee-part series collection. Another series of NFTs is called Gucci Grail.¹²⁸



Figure 20: Gucci Virtual Try On¹²⁹

Table 5: Gucci Technology Summary¹³⁰

AR	VR	METAVESE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X	X	X	X	X	X	X

Channel

Another landmark brand in the fashion industry is innovating in their retail strategy. While Pop-up stores, theme stores and seasonal experiences are trends, Chanel is bringing “Private stores” as the newest change in their retail. These target top-spender customers and will be starting in Asia this year (2023).¹³¹ It is important to note that Chanel does not sell collections online, only beauty products.¹³²

¹²⁶ Gucci, 2022

¹²⁷ #Legend, 2022

¹²⁸ Raconteur, 2022

¹²⁹ FASHNERD, 2022

¹³⁰ Self Creation

¹³¹ Business of Fashion, 2022

¹³² Fashion United, 2022

When it comes to phygital integration or digital technologies present in stores, across the different products lines, the following could be found:

- a) Gamification¹³³: For beauty items, Chanel had an arcade activation in China, in which they had sample products
- b) Virtual Try On¹³⁴: This feature is available as well for the lipsticks and make up un general. Fueled by AR technology.
- c) AR Smart mirrors¹³⁵: allowing customers to have more information about a product and virtually try on the product.
- d) AR Fitting Rooms:¹³⁶ The customer gets to choose the garments they are interested on the App, they book their visit and they are ready for when they get there. On the mirror of the fitting room there are videos of the runway or styling ideas.
- e) RFID Tags¹³⁷: If new items are brought to the fitting room, the mirrors identify them via RFID and add them to the experience with looks.
- f) Metaverse & NFTs: The French brand is not yet present in Metaverse, but probably in the near future. Chanel's President Bruno Pavlovsky told Vogue Business¹³⁸ that they *“will never be the first one. Metaverse is a revolution in the digital world. The day we are ready, we’ll probably come with our own contribution.”*

Table 6: Chanel Technology Summary¹³⁹

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X				X	X	

¹³³ JING Daily, 2019

¹³⁴ CHANEL, 2022

¹³⁵ The International Academy, 2022

¹³⁶ Fashion Network, 2020

¹³⁷ Fashion Network, 2020

¹³⁸ SHOWStudio, 2022

¹³⁹ Self Creation



Figure 21: Chanel AR Fitting Rooms¹⁴⁰

Adidas

The German sports brand recently redesigned their flagship store in Beijing, China and is offering a broad option range of phygital experiences, some of which are¹⁴¹:

- a) Gamification: A giant cube that works like a lottery to vote for and buy limited edition products.
- b) Sound Garden Experience: an interactive spot where users can create a personalized music video with the brand.
- c) AR connection: An immersive gallery exhibition that shows interactive AR experiences to show Adidas events around the city. They can explore and join activities as part of their tailored wellness plan.

In other flagship locations, some functional digital features are included:

- d) RFID Mirrors¹⁴²: to show look ideas according to customer choices and give additional information about the products.
- e) Hype Wall: Featuring exclusive product drops

¹⁴⁰ Fashion Network, 2020

¹⁴¹ Designboom, 2022

¹⁴² Frame, 2019

- f) Bring it to me¹⁴³: Function connected to the app, in which they can scan products, check availability and shop on the spot if they want to.
- g) Booking services: Through the app, booking cleaning service, bra fitting or shoe fitting.
- h) Share my look: customers can interact with smart mirrors take a photo of themselves with an item from the store and share it on their social media.
- i) Interactive shoppable displays: Customers can see real size products on screens, change the look of the mannequin, view details and move to their shopping cart to purchase.
- j) Run Genie ¹⁴⁴: an in-store tool to recommend the best sneaker for the customer. By running in a smart treadmill in store, customers can make a test run that is monitored. According to their running style and physical traits a personalized recommendation will be given to the customer.
- k) Metaverse & NFTs: Adidas has launched a full collection of virtual clothing¹⁴⁵ and accessories that can be bought and worn in metaverse. They have an online website where it can be directly accessed. At first the launched a collection through the campaign “into the metaverse” with limited NFTs that sold out almost immediately.¹⁴⁶

Table 7: Adidas Technology Summary¹⁴⁷

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X	X	X	X	X	X	X

¹⁴³ Adidas Group, 2019

¹⁴⁴ eginedigital, 2022

¹⁴⁵ Adidas, 2022

¹⁴⁶ Retail Brew, 2022

¹⁴⁷ Self Creation

Figure 22: Adidas Soundgarden Experience¹⁴⁸

Hermès

Regarding the family-owned French luxury brand, there was no news that could be found regarding phygital innovation in their retail stores. So far they have gone digital with online stores, they are participating in the Metaverse with NFTs but the retail strategy is not focused on technology or omnichannel.

What could be found, was a strong focus on culturally individual shops¹⁴⁹ according to the locations. Another interesting approach is launching a pop-up gym store¹⁵⁰ for experiences, the customers can register and attend the lessons, get advice and be part of the community for a limited amount of time, but regarding the focus of this study, there was no contribution that could be added.

Metaverse & NFTs: The brand has not officially launched an environment or goods sold in metaverse or as NFTs, however they recently filed some trademarks that cover retail stores, virtual goods and services, online, virtual and mixed realities.¹⁵¹

¹⁴⁸ Designboom, 2022

¹⁴⁹ Forbes, 2022

¹⁵⁰ Inside Retail, 2022

¹⁵¹ Coin Telegraph, 2022

They also filed a lawsuit against creators that were selling NFT “metavirkin” which was similar to the emblematic “Birkin Bags” from Hermes. The case clearly showed the customer’s interest for their luxury goods in the virtual world.

Table 8: Hermes Technology summary¹⁵²

AR	VR	METAVEVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS

ZARA

Zara is one of the biggest fashion names in the world. It is considered part of the “Fast-fashion brands” and targets a wide range of customer age groups. They have sales in stores all around the globe and through website and app.

For their retail, they are focusing as well on digitalization, phygital experiences and overall closing the omnichannel strategy.

Some of the technologies that can be found in Zara stores around the world are¹⁵³¹⁵⁴:

- a) Click and Find: App functionality that enables the user to find the desired item in store.
- b) Book a fitting room: Feature to make a more convenient in store experience and to avoid waiting in line.
- c) Pay & Go: customers can pay by scanning using their app in store.
- d) Click and Collect: Customers can buy and pick up within 30 minutes.
- e) Interactive AR, AI mirrors: With RFID technology to detect the garment, give information on the item and suggest more items to complete the outfit.
- f) iPad: To help the employees find items and also accept payments on the go.
- g) Self-check-out: easy and without the use of the app.
- h) Metaverse & NFTs: They have released a virtual collection called “Lime Glam”¹⁵⁵ available in Zepeto Metaverse, as well as nail polish for the avatars. A peculiarity of this collection is that it can be also purchased offline, however it is a limited-edition capsule.

¹⁵² Self Creation

¹⁵³ Retail Ritesh, 2018

¹⁵⁴ Power Retail, 2021

¹⁵⁵ Hypebae, 2022

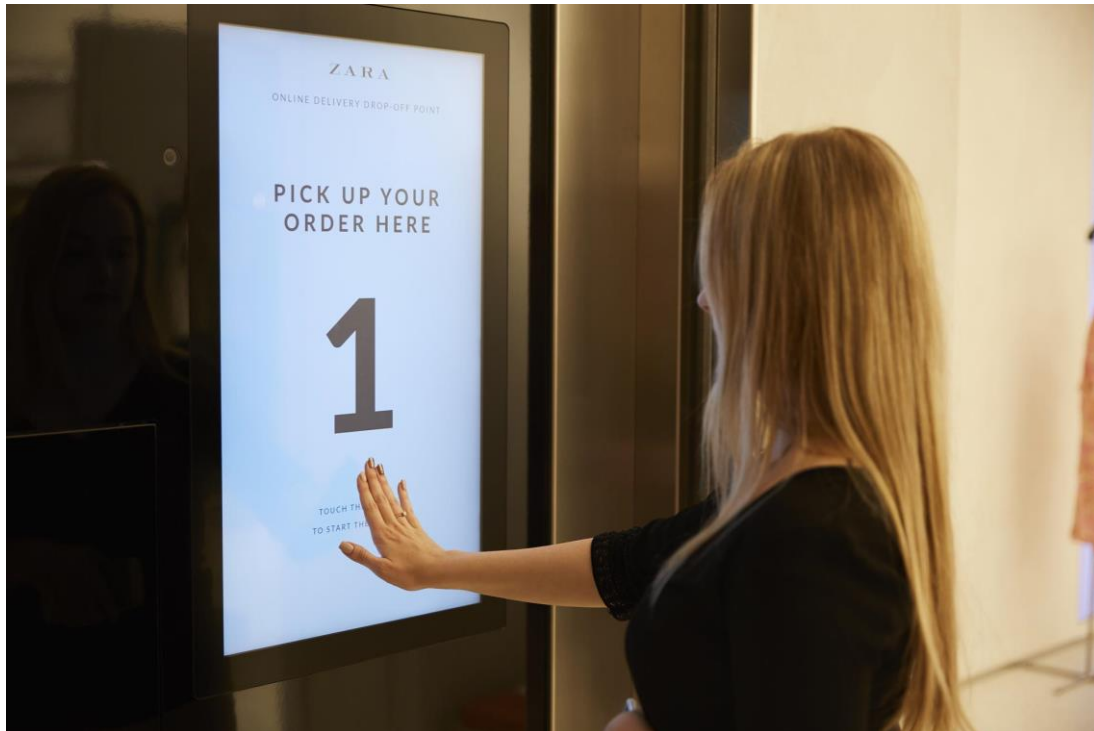


Figure 23: Zara Digitally Integrated Store¹⁵⁶

Lefties, a daughter company of Inditex group also launched an innovative store in Barcelona¹⁵⁷ on 2022 with the following innovations that will probably reach ZARA as well:

- a) Easy Pay: RFID automatic reader of the customer's items that allows multiple payment methods.
- b) Pick up and online return spots: Easy online merchandise return spots to avoid sending through delivery partners or talking to a sales associate.
- c) In store personalization: More than 100 options to choose through interactive display that allows to choose the item, select personalization items, see the simulation of the design before and then confirming and paying for it.
- d) Intelligent Fitting Rooms: Makes a virtual line and assigns customers to a designated fitting room. Customers will get an APP notification when a fitting room is available.
- e) Fitting room return box: customers can place the unwanted items in there. The clothes go to a carousel in the warehouse and makes the fitting room process easier, by eliminating the returns desk.
- f) Gamification: Arcade machines for the customers to play and stay in store longer time.
- g) Return area: self-service and independent to cashier section.

¹⁵⁶ Retail Week, 2018

¹⁵⁷ Peru Retail, 2022

Adding to the digital integration of the store, it follows the trend of making experiences in store with theme areas, a coffee shop, pet friendly sections and games.

Table 9: ZARA Technology Summary¹⁵⁸

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X	X	X		X	X	X

H&M

H&M digital instore experiences, couldn't be far behind from what competitors are doing. Similar to Zara, they are rolling out pilot projects in flagship stores to enhance customer experience through the use of technology in the "brick-and-mortar" physical retailer. As group, H&M is piloting innovations in their COS stores like¹⁵⁹:

- a) Fitting Room Smart mirrors: Allowing customers to order more items without leaving the fitting room. As well as personalized styling recommendations according to what they brought.
- b) Shopfloor fitting rooms: for virtual try on and styling.

For pure H&M stores, some of the technologies include¹⁶⁰¹⁶¹:

- a) RFID tech for tracking availability in real time.
- b) Payment options: Mobile payment ofrom anywhere in the store
- c) Fitting Room Smart Mirrors: Detecting the products and showing styling suggestions.
- d) Shop the look: Allows customers to shop on their phone by scanning the QR of the look, select seizes and shop.
- e) Selfie Mirror: Customers have the possibility to take a photo and have it rendered in a magazine cover they can download and share.

Similar to other brands, experiences including art, music, fashion will take part as well as event happening and collaborations to invite more people in to the store.

¹⁵⁸ Self Creation

¹⁵⁹ Charged Retail, 2022

¹⁶⁰ RIS News, 2022

¹⁶¹ Fashion Gone Rogue, 2022

f) Metaverse & NFTs: H&M is present in Roblox with Loooptopia¹⁶². It is an interactive virtual experience in which users can play, create clothes, attend events, recycle clothes and interact with the brand.

Table 10: H&M Technology Summary¹⁶³

AR	VR	METAVEVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X	X	X		X	X	X

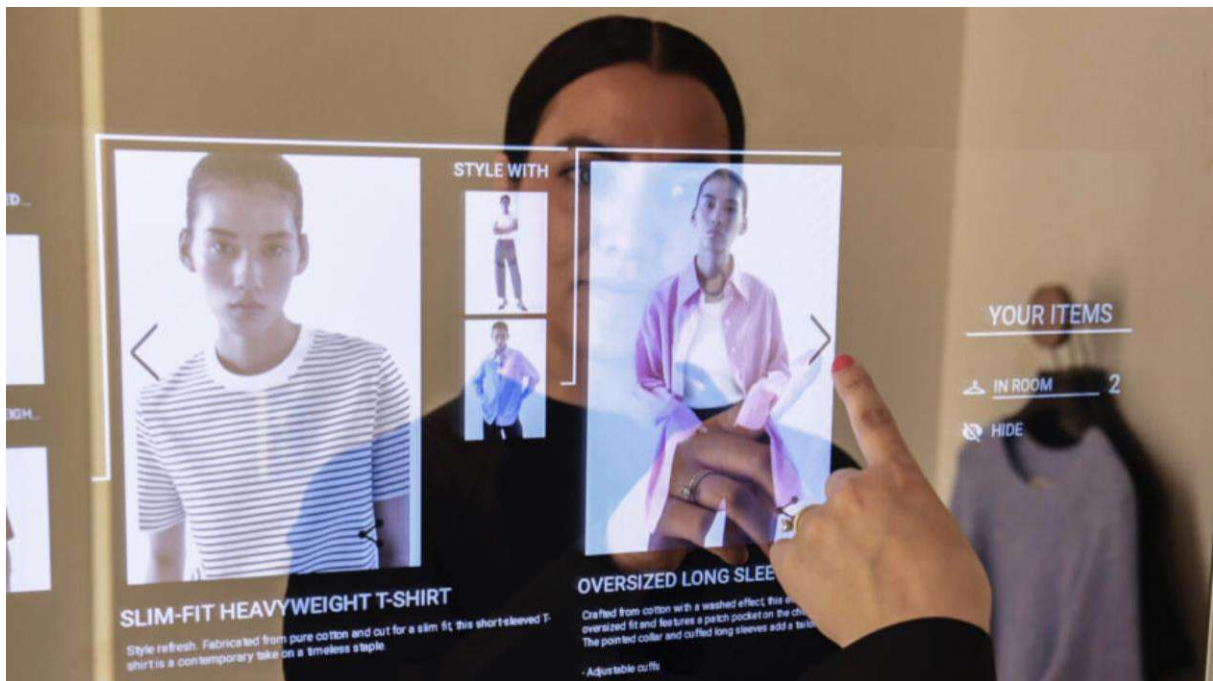


Figure 24: Smart Mirrors COS¹⁶⁴

Cartier

Cartier has acknowledged the importance of enhancing customer experience through digital touchpoints in store as well, both for customer and staff. Piloting in some boutiques, to roll out in different markets, they have implemented solutions to improve the level of engagement of the customers.¹⁶⁵

¹⁶² NFT Blog, 2023

¹⁶³ Self Creation

¹⁶⁴ Retail Detail, 2022; H&M Group, 2022

¹⁶⁵ Occtoo, 2022

- a) Distance Selling tools: When the customer is in store and if a product is not available or is on presale, they can present the pieces in realistic ways.
- b) Personalization: An app to tailor engagement rings according to their wishes. Browsing from all possibilities around the world, localized with language according to the market. Also another initiative is called *Cord Bar Service*,¹⁶⁶ with the purpose of personalizing Cartier’s bracelets and guide customer throughout the process in store.
- c) Multi-sensoric experiences¹⁶⁷: Campaigns with interactive, personalized, shareable and augmented reality.
- d) Metaverse & NFTs: No mediatic coverage around Cartier in the Metaverse or NFTs could be found at the moment of writing and researching.

Table 11: Cartier Technology Summary¹⁶⁸

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X					X	

UNIQLO

The Japanese fashion brand is also innovating their retail strategy including digital aspects.

Some of the aspects that can be found are^{169,170}

- a) Interactive booth: Allows the customer to explore an interactive catalogue of a series of T-shirts.
- b) Personalization: Via the UPme! App, the customer can create their design and get it printed within 20 minutes.
- c) Self-Checkout: Selected stores have connected chips (RFID) that are automatically recognized, this replaces bar codes and makes a simpler and faster checkout process.
- d) Vending machines: This is an alternative point of sales, since it is not necessarily in the same store. Customers can buy from these machines at any time and easily return by post or in store if needed.

¹⁶⁶ Occtoo, 2022

¹⁶⁷ Marketing Interactive, 2022

¹⁶⁸ Self Creation

¹⁶⁹ Behance, 2012

¹⁷⁰ The Strategy Story, 2021

- e) Click and Collect: Through the APP, if orders are made before 11:00am they can pick up at the nearest store.
- f) Metaverse & NFTs: The Japanese brand started selling virtual outfits for Minecraft players.

Table 12: Uniqlo Technology Summary¹⁷¹

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
				X	X	X



Figure 25: UNIQLO Interactive Booth¹⁷²

Burberry

This year, the British brand didn't make to top ten, however it is constantly headlining about digital integration and innovation in its channels. The brand announced in 2000 the goal to become a fully digital luxury company, being pioneers in eCommerce, social media and live streaming before its competitors.¹⁷³

¹⁷¹ Self Creation

¹⁷² Behance, 2012

¹⁷³ Indigo Digital, 2022

In China, they opened the first “social store” and it has very strong integration with WeChat alongside other experiences in place. Some of the functionalities they can have with phygital interaction are¹⁷⁴:

- a) Booking of fitting rooms, and clothes to try on & the possibility to select the background music.
- b) Personal shopper appointments with specialized sales associates.
- c) Features to share special content on social media.
- d) They can book a table or tour in the “Thomas Café” (in-store experience café).
- e) Gamification: They can earn social currency for their in-store activities, which can be traded for outfits for their app avatars or exclusive menu items.
- f) Scanning QR codes for more information about the product, styling tips and inspiration for each of the products, they also give rewards in the social currency.

When it comes to innovations regarding physical/digital links in other channels, the brand offers in their website an AR feature¹⁷⁵ to generate a 3D model of the bag so they can position it somewhere and evaluate size, colors and explore product details. This is not used in store, but is an enhancement of the digital store. Other AR applications in store or pop-up stores are mainly for marketing and engagement purposes, similar to other brands:

- h) QR scans to activate AR filters in campaigns.

¹⁷⁴ Business of Fashion, 2021

¹⁷⁵ Burberry, 2022

Figure 26: Burberry Retail Szenen¹⁷⁶

i) Metaverse & NFTs:

- a. Sharky B¹⁷⁷ is an NFT that can be purchased, upgraded and sold within the game “Blankos Block Party”. The character can be trained and play. The brand also launched NFT accessories for the game which can be used in other characters as well.
- b. The British band also joined Minecraft in a new in game experience called: Burberry: Freedom to go beyond¹⁷⁸. The environment is a London virtual reality with Burberry characters and motifs. The users have 15 free skins to use and download.
- c. To continue the metaverse venture, they also launched a virtual bag collection on Roblox¹⁷⁹. It consisted of 5 bag designs that could be purchased for was available to shop for only 24 hours each.

¹⁷⁶ British Vogue, 2020

¹⁷⁷ #Legend, 2022

¹⁷⁸ Domus Web, 2022

¹⁷⁹ Cyptonomist, 2022

Table 13: Burberry Technology Summary¹⁸⁰

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X	X	X	X	X	X	

Hugo Boss¹⁸¹

A brand-new flagship was opened in 2022 in London. For the German brand, the physical store in this location, is showcasing what the future of Hugo Boss retailers is going to look like. Some of the Digital aspects included in the store are:

- Interactive Outside Display- Gamification: The screens show an interactive videogame, with which pedestrians or passers in front of the store can play through their mobile devices.
- Influencer Shopping Displays: Displays inside the store featuring content from brand ambassadors. These displays are enabled with a digital shopping function so that customers in the store can explore the items and buy them via screen or tablet.
- Personalization: Through interactive screens customers can customize their products and then purchase it.
- Metaverse & NFTs: There is a dedicated space in their website to explain their first steps into the metaverse.¹⁸² The German brand launched 5 NFTs in 2021 alongside physical twins that were not sold but given away as prizes. They later auctioned NFTs for a Women's day initiative. They launched an NFT collection¹⁸³ late 2022 with the studio "Imaginary ones"¹⁸⁴. It consisted of 1,001 3D animations to commemorate the World Mental Health day, these were also auctioned. They made a total of 500 T-shirts open for sale accompanying the NFT collection and via Snapchat lens, a special effect could be unlocked by scanning the shirts.

Table 14: Hugo Boss Technology Summary¹⁸⁵

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X	X	X	X	X	X	

¹⁸⁰ Self Creation¹⁸¹ Fashion Network, 2022¹⁸² Hugo Boss, 2022¹⁸³ Hugo Boss, 2022¹⁸⁴ CryptoSlate, 2022¹⁸⁵ Self Creation

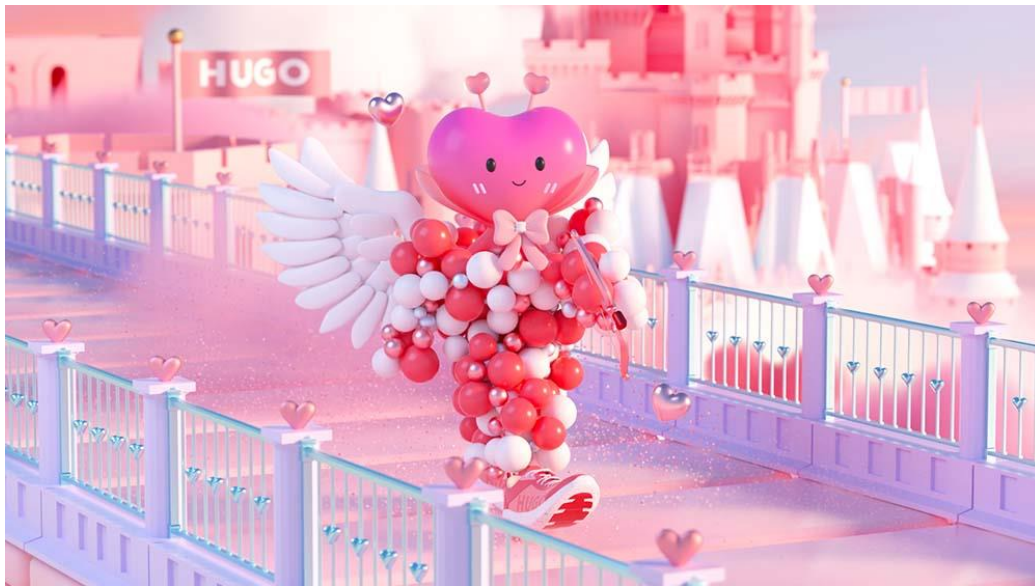


Figure 27: HUGO x Imaginary Ones¹⁸⁶

Amazon

Finally, Amazon is an important player to keep an eye on when it comes to retailing, and fashion retail. The fact that the biggest marketplace decided to open physical stores, shows the growing customer interest of having physical purchasing experiences as well. The experience of their stores had to go hand in hand with what they already offer online, therefore the concept of Amazon Go (convenience and grocery) and Amazon Style (Fashion)¹⁸⁷ includes some of these technological experiences¹⁸⁸¹⁸⁹

- a) “Just walk out”- The shopping experience in which there are no cashiers or registers. The store works through Amazon Go App and gets billed to the amazon account. The technology used for this is artificial intelligence, RFID, computer vision, cameras and sensors throughout the store to ensure only what the customer takes is being charged.
- b) Smart Recommendations: Through machine learning they will help customers find clothes and recommendations.
- c) Browse online try in store: Customers can check and select items on the app and choose to see and try on in store.

¹⁸⁶ Hugo Boss, 2022

¹⁸⁷ Business of Fashion, 2022

¹⁸⁸ Pocket-lint, 2023

¹⁸⁹ Amazon, 2022

- d) QR Scanning: Customers can scan and verify availability of products, sizes and ratings. They can choose to pick up and take home or have them sent to a fitting room, they get notified when the fitting room is ready, and they can unlock it with their phone. Even without purchase these items are saved on the account in case the customer decides to purchase later.
- e) Interactive fitting room: Equipped with touchscreen displays, the customers can check out tailored recommendations and change the size and color of the items they already have. Also asking for additional pieces without leaving the fitting room.
- f) Payment methods: In Amazon Style they can scan a QR and get charged to their account, use a self service check out station and pay by cash or card as well.
- g) Metaverse & NFTs: Amazon is not yet present as marketplace in a metaverse but are preparing VR tools in the online shopping experience.

Table 15: Amazon Technology Summary¹⁹⁰

AR	VR	METVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X				X	X	X



Figure 28: Amazon Style¹⁹¹

¹⁹⁰ Self Creation

¹⁹¹ Business Insider, 2022

5.3 Innovations In Automotive Retail¹⁹²

To continue with the methodology of research regarding the benchmark industry, for Automotive innovations, a detailed screening of the top ten Automotive Brands will be reviewed in this section alongside the technologies implemented in their retail experience. Additionally, players with relevant innovative approaches will be included as well.

Toyota

Toyota revolutionized automotive when introducing their methodology into production. When it comes to retail, some of the recent innovations in their showrooms include¹⁹³¹⁹⁴

- a) LED Hero Walls: To present new products and technologies.
- b) Audio systems: To play music for the customers.
- c) Displays: To present personalized messages for customers.
- d) Augmented reality: Allowing customers to visualize accessories for the cars directly on the vehicle.
- e) Smart Path¹⁹⁵: The omnichannel and “self-service” strategy of Toyota. The model allows customers to make the purchasing process online, offline or hybrid by seamlessly changing from one platform to the other. In the showroom they have tablets where they can pick up their online journey where they left it and complete the purchase with or without support from salesmen at the dealership. Online, the inventory is filtered according to zip code and by selecting one dealer at the time, they can select the car, select accessories, get a trade in offer, apply for their financing and even add insurances in the same platform.
- f) App:¹⁹⁶ The brand has multiple diverse apps depending on the market. The main functionalities include route planning, find your car, stay informed, reminders of tax and maintenance, booking service appointments, and usage tips.
- g) Metaverse & NFTs: Toyota announced their entering into the metaverse¹⁹⁷, however unlike other competitors, the approach is for the employees and workforce. They have decided to have virtual workspaces where they can interact. They launched early 2023 collectible NFTs at the Tokyo Auto Salon.¹⁹⁸ The concept was a stamp rally to connect interactively with attendees, they could collect them in different areas of the exhibition booth and partner booths as well.

¹⁹² Brand Directory, 2022

¹⁹³ TRISON, 2022

¹⁹⁴ AutomotivIT, 2022

¹⁹⁵ Forbes, 2021

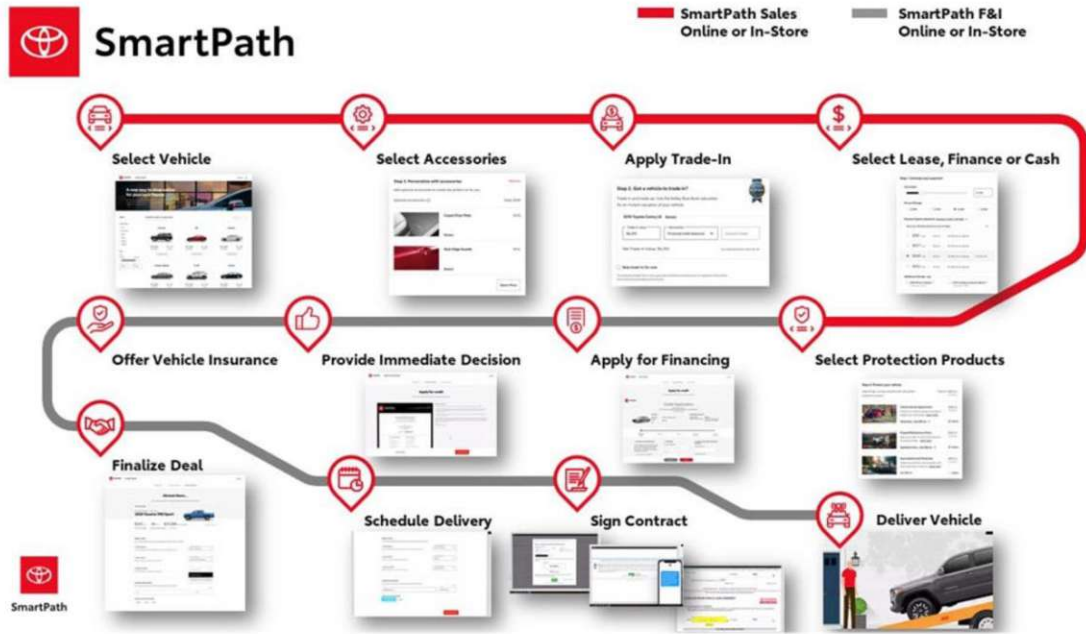
¹⁹⁶ Toyota, 2023

¹⁹⁷ Rarity Sniper, 2022

¹⁹⁸ Medium, 2023

Table 16: Toyota Technology Summary¹⁹⁹

AR	VR	METAVEVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X		X			X	X



A diagram of the stages of the process as buyers navigate their purchase through Toyota's SmartPath system. Toyota

Figure 29: Toyota Smart Path²⁰⁰

Mercedes-Benz

Mercedes-Benz is shifting their strategy into being fully a luxury brand. With this in mind, there are some trends that are being considered in the strategy of their retail touchpoints:

- A) G Box²⁰¹: The interactive experience for the configuration of the G-Class. It is a phygital configurator with touchscreens and 3D-Printed objects with RFID technology that instantly adapt the visualization of the G-Class that is being designed. There is also a mobile integration with a QR code and instant personalized renders of the final vehicle. For this BTO product, there are more than 1 million variations that can be built in the configurator.

¹⁹⁹ Self Creation

²⁰⁰ Toyota, 2023

²⁰¹ Mediaman, 2022

- B) Online Showroom²⁰²: The Mercedes-Benz alternative for online sales. The customer is able to configure a car and request to get contacted by the dealer to order, or can choose from existing stock, pay a booking fee and then pick up in their dealer/agent.
- C) VR Test Drive²⁰³: Simulation from the passenger seat experience. The customer wears VR glasses and is seating in a seat that transfer the driving movements to give a realistic feeling. The purpose is to showcase the assistance systems and support in the sales process.
- D) One touch retail²⁰⁴: The platform to join customer interactions from online to physical touchpoints and vice versa. Allows to send and process documents for signature, give online video consultation and communicate through the most convenient channels for the customer.
- E) Tablets and screens²⁰⁵: Sales support from all around the showroom with sales tablets and screens for showing information to the customer while explaining the product benefits.
- F) Live-consultation studio: Solution for certain markets, in which there is online consultation, personalization and support for experiencing and getting to know the products.
- G) Studio-Odeonsplatz: Transforming the traditional showroom retail, Mercedes-Benz has a concept location called Studio-Odeonsplatz²⁰⁶ in Munich. This is the phygital laboratory of the brand that seeks to merge brand experience, creativity, art, content, and digitalization. The store shows vehicles but in creative ways in collaboration with artists. At the same time, more than a car showroom, it has diverse happenings from yoga to music events, has a coffee place and a co-working area that is free of charge. The features of the cars have digital activations according to the exhibition presented at that moment in time, they are triggered by QR-Codes or positioning in the store. Exhibitions and experiences change every two months.
- H) Mercedes-Benz also has AMG Brand Center stores in China and Germany. Some features include²⁰⁷:

-Media-wall: to configure and experience the vehicle 360.

-Salon Privee: closing the store for selected customers.

²⁰² Mercedes-Benz, 2023

²⁰³ Mercedes-Benz Consulting, 2023

²⁰⁴ Automotive IT, 2021; Ackermann, 2021

²⁰⁵ Mercedes-Benz Group Media, 2018

²⁰⁶ Liganova, 2022

²⁰⁷ MB Passion, 2022

-AR Experience: Connected with the phone there is a special interaction for the customer’s entrance.

- I) App: ²⁰⁸ It is mainly used as a link or extension of the vehicle information. It can start the car, plan a route ahead, give driving or efficiency tips, services reminders and appointment booking. With a secondary app, purchasing subscription services can also be done.
- J) Metaverse & NFTs: Mercedes-Benz launched G-Class NFTs²⁰⁹. They teamed up with ART2People and created artwork using the G class as inspiration for the artwork. The art pieces sold out almost immediately. At CES 2023 they also presented a collaboration with Superplastic presenting their character “Superdackel” for the Web3.²¹⁰

Table 17: Mercedes-Benz Technology Summary²¹¹

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
	X	X	X	X	X	X



Figure 30: Mercedes-Benz G-Box²¹²

Tesla

The American brand started since their foundation with the clear idea of direct online sales with no dealerships. In some markets there are pop-up-stores or flagship stores with one or

²⁰⁸ Mercedes-Benz, 2023
²⁰⁹ Mercedes-Benz, 2022
²¹⁰ Marketing Dive, 2023
²¹¹ Self Creation
²¹² Mediaman, 2022

two vehicles for the customers to see, but in general there is nothing in the news regarding innovations in the showroom. They have a couple of screens for videos and configuration.

Regarding online-direct sales, they are the ones with most experience, since that is how their business model started and the journey is built that way.



Figure 31: Tesla Showroom²¹³

- a) APP:²¹⁴ The app enables car functionalities like locking, heating, information about charging, location, controlling media. It is a car controlling extension.
- b) Metaverse & NFTs:
- c) Metaverse: There are not many news or announcements around Tesla in Metaverse, mostly what appears are the founder’s ideas and skepticism weather it is really going to be a widespread technology and not just a momentarily marketing strategy. ²¹⁵

Table 18: Tesla Technology Summary²¹⁶

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
				X	X	X

Volkswagen

In China, the German automaker reinvented their retail strategy to increase customer engagement.

²¹³ The Guardian, 2021
²¹⁴ Google Play, 2023
²¹⁵ Inside Telecom, 2022
²¹⁶ Self Creation

The technologies used for such approach are:

- a) AR: Interactive are in which they can scan the car with an instore tablet to access information about the configuration and performance of the car.
- b) Ecommerce experience in store: They can do it by themselves in a dedicated area if they wish to order.



Figure 32: FAW VW Digital Showroom²¹⁷

- c) Omnichannel direct sales²¹⁸: The biggest trend in automotive is as well valid for VW. The latest products will be commercialized with “agent model” and the customer can decide to buy online or at the dealer and switch from channels seamlessly.

²¹⁷ Uniplan, 2023

²¹⁸ Volkswagen AG, 2020

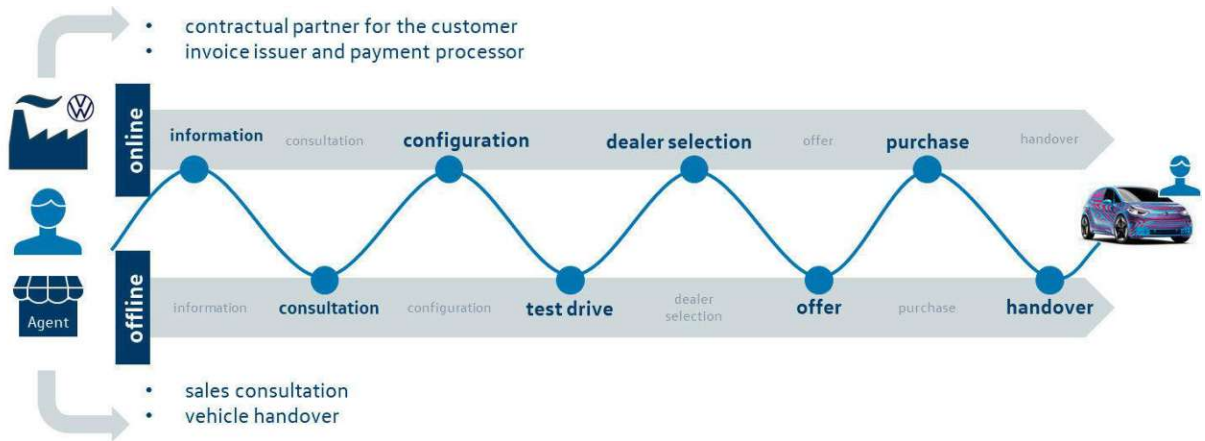


Figure 33: Volkswagen Omnichannel Sales ID²¹⁹

- d) App:²²⁰ There are various apps differing in all markets. They mainly focus on vehicle usage, and media and location services. It is a remote control for the car with additional features and ways of interacting with the vehicle.
- e) Metaverse & NFTs: Digital Garage is the NFT marketplace from Volkswagen²²¹, there are digital collectibles and cards in which the users can buy iconic models, special series, concepts cars and more. In South Africa they launched “Game on²²²”; an interactive storytelling/gaming campaign to invite users to be part of a treasure hunt for NFTs hidden in different social media: by finding them they will also unlock rewards of real prices.

Table 19: Volkswagen Technology Summary²²³

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X		X	X		X	X

BMW

The Munich-based brand is following suit to the competitors. Some of the innovations in the sales and retail are:

- a) Omnichannel sales²²⁴: The customer can start and finish the purchase journey online, offline or switch between them. They can configure, reserve, apply for financing, book a test drive, add additional services, pay, and select delivery as they wish. When

²¹⁹ Volkswagen, 2020
²²⁰ Volkswagen, 2023
²²¹ Volkswagen, 2023
²²² The Drum, 2022
²²³ Self Creation
²²⁴ BMW Group, 2015

switching channels, they can pick up where they started through their saved configuration.

- b) VR²²⁵: Selected markets have VR headsets to take for the customers who cannot visit the showroom, but also for customers who wish to see and experience models and configurators that are not physically there.
- c) Holo-lens walk around²²⁶: through mixed reality, the customer can get to know the technology of the cars in detail, material, structure, functionality by walking around, observing, and listening to the explanations. They can experience safety features in the virtual world, for clearer understanding but without putting them in the real situation.
- d) Interactive displays²²⁷: Both for lifestyle products and accessories to be browsed and shopped in store and also vehicles. They can evaluate and configure in the screens or connected to mobile devices.
- e) “Urban Concept stores”²²⁸: Similar to retail trends from fashion, BMW is developing “Urban Concept stores” in various markets where they not only show the vehicles with this mix of digital technologies, but also have a coffee/ bar area open to public and various events and experiences held on premise to gather the community in the showroom. Examples of them are in Rome, Manhattan, Coruna, and Dubai to name a few.
- f) APP:²²⁹ Like other brands, it is an extended enabler to the car, navigation and travel planning, brand related news, connectivity to financial services and shop. Also allows to make service bookings.
- g) Metaverse & NFTs: At CES 2023 Joytopia²³⁰ was re-released, the metaverse BMW universe. It was previously launched in 2021 at the IAA for users to experience the brand with their avatar.²³¹ It is an emotional virtual journey. Joined with Joytopia, BMW I Vision Dee was launched, it can be experienced in the metaverse environment, but it is also a concept car of how the brand sees a phygital blending experience of the product in real life and virtual experience.²³²

²²⁵ Automotive IT, 2020

²²⁶ Immersive Learning News, 2023

²²⁷ The Week, 2020

²²⁸ BMW Group, 2021

²²⁹ BMW, 2023

²³⁰ BMW, 2022

²³¹ Medium, 2022

²³² Geek Metaverse, 2023

The iX1 was launched in Metaverse in a dream-like experience²³³, the user’s avatar could also wear an exclusive BMW hoodie in the iX1 Metaverse.

Another use case of metaverse for the German automaker is a digital twin factory in Metaverse where they could test the most optimized production, by joining collaborative best practices from around the world.²³⁴

When it comes to NFTs, the brand has recognized the intangible asset that sound can be, therefore they created “Museum of Sound²³⁵”. There they have a collection of 19 BMW M engines, aiming to immortalize the sound of ICE. The NFT sounds were given to M owners.

In other customer stages, NFTs are going to be part of a loyalty program rolled out in Thailand²³⁶ where via a Web3 rewards app, customers will earn and cash loyalty points in that environment.

Table 20: BMW Technology Summary²³⁷

AR	VR	METaverse	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X	X	X	X	X	X	X

²³³ BMW, 2022

²³⁴ Innotech Today, 2022

²³⁵ #Legend, 2022

²³⁶ NFT Evening, 2023

²³⁷ Self Creation

Figure 34: BMW Urban Stores²³⁸Figure 35: BMW Urban Stores²³⁹

Porsche

Porsche is one of the brands that started earlier with online configuration and sales. Currently they have a well-developed online sales tool both for new and used vehicles. There is online customer support and they can select, book, apply for financing, calculate trade in. When configuring they can request an offer from their closest dealer and then proceed physically. The journey differs a bit between markets, nevertheless it is the general functionality.

²³⁸ BMW Group, 2021

²³⁹ BMW Group, 2021

The retail experiences vary according to each market, but some of the digital integrations and retail innovations found are:

- a) Gamification²⁴⁰: In order to boost engagement, there are race simulators in showrooms and brand experience centers.
- b) VR Experiences²⁴¹: The client customizes the car and gets to watch a render of their desired configuration through a set of VR Glasses.
- c) AR²⁴²: The AR initiative of Porsche is called “Mission E Augmented Reality“. This is mainly used in pop-up stores or exhibitions with the purpose of explaining complex technologies in a more visual way.
- d) Taycan VR experience: Designed specifically for the all-electric high performance vehicle. It gives educational purposes as well, it allows explaining all features in an interactive way to customers.



Figure 36: Porsche Studio²⁴³

Porsche Studio: Porsche’s concept stores are called “Porsche Studio”, they are in 20 locations around the globe and have a few vehicles on display, a “fitting room” to configurate the car supported by touchscreen screens, a coffee bar and they are set to be events and experience centers.

- e) Porsche Now: Pop-up stores, called “Porsche Now” are increasingly in their strategy, the rationale behind it is bringing the products to where the customer is. Some pop up stores are in Shopping centers²⁴⁴, others in ski areas, art galleries, and more.

²⁴⁰ Porsche, 2022

²⁴¹ Automotive IT, 2020

²⁴² Porsche, 2018

²⁴³ Go Auto News, 2022

²⁴⁴ The Fast and the Luxurious, 2022

- f) App:²⁴⁵ The app allows the customer to book service appointments, to have the status and diagnose of the car in real time, to enable additional services like security or Wi-Fi.
- g) Metaverse & NFTs: Porsche announced the launch of their NFTs²⁴⁶. There will be 7,500 unique collector items, and each person can buy up to three. Owners of this tokens will have access to experiences in the virtual and physical world and before acquiring their NFT they can influence on the design in 3 distinct design ways: performance, heritage and lifestyle.

Table 21: Porsche Technology Summary²⁴⁷

AR	VR	METAVEVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X	X	X	X	X	X	X



Figure 37: Porsche Oberpollinger²⁴⁸

HONDA

Honda has not been publicly announcing innovations to their showrooms in the last years. Technologies like VR and AR are being used for product development, but so far in the sales process there is not much being talked about.

What could be found in the screening was:

- a) Online sales: Available in certain markets, the customer is allowed to input a zip code, select a model and configure it and request a quote or identify matches in a dealership

²⁴⁵ Porsche, 2023

²⁴⁶ Porsche, 2022

²⁴⁷ Self Creation

²⁴⁸ Fast and Luxurious, 2022

nearby upon request. They can apply for financing, estimate payments, and do checkout through selected dealerships.²⁴⁹

- b) Virtual showroom:²⁵⁰ To increase digital engagement, the customer can explore every detail from inside out of the models. Each feature that is considered a highlight, has also video features that the customer can click on to learn more about the product. This allows customers to know the product without visiting the showroom.

In the physical showroom there are no innovations or digital integrations that are mentioned widely or publicly.

- c) App²⁵¹: Allows to connect the car to WIFI services, gives driving tips and allows voice commands via Alexa. Allows to have vehicle notifications and diagnoses, have favorite locations saved, quick assistance. In certain markets service bookings can also be made.
- d) Metaverse & NFTs: Hondaverse²⁵² is the name of the brand’s metaverse. It is a virtual world within Fortnite videogame.

For the Acura brand, they released Integra NFT for the first 500 customers to order the new 2023 model²⁵³. They also opened a digital showroom for their products called Acura Decentraland²⁵⁴. There are gaming and interactive rooms as well, and even exclusive brand wearables.

Table 22: Honda Technology Summary²⁵⁵

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
X	X	X	X	X	X	X

FORD

- a) Online sales: Like other competitors, Ford is also looking to have the online sales channel with controlled prices. The customer can choose the vehicle and apply for financing as well. They can complete the full journey online and just agree on the delivery point and date.²⁵⁶

²⁴⁹ The Japan Times, 2021

²⁵⁰ Visualise, 2023

²⁵¹ Honda, 2023

²⁵² The Cryptonomist, 2022

²⁵³ Honda, 2022

²⁵⁴ Acura, 2022

²⁵⁵ Self Creation

²⁵⁶ Ford México, 2022

- b) Kiosks: Interactive tablet size or screen size kiosks with information about the vehicles in different languages. ²⁵⁷

Other than that, there seems to be little innovation in the showrooms at least published in the latest news.

- c) App²⁵⁸: Functions like auto diagnose, vehicle status, navigation and charging points for electric vehicles is included.
- d) Metaverse & NFTs: Ford has been recently in news around metaverse and NFTs because they filed for patents, however there has still been no launched communication since the news on September 2022. ²⁵⁹

Table 23: FORD Technology Summary²⁶⁰

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
				X	X	X

NISSAN

News around a new retail concept around the world²⁶¹, can be found. However, the innovations are not clear, it is said that there is a digital integration to guide the customer throughout the experience, but there is still some room for improvement in the details.

- a) Virtual Showroom²⁶²: Dedicated landing pages per model to go into vehicle features. It is not 3D or 360 rendered but including still pictures of each of the highlighted areas.
- b) Virtual reality experience²⁶³: with the Arya model, customers and users are able to experience the vehicle in the metaverse.
- c) APP²⁶⁴: Similar to the rest of the manufacturers, the app is a vehicle extension to have diagnosis, connect to navigation systems, charging service information and smart alerts.

²⁵⁷ APS Group, 2022

²⁵⁸ Ford Motor Company, 2023

²⁵⁹ Crypto Globe, 2022

²⁶⁰ Self Creation

²⁶¹ Nissan, 2022

²⁶² Nissan, 2022

²⁶³ Nissan, 2023

²⁶⁴ Nissan, 2023

- d) Metaverse & NFTs: The Japanese brand announced in 2022 that they will create virtual reality rooms for customers. They unveiled a showroom on the platform VRChat²⁶⁵. The idea is to allow the customers to get to know the vehicles, especially the Ariya line and learn about the brand’s sustainability initiatives and commitment with the environment.

Table 24: NISSAN Technology Summary²⁶⁶

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
	X	X		X	X	X

Volvo

The Swedish brand is known for innovations in safety topics. When it comes to retail and sales, they are shifting to similar approaches to the competitors approaching direct sales, not necessarily innovations in the showroom, nevertheless the future of sales in Volvo includes some of the following examples:

- a) Digital Signage²⁶⁷: Including digital screens/ totems to advertise accessories, financial services and other products while the customer is in the showroom.
- b) Sales Objective: Fully electric by 2023 and fully sold online by 2030.²⁶⁸
- c) Digital Sales: Direct sales approach for customer to complete the whole journey online, Volvo aims to leave dealerships as service centers mainly.
- d) World of Volvo²⁶⁹: Following the trend of special brand showrooms or venues, Volvo will be opening a brand experience center in 2024 merging the brand to the Swedish culture and offering exhibitions, events, music and shopping.
- e) Test Drive VR²⁷⁰: Mobile App based feature, with it, customers can experience the car when they don’t have a nearby dealer.
- f) App:²⁷¹ Connected app that allows to open, close, heat or cool the car as the customer wishes. Cars manuals or consultation from an expert can be received from the App. Service reminders and appointments and finding charging stations.

²⁶⁵ Rarity Snipper, 2022

²⁶⁶ Self Creation

²⁶⁷ Littlebit Technology, 2023

²⁶⁸ Automotive News Europe, 2022

²⁶⁹ LSN Global, 2022; Volvo, 2023

²⁷⁰ Habib, 2022

²⁷¹ Volvo Cars, 2023

- g) Metaverse & NFTs: Volvoverse²⁷² is the environment of the brand in Metaverse. There they launched the EV SUV XC40 completely in the virtual world.

Table 25: Volvo Technology Summary²⁷³

AR	VR	METAVVERSE	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
	X	X		X	X	X

KIA

The korean carmaker, is an important player in the automotive industry. Products and warranty policies in certain markets disrupted the way OEMs traditionally worked. When research other automakers with the keywords and search terms, KIA appeared, for that reason it seemed relevant to include them

- a) VR Showroom²⁷⁴: Replicating the looks of a physical retailer, the customer can choose a car, explore inside out a model of their choice and even configurate some features according to their likes and dislikes.



Figure 38: KIA Virtual Showroom

²⁷² Mashable India, 2022

²⁷³ Self Creation

²⁷⁴ KIA, 2023

- b) App²⁷⁵: The app Kia Connect, allows the customer to control and have functionalities like navigation, travel data and analytics, general status, charging process or locations, opening, closing and heating or cooling the car.
- c) Metaverse & NFTs: Kia recently launched a campaign²⁷⁶ for the 2023 KIA Soul in the US where QR codes can be scanned and 10,100 NFTs can be found. It is the first time that a TV commercial has NFTs embedded, and it is a collaboration with Death Army Skeleton Klub (DASK) Characters.

Regarding EV Product NFTs, on the Hyundai motor group website²⁷⁷, the rationale behind the different product NFTs that can be found: Niro, EV6 and EV9 with various artists collaborations. 60 pieces were sold in total.

Table 26: KIA Technology Summary²⁷⁸

AR	VR	METaverse	NFT	MOBILE DEVICES	APPLICATIONS	PAYMENT SYSTEMS
	X	X	X	X	X	

6 Comparison and Empirical Research

This chapter focuses on gathering the innovations of each brand and clustering the technologies and purposes according to what was previously reviewed in the theoretical chapters. With this clustering, it is easier to observe the main trends and usages of technologies, providing a clearer outlook of their application. Just by observing which technologies exist, it is not possible to observe the functionalities and purposes for which they are used, therefore this chapter allows to have a deeper detail and observation of the applications.

6.1 Fashion

The first chart groups the presence of the researched brands on four main channels that result in income for the fashion brands, regardless of the type of object being commercialized. As it

²⁷⁵ KIA, 2023

²⁷⁶ Metaverse Post, 2022

²⁷⁷ Hyundai Motor Group, 2022

²⁷⁸ Self Creation

can be observed, almost all fashion brands are present in online, physical and app channels. Metaverse is in 6 out of 13 with commercial purposes.

To observe in more detail, the Chart 2 shows which uses are currently being given to metaverse, weather engagement (hedonic) or with a commercial (utilitarian) purpose. There is still a mix, some brand using both and others rooting for one only. This technology is still not highly developed, so it is understandable that they are exploring.

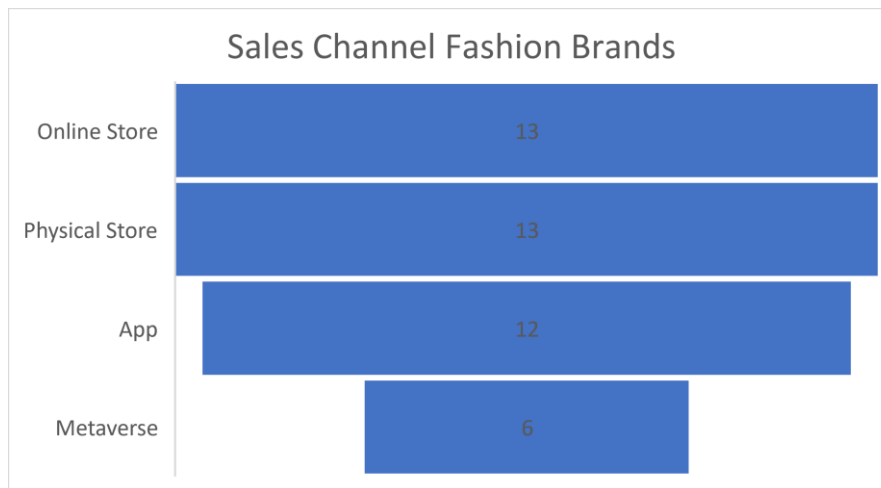


Chart 1: Sales Channel Fashion Brands²⁷⁹

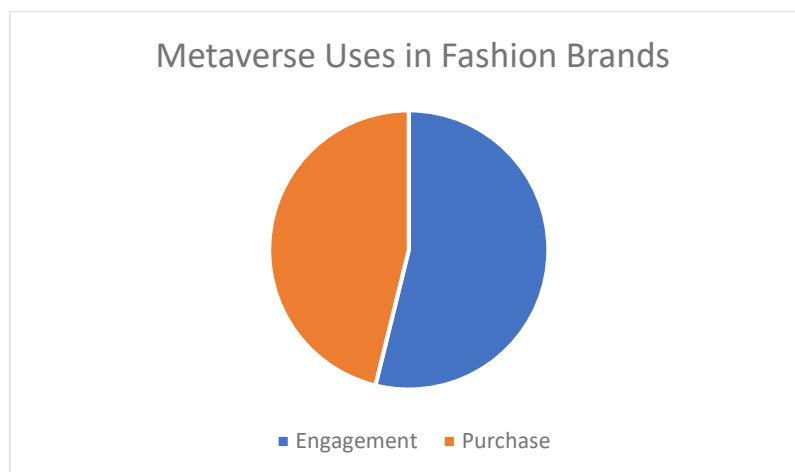


Chart 2: Metaverse uses Fashion Brands²⁸⁰

Chart 3 , shows the common uses the app has. It can be observed that in some cases, it is still mainly used as catalogue, whereas in others, it serves multipurpose throughout the lifecycle

²⁷⁹ Self Creation

²⁸⁰ Self Creation

and also as an in-store experience enhancer. The more functionalities, the more it enables omnichannel experience and customer data collection.

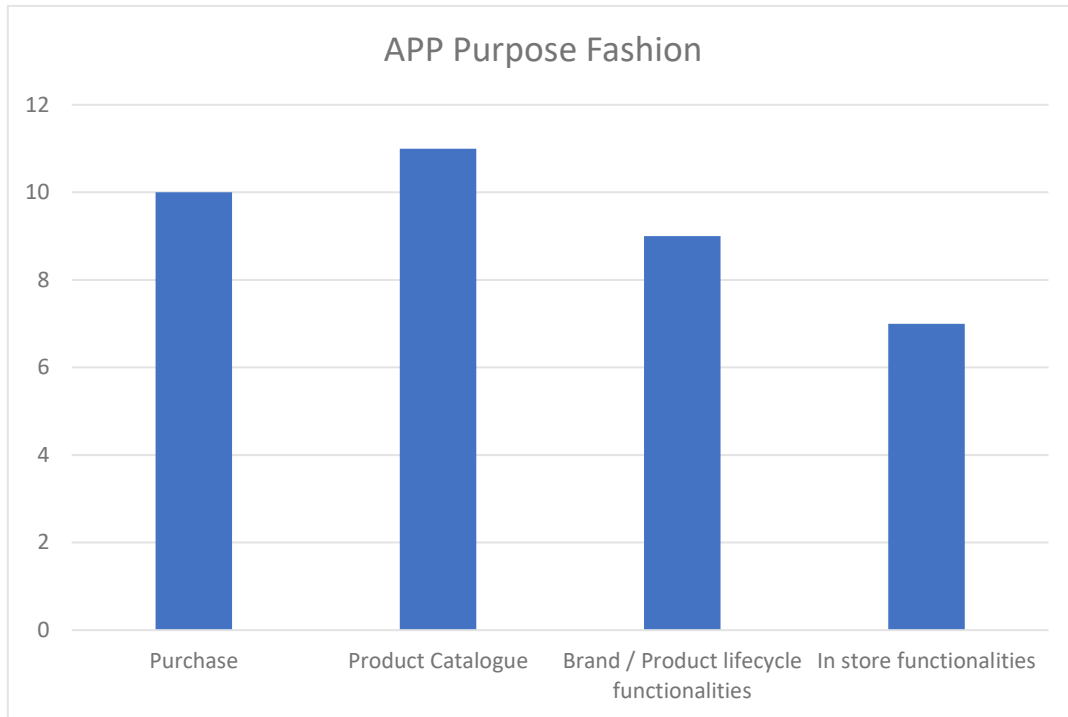


Chart 3: App Purpose Fashion Brands²⁸¹

Chart 4 is the most complex but aims to summarize the most common functionality trends enabled by technology. Clustered into 16 main topics, the most frequent ones show what will be sent as the standard: Gamification, shop what you see and extended reality integrations. Two of these are fulfilling utilitarian needs, making the experience more convenient and another one is completely hedonic, making it engaging and fun. The same trend is followed in the other repeating trends like innovative or different payment forms, social media integration, self service and experiential shopping. A balance between utility and enjoyment.

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²⁸¹ Self Creation

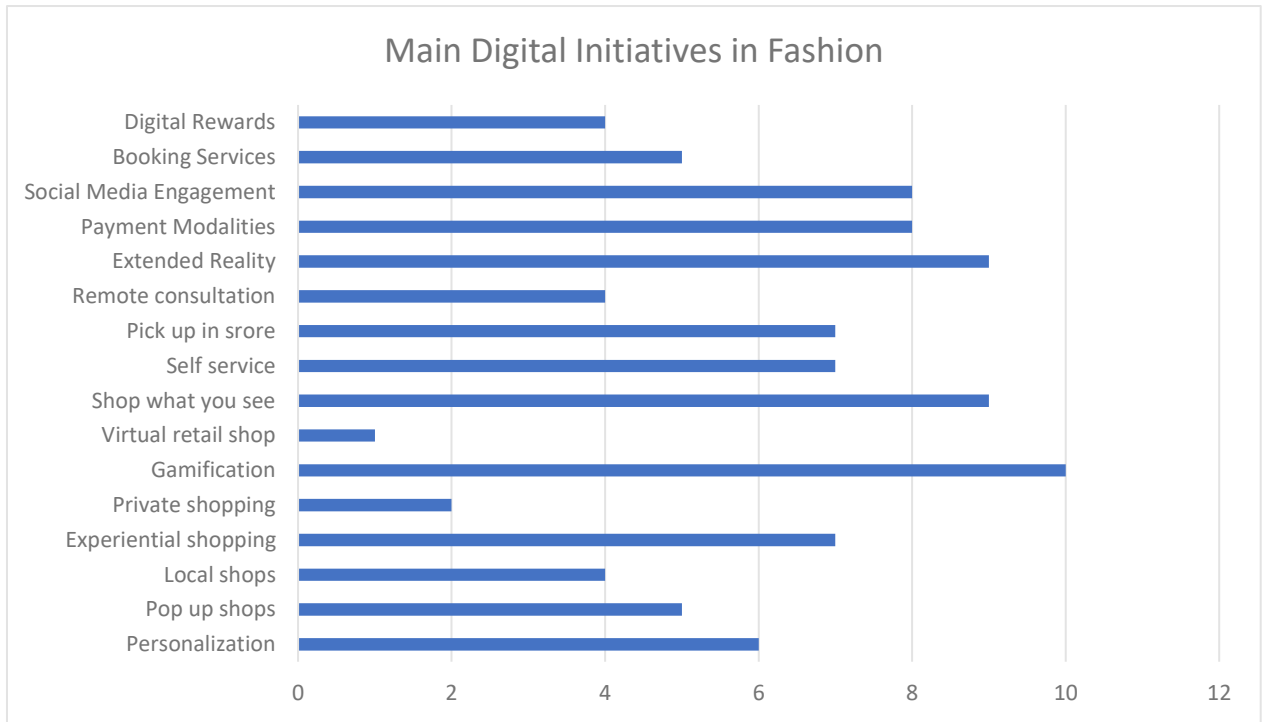


Chart 4: Main Digital Initiatives in Fashion Brands²⁸²

6.2 Automotive

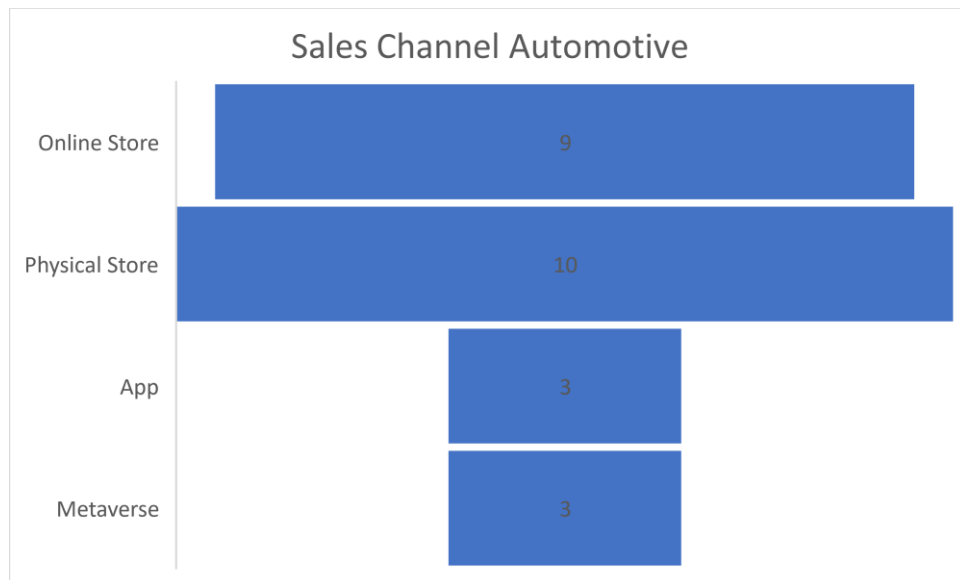


Chart 5: Sales Channel Automotive Brands²⁸³

²⁸² Self Creation

²⁸³ Self Creation

This first clustering (Chart 5) shows the sales channels in automotive. As it can be seen the APP column and Metaverse have very few participants that enable purchasing from the app. Despite OEMs having apps available, it is complementary service feature or extension of the product functionalities.

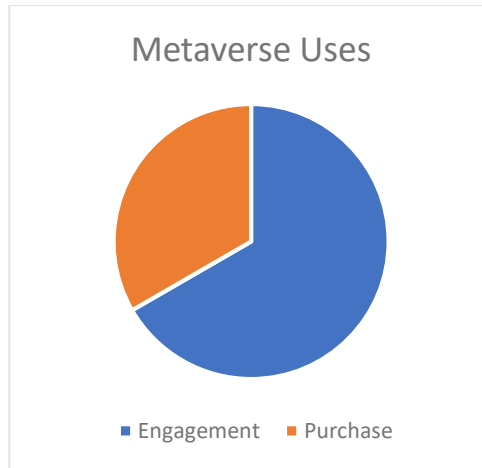


Chart 6: Metaverse uses Automotive Brands²⁸⁴

In Chart 6, we can observe that Automotive brands are using Metaverse, but mostly focused on engagement and entertainment. The use as an alternative sales channel is not yet fully explored.

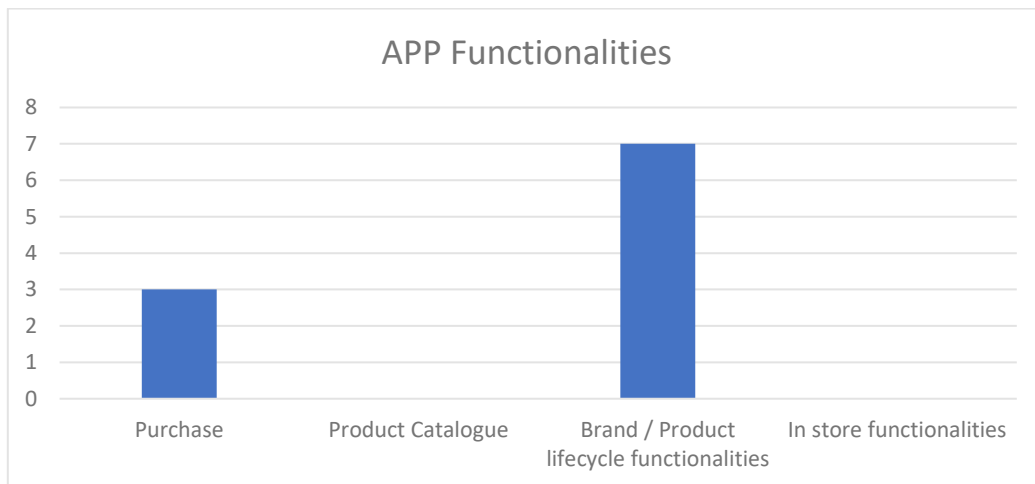


Chart 7: App functionalities Automotive Brands²⁸⁵

²⁸⁴ Self Creation

²⁸⁵ Self Creation

In the chart 7, we can observe that APP functionalities of almost all brands, enable services while owning the car. The early stages like awareness, consideration that would require product catalogue or in store functionalities, are almost not existent. The purchase function is mainly for accessories or subscription services for customers, if the user is not an existing customer, there is no purpose in using or downloading the apps.

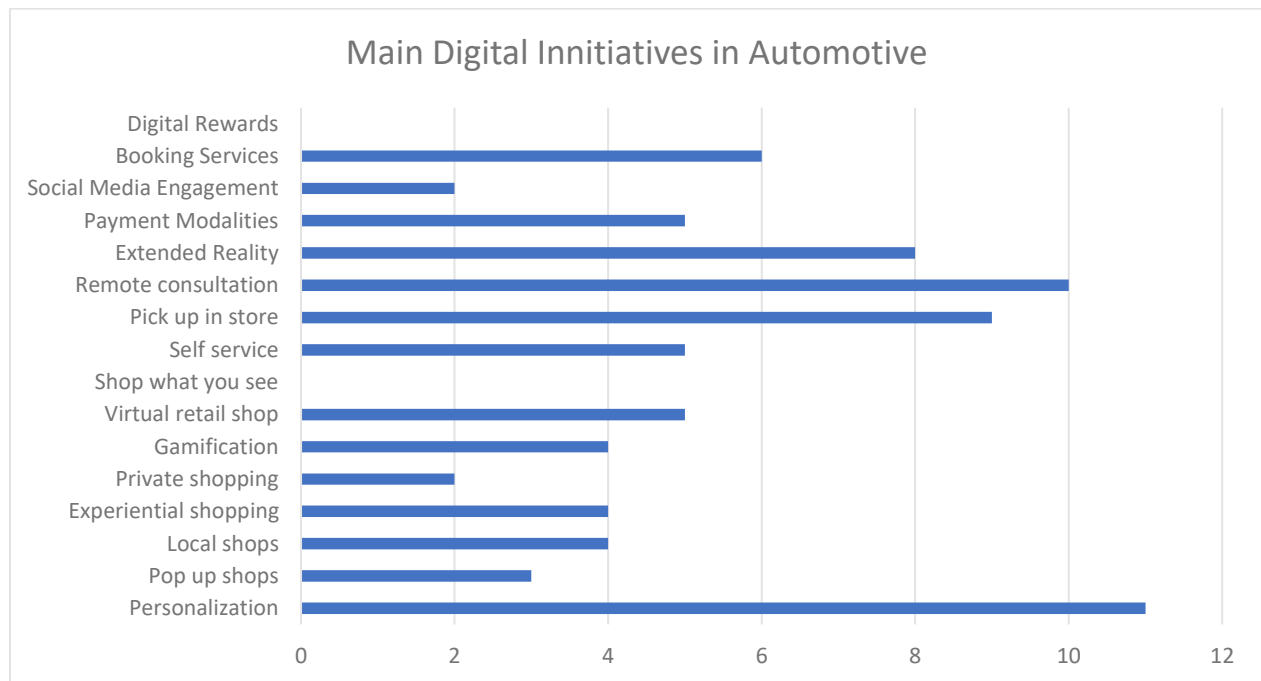


Chart 8: Main Digital Initiatives Automotive Brands²⁸⁶

The main functionalities enabled by technology in automotive industry, are the personalization possibilities of the products, the remote consultation features, picking up in store and extended reality enhancements in the showroom, These dominant features are fulfilling more hedonic or engagement purposes than utilitarian.

6.3 Comparison

In the chart one, it can be observed that for both industries, the physical sales channel is important, it should be noted however, that other channels that are heavily present in fashion, like online and APP are not so relevant for transactional purposes in automotive.

²⁸⁶ Self Creation

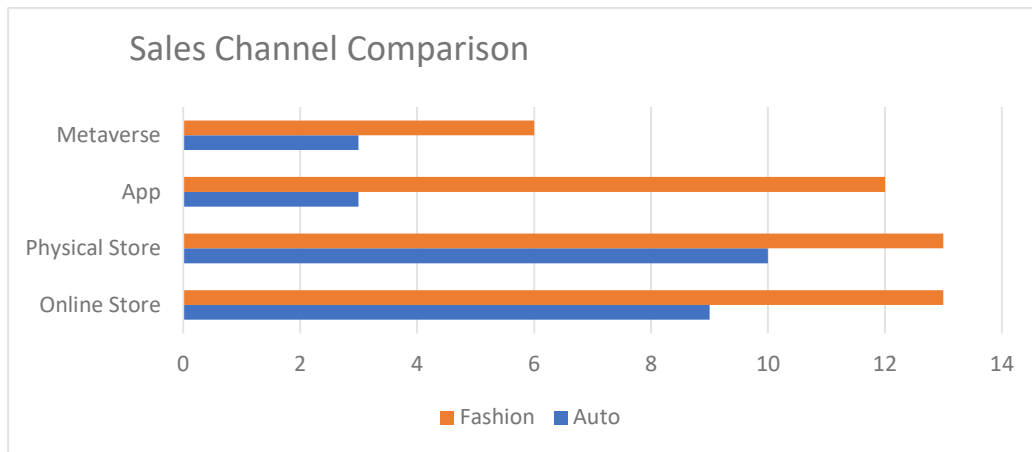


Chart 9: Comparison Sales Channels²⁸⁷

On chart 10 it can be observed that while engagement is the main purpose still for the use of metaverse, fashion industry has been quicker into turning it into a revenue stream as well. This can be with alternative products like NFTs or potentially as an additional sales channel.

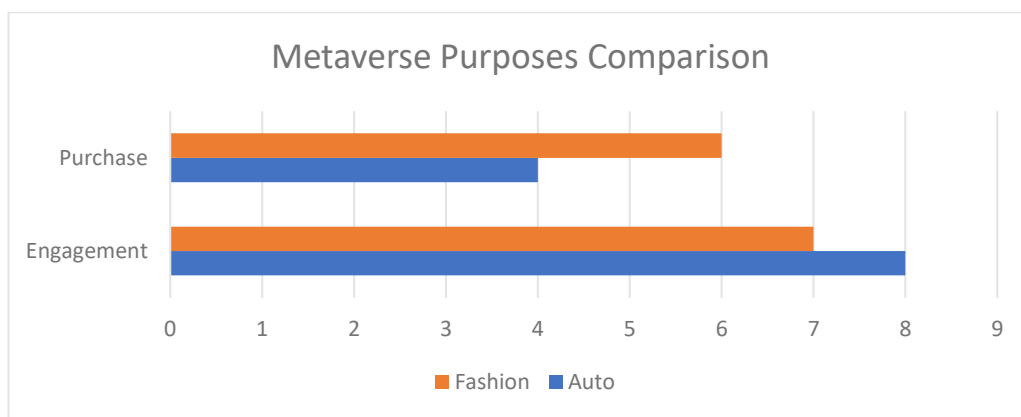


Chart 10: Comparison Metaverse Purposes²⁸⁸

When it comes to analyzing the APP functionalities, a clear distinction in the purpose for which industry uses them can be made. Fashion uses it for early stages, whereas automotive uses it once they have an existing customer. This differentiation can be seen in chart 11.

²⁸⁷ Self Creation

²⁸⁸ Self Creation

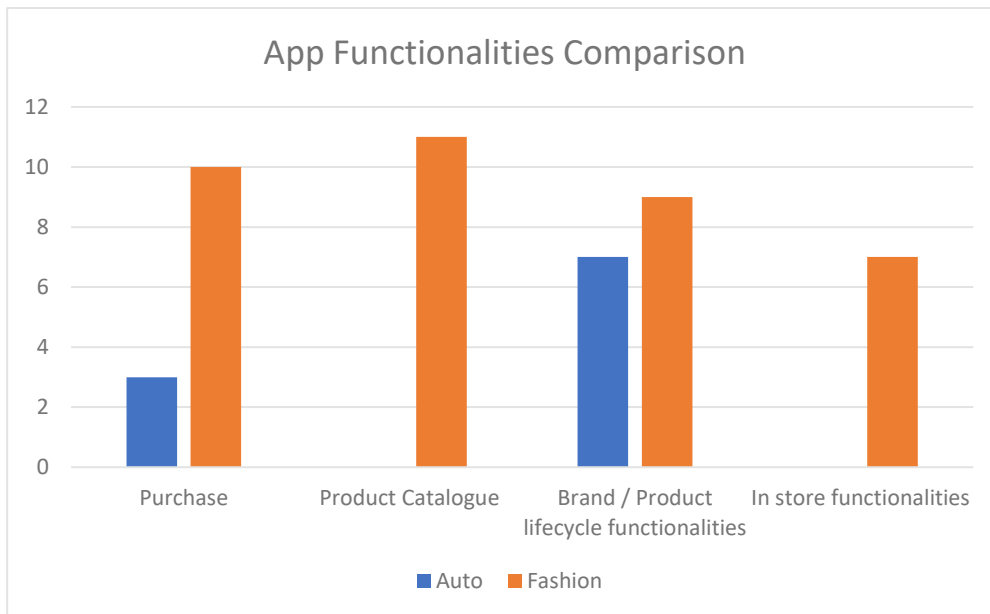


Chart 11: Comparison App Functionalities²⁸⁹

In the chart 12, we can clearly compare technological trends between both industries.

While both of them have in general the same trends present, some are more frequent in fashion than in automotive and vice versa. Notably, the high involvement aspects of Automotive can be observed in requesting services like remote consultation, pick up service, booking services and the relevance of personalization. In fashion, on the other hand, we can see a practical feature like shop what you see, or payment modalities being prioritized. Something in which both industries converge is extended reality and booking services.

²⁸⁹ Self Creation

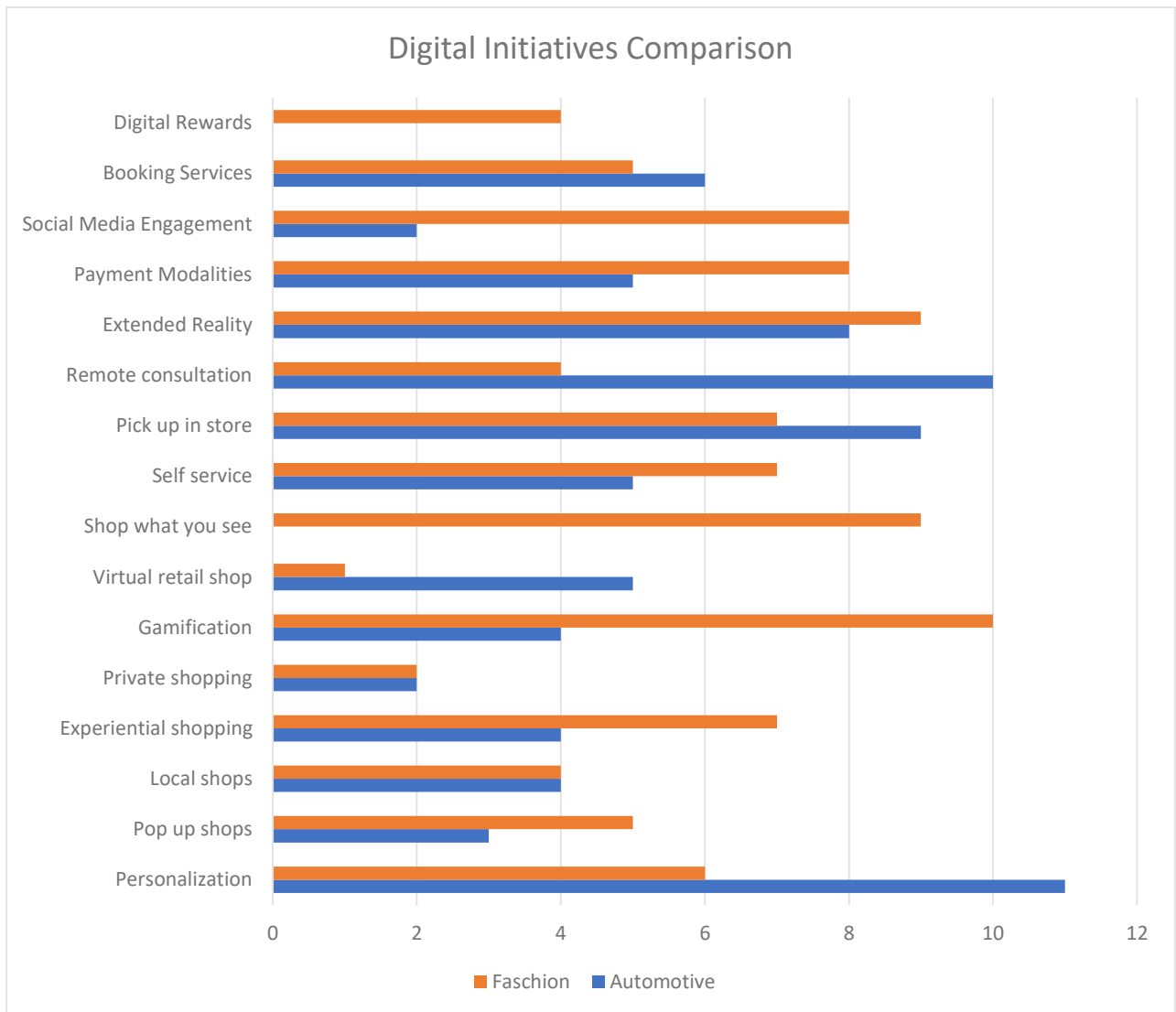


Chart 12: Comparison Digital Initiatives²⁹⁰

7 Scientific results and findings

The results from the applied research on both of the industries, show that the trends are on quite similar direction. Most of the technologies are used in both industries and in general, the technologies mentioned on the radars, are as well present in the launches and innovations being announced. After observing the main trends used in fashion retail and automotive retail, some relevant findings can be highlighted:

²⁹⁰ Self Creation

-Sales Channels: It is important to create an omnichannel and convenient experience. Fashion is already working that way. They are gathering customer data from different channels, linking them in store as well and with it, they are making suggestions to push further sales.

Automotive is currently undergoing this change, enabling online dealer connected sales or going for direct sales. This step will get the industry closer to enabling the omnichannel path which is not paved yet. Despite having diverse Apps, they are mostly developed as extended services, but not as part of the sales journey.

Metaverse is an alternative sales channel, mostly used for digital goods but that can generate real income for brands. Fashion is really pushing it, meanwhile Automotive is just using it as an entertainment channel.

-Personalization: one of the biggest trends found in both industries. Automotive has it in a higher or lower level depending on the brand strategy and complexity, and fashion is increasing the possibility due to the wishes of the new younger customer groups. It is increasingly gaining importance, so regardless of the cost effectiveness, personalization is preferred.

-Interactivity: whether it is to gather further information about a product, try clothes on, find additional products, change color or explore functionality, the customer does no longer wants to go to a store and just see and purchase a product. That is not a sufficient reason to go to the retailer. The customers want to interact in the store and have an experience, not necessarily speaking to other people, but being able to do it by themselves, attend an event, experience something different.

-Convenience: Customers want to have a smooth convenient experience. It can be selecting a product and not carrying it in a store for example, paying automatically without lining up, picking up at store, configuring the product, etc. Fast and easy. It is important to highlight that the interactions in fashion, fulfill mostly an utilitarian aspect and secondarily and hedonistic one. When scanning a product, it is for seeing availability, materials, sending to the fitting room, checking outfit ideas or purchasing. In some cases they might generate content or have fun, but the focus is on convenience. Automotive still has a gap in this aspect, there are extended reality possibilities to configure or make a fun virtual test drive, but most of the experiences are not making the purchase path smoother.

-Markets: Most of the innovations being set in the retail sphere are in markets such as China or The USA, where they have low uncertainty avoidance. Most social experiences and community driven initiatives are being rolled out in regions like Asia, whereas exclusive experiences and private schemes are rolled out in individualistic societies like the us or Europe. In general, brands are taking this into consideration when rolling out new technologies and initiatives, so that they are matched to the customer expectation and wishes. Before, a very

standardized experience was provided world-wide, and now it is more customer specific driven.

8 Critical reflection and outlook

This research was meant to be a broad outlook of the main innovations in the retail and sales of Automotive industry, based on the early stages of the customer journey. It is not exhaustive because the customer journey and the current sales experience of each brand varies a lot from country to country. Unlike fashion that has a seamless integration in most main channels, that is not the case yet in automotive. A second limitation is the low visibility on the journey once the customers made a purchase and continue their experience with the brand. There is very few publicly available information about integrations and interactions and unfortunately, as it also varies from market to market, at this point in time, it couldn't be fully assessed.

Further research could gather these aspects as basis and narrow it down to a specific market to observe detailed information on the complete digital integrations and make a comprehensive analysis.

9 Conclusions

This paper aimed to find a general overview on how digitalization and technology are impacting the automotive industry. Things are changing fast and customers are expecting more of the experience and services they get from brands, regardless of the industry. Throughout the study, it could be observed what the main changes in the role of customers, competitors, data were from analog to digital times. The main technological trends and radars from companies were assessed, as well as customer journey stages, cultural and purchase influencing factors.

The theoretical basis allowed then to move to a practical research including a benchmark of the fashion industry to compare with the automotive. The same criteria of brand selection in both industries, and keywords on search engines were taken into consideration for this study.

All in all, it could be clearly observed throughout the research, that while in fashion, the sales channels are mostly well integrated, automotive still has the channels quite separated from one another.

One clear difference that could be observed, is that in fashion, the "fast fashion brands" are the ones that offer more digitalized services and with an utilitarian purpose, whereas in automotive, the premium or luxury brands are the ones leading in technological integrations.

The biggest impact that digitalization is having in the automotive customer journey, is enabling online sales. It doesn't matter if it is via dealer stock online or direct sales, the aim of the brands

is to sell through the channel and gather the customer data in the touchpoint so that they can be closer to them. This changes the relationship to the customer and the dealer. The biggest aim of this is to reduce friction and make it a seamless and easier experience for the customer. Phygital is mainly being integrated in configurators and test drive simulators, interacting with screens, tactile devices and in some cases VR/ AR features. In contrast with the fashion industry, it is not providing an enormous value adding like: educating, suggesting, providing convenience. Most importantly, these experiences are only at the point of sale and with brand-owned devices.

Fashion disruptions can be considered in the automotive customer journey if they are adapted to possible use cases. Extended reality functionalities like “shop what you see” could simplify the configuration process for the customers, while still allowing them to make modifications. They could also upload 3 pictures of them and have a configurator suggested according to their looks, this could require AI technology to make a recommendation, but it is a use case that is done in fashion and could potentially be adapted to automotive.

Having AR possibilities through their mobiles, could also enhance the consideration phase, by interactively and without the need of a salesmen, teach them about the car features. RFID tags or smart screens with AI, could screen the vehicle in which the customer is arriving, and make a personalized suggested offer that would be attractive to them.

Another interesting approach are digital rewards. In fashion, interactions like register, visiting a store, completing a purchase, give the customer points they can exchange later. This could be an integrated touchpoint in automotive as well, it could count every interaction with the brands and also especially considering the Electric vehicles and their charging needs. These rewards could even be linked to NFTs, metaverse experiences or even in person events or experiences.

All in all, even when most technologies are present in both industries, not everything can be completely replicated. It is important, however, to keep an eye on what is going on around us, because the more common something becomes in another industry, the more it is expected by the customer to be applied to the rest. Fashion industry is used to moving fast and adapting to change, automotive is not. It has increased speed, however it can still increase it a bit more.

Although this study could not be exhaustive enough to particularize on each market, and certain stages of the customer journey were excluded, further research can be done having these aspects in mind and narrowing to a specific market. Most pilot innovations are being found in markets like China, the United States or United Kingdom, when it comes to automotive. In fashion, usually on the local markets of the HQ or the biggest locations.

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