

# E-Commerce Technology Analysis

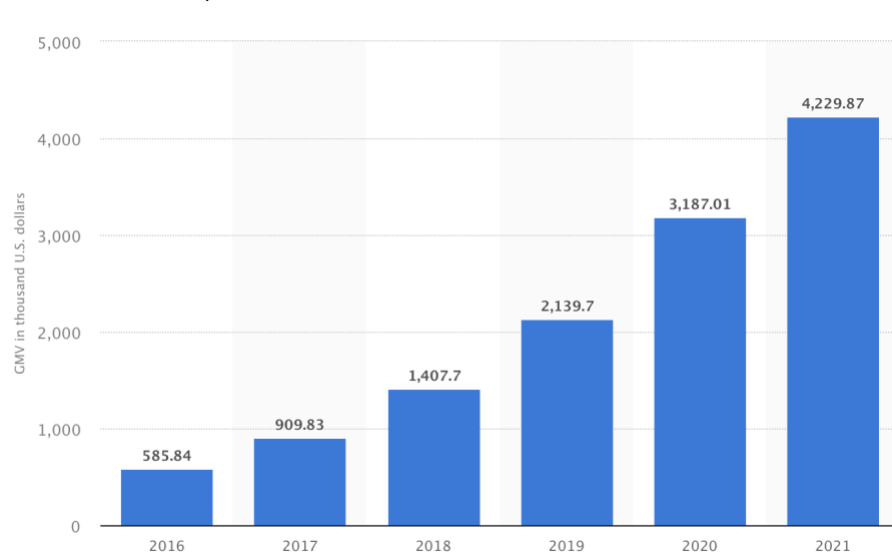
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**Figure 1:** GMV of Farfetch worldwide from 2016 to 2021 (in 1,000 U.S. dollars), (Chevalier, 2022)



# 1. Introduction

This report examines e-commerce platforms Farfetch, ASOS, and Zalando through an investor's perspective, evaluating their use of technology. The emphasis is on best practices, potential risks, and ethical concerns to help potential investors make informed choices.

## 2. Selected eCommerces

Our investigation focuses on three fashion companies: Farfetch, a global luxury e-commerce leader with an emphasis on eco-friendliness; ASOS, a global online retailer known for affordability and a large customer base; and Zalando, a large European e-commerce site employing advanced technology in a one-stop-shop approach. The research gives specific insights for potential investors on how these businesses have impacted the fashion industry.

## 3. Use of eCommerce Technologies

According to Harba (2019), Farfetch uses a data-driven strategy by combining artificial intelligence (AI) and machine learning. This technology is critical for inventory management and providing highly personalised shopping experiences that cater to individuals. AI deployment includes inventory optimisation, ensuring customer choice alignment, decreasing waste, and increasing revenues. According to Jain, Kamalun Nabi, and Chaturvedi's (2018) research, hyper-personalisation through using AI has a considerable positive effect on purchase intention. Magalhes (2019) emphasises Farfetch's expertise in suggesting items that are specific to individual preferences, thus increasing customer engagement, and generating sales. Farfetch's AI-powered strategy, offers a customer-centric and highly successful approach to creating a unique and personalised shopping experience.

The use of omnichannel retail strategy has been transformative in the retail industry, collating all customer touchpoints into a unified experience (Lorenzo-Romero, Andrés-Martínez and Mondéjar-Jiménez, 2020). ASOS, as a frontrunner in this approach, has fully embraced omnichannel eCommerce by integrating their website, mobile app, and social media platforms. Their website offers a user-friendly interface and simple navigation, catering to a diverse global audience. Recognising the importance of mobile social media apps in today's digital marketing (Yadav, Joshi, and Rahman, 2015), ASOS has carefully developed its mobile app to enhance the buying experience, including features that allow for simple browsing and on-the-go purchase. Furthermore, ASOS leverages the potential of social media, a valuable channel for fashion companies (Tallent, 2015), by seamlessly integrating platforms such as

Instagram and Facebook into their strategy. Through these platforms, ASOS effectively reaches its customers, conducts promotional campaigns, and creates increased brand engagement. The omnichannel approach ensures a cohesive and highly accessible shopping experience for ASOS customers.

Zalando's eCommerce strategy involves two main components: supply chain optimisation and the establishment of a digital marketplace. They have enhanced the value of their supply chain by introducing modular operation units, effectively managing bottlenecks, and reducing wastage through collaborative planning and control (Jin et al., 2019). Zalando's supply chain now operates efficiently, ensuring optimal inventory management and timely deliveries. Their adoption of eCommerce technologies has led to a responsive supply chain, meeting customer demands effectively. Additionally, the transition from a collaborative filtering approach to a learning-to-rank model was instrumental in helping Zalando overcome operational challenges (Freno, 2017), making their recommender system more adaptable, cost-efficient, and better at leveraging existing data sources.

Moreover, Zalando operates a dynamic digital marketplace that features a diverse array of products, including clothing, shoes, and accessories. This digital marketplace positions Zalando as a comprehensive one-stop destination for fashion enthusiasts, significantly enhancing their competitiveness in the market (Buonpastore, 2013).

## 4. Impact of Technologies (Pros and Cons)

This section investigates the technology influencing the selected e-commerce performance. The evaluation focuses largely on their financial success and the resulting changes in the investment landscape.

### Farfetch

According to Kalaignanam, Kushwaha, and Rajavi in 2018, Farfetch's integration of AI and machine learning technologies has greatly personalised customer experiences, corresponding with greater eCommerce profitability. The significant year-over-year rise in sales and Gross Merchandise Value (GMV) confirms the effectiveness of Farfetch's eCommerce and technology-driven strategy, with the purchase of New Guards playing a key part, as reported by Forbes in 2020 (see appendices, figure 1).

Despite these accomplishments, Harba (2019) anticipates problems in data security. The widespread use of technology, AI, and machine learning increases the danger of data breaches and security vulnerabilities, with the potential disadvantage of overreliance on technology affecting customer trust and satisfaction.

As Sun stated in 2020, implementing Farfetch's successful techniques, such as personalised suggestions and a user-centric design strategy, is recommended for new businesses to encourage client loyalty. However, a balance is required to ensure that technology complements rather than replaces human connection, therefore avoiding a negative impact on relationships with customers. Cybersecurity precautions are critical in protecting customer data. Recognising the importance of e-commerce security and privacy, as highlighted by Norian in 2020, is necessary to avoid negative publicity and legal consequences.

## ASOS

Poushneh and Vasquez-Parraga (2017) examine ASOS's Augmented Reality (AR) investment, which revolutionises the shopping experience by enabling virtual try-ons and enhances the process of buying goods online. This innovation, which creates a home dressing room experience, enables customers to make educated choices, resulting in greater sales and decreased returns. It also provides novelty, immersion, and enjoyment, which leads to positive perceptions towards AR (Yim, Chu, and Sauer, 2017).

Investors predicting ASOS's future development and profitability recognise the spike in sales induced by technology advancements, as proven by research conducted in 2012 by Da, Jagannathan, and Shen. However, deliberate investments in AR technology may have unintended consequences. Concerns of accessibility and inclusion raised by Contreras-Espinosa, Blanco-M, and Eguia-Gomez in 2021 suggest that AR may not be available to all customers, prompting fears of exclusion, particularly among those with impairments or the elderly.

The increasing popularity of AR apps requires a thorough security review as well as consideration of user issues (King, Kaleem, Rabieh, 2020). Concerns have been raised about the data processing of customer photographs or videos in AR, with possible privacy mishandling leading to customer concerns and data breaches, negatively affecting ASOS's brand. Furthermore, as Chen et al. (2011) warns, overreliance on AR could undermine the valued personal touch and human connection in the shopping experience, which is especially important for high-value fashion purchases.

## Zalando

To improve supply chain management, Zalando makes use of innovative eCommerce technologies (Wang et al., 2018). This decreases expenses while boosting profits. Freno (2017) claims that Zalando excels in fine-tuning its recommender system, making it more adaptive and providing recommendations based on what customers like.

These improvements, according to Bloomberg's 2022 study (Cantrill, 2023), boost investor confidence and drive Zalando's stock to increase. However, as Cavinato warned in 2004, relying too heavily on technology might result in issues such as system malfunctions and mistakes. Maintaining and updating these technical solutions necessitates ongoing expenses. Furthermore, automation can have an impact on jobs, particularly manual or low-skilled ones, causing ethical and societal issues (Starly, Cohen, and Raman, 2020).

The use of customer data for suggestions by Zalando creates data privacy concerns (Vu et al., 2016). This reliance may cause privacy concerns, making customers wary of data handling. If data privacy regulations are not enforced, it may result in a loss of confidence and legal issues.

## 5. Website Comparison

When analysing the online presence of selected companies, an examination of their websites becomes necessary for understanding user experience, advantages, and pitfalls, all crucial in shaping investor perception.

### Farfetch

Farfetch distinguishes itself in the e-commerce space by providing investors with a distinct value proposition based on an easy-to-use interface and cutting-edge capabilities. The user-friendly design makes it simple to navigate, and the use of a one-click buy option is a strategic benefit that may enhance conversion rates (Pathak and Jain, 2021). However, possible risks, such as interface complexity, must be acknowledged. The product categorising can be a learning curve for some customers, reducing satisfaction and browsing efficiency. This complication is crucial in shaping investor perception, aligning with current e-commerce trends, and expressing confidence in Farfetch's agility and customer-centric strategy.

### ASOS

ASOS strategically positions itself as a user-friendly e-commerce, significantly impacting investor perception. The platform excels in providing users with a seamlessly navigable website, enhancing engagement. Personalisation features contribute positively to the platform's overall perception. However, pitfalls may arise from evolving user expectations, with investors closely monitoring how ASOS adapts to ensure sustained user satisfaction. The user-friendly design of ASOS's website plays a crucial role in influencing investor trust, interpreted as a strategic investment

in customer satisfaction and increased conversions (Kartikowati and Permatasari, 2018).

## Zalando

When comparing the selected organisations, Zalando's website stands out, presenting both advantages and possible risks that may affect investor perception (Downing and Liu, 2011). The site's user-friendly design gives a pleasant experience with a diverse range of fashionable items. However, issues like trouble with the user interface may arise, causing investors to examine how Zalando handles them. Investor perception of Zalando's website is strongly dependent on the balance between innovation and usability.

## 6. Ethical Practices in eCommerce

### Farfetch

Farfetch's business strategy reflects their commitment to sustainability. This is evident in their handpicked collections, which include eco-friendly items. This should be implemented because some customers believe that businesses have an ethical obligation to contribute to the well-being of the environment. Furthermore, customers are becoming more concerned with sustainability, and an eco-friendly image may help a company's reputation (Neumann, Martinez, and Martinez, 2020). Being an ethical choice can provide a competitive advantage in a market where sustainability is an important concern for customers. Furthermore, implementing eco-friendly technology and practices frequently results in more efficient use of resources such as electricity, water, and raw materials. This efficiency might result in long-term cost benefits for the firm (Yagi et al., 2015).

### ASOS

ASOS is acknowledged for its positive ethical stance, particularly its strategic investment in AR technology, enhancing the customer experience with virtual try-ons. The user-friendly design of ASOS's website embodies an inclusive approach, catering to a diverse global audience. However, challenges arise in the accessibility of AR technology, potentially excluding segments of the population and raising concerns about inclusivity (Mieczakowski, Hessey and Clarkson, 2013).



## Zalando

Ethical considerations in Zalando's operations are evident in supply chain optimisation and the establishment of a digital marketplace, aligning with principles of waste reduction and efficient inventory management. Challenges arise in potential job displacement due to automation and technological advancements. Additionally, Zalando's use of customer data for personalised recommendations raises data privacy concerns, emphasising the need for a careful balance between personalization and privacy (Smith, 2017).

In summary, while these eCommerce giants demonstrate ethical commitments, ongoing scrutiny and adaptation are required to address challenges. Finding a balance between technological innovation, sustainability, and inclusivity is crucial for fostering positive ethical perceptions in the dynamic eCommerce landscape.

## 7. Potential Risks in eCommerce Businesses

Whilst investigating eCommerce businesses, it is necessary to evaluate possible risks apparent in their operational strategies and technical implementations. This analysis is critical for investors looking to make educated judgments in a constantly evolving digital economy.

### Farfetch

Farfetch specialises in integrating AI and machine learning technologies, elevating customer experiences and driving significant sales and GMV growth (Chevalier, 2022). This success comes with underlying risks and reduces the personal touch. Overreliance on technology in the absence of human interaction may result in a sense of disconnect and reduced customer satisfaction. Customer expectations are dynamic, so businesses must strike a balance to successfully react to changing needs and expectations; a primarily technology strategy may struggle to keep up with changing customer requirements.

### ASOS

ASOS is known for its strategic investment in AR technology, which improves the customer experience with virtual product try-ons. However, difficulties occur in the accessibility of AR technology since it limits the consumer base by excluding customers with various needs or impairments. Furthermore, in today's socially conscious world, customers are becoming more aware of and sensitive to concerns of

inclusion. A company that is seen as neglecting inclusion may experience criticism and an unfavourable public opinion, negatively damaging its brand image. This will have an impact not just on customers, but also on employees; a lack of digital inclusion in internal tools and procedures can lead to employee dissatisfaction affecting morale and productivity (Masood and Egger, 2019).

## Zalando

While Zalando's supply chain optimisation and dynamic digital marketplace boost efficiency, they also present risks such as potential technology faults and the need for ongoing maintenance. Additionally, using customer data to generate recommendations raises privacy concerns, highlighting the need for rigorous privacy laws. The collection and analysis of customer information for personalised recommendations may violate individual privacy, making people uncomfortable when their preferences are tracked without their explicit consent (Muneer, S and Z, 2018). The extensive collection of customer data increases the risk of data breaches, as ecommerce sites become attractive targets for hackers wanting unauthorised access to sensitive customer information, with the most common being credit card fraud (Jamra et al., 2020).

## 8. Practices to Consider and Practices to Avoid

When establishing a comparable ecommerce platform, the following tables highlight technologies that should be considered for adoption and others that should be avoided.

<b>Technologies Worth Considering</b>	<b>Models / Frameworks worth Considering</b>	<b>Justification</b>
AI and Machine Learning	<b>Principles of Responsible AI:</b> Prioritise fairness, transparency, accountability, and inclusivity in AI for unbiased, transparent, and responsible outcomes.	Improves client experiences, boosts engagement, and boosts revenue (Harba, 2019).
Omnichannel Retail Strategy	<b>Ethical Decision-Making Model:</b> Identify ethical challenges in omnichannel data use, prioritise values	Provides a coherent and accessible buying experience across multiple platforms, appealing to a wide range of

	like trust and privacy, implement aligned strategies, and continually assess and adjust practices.	audiences (Lorenzo-Romero, Andrés-Martnez, and Mondéjar-Jiménez, 2020).
AR Technology	<b>Fair Information Practice Principles (FIPPs):</b> Ensure transparency, user choice, access, and security in AR data practices.	Transforms the purchasing experience by letting buyers digitally try on things and make educated purchasing selections (Vasquez-Parraga, 2017).
Supply Chain Optimisation	<b>Ethical Supply Chain Framework:</b> Prioritise eco-friendly and socially responsible practices, ensure fair labour treatment, maintain transparency, and protect sensitive information in the supply chain.	Reduces expenses, increases profits, and assures on-time delivery, which promotes investor confidence (Wang, Y., Jia, F., Schoenherr, T., and Gong, Y. 2018).
Digital Marketplace	<b>Digital Ethics Framework:</b> Safeguard user data, promote fair competition, implement fraud prevention measures, and ensure accessibility for diverse users.	Enhances competitiveness by offering a comprehensive range of products, attracting, and retaining a diverse customer base (Buonpastore, 2013).
Chatbots	<b>AI Ethics Guidelines for Chatbots:</b> Ensure chatbot accuracy, disclose interactions, obtain user consent, and mitigate biases.	Improves customer support, gives real-time help, automates repetitive processes, and increases engagement, resulting in enhanced customer satisfaction and operational efficiency.

Technologies Worth Avoiding	Models / Frameworks worth Considering	Justification
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Over Reliance on AI and Machine Learning	<b>Ethical AI Governance Framework:</b> Ensure human oversight, accountability, bias mitigation, and transparency in AI decision-making.	This might result in significant data security problems. Customer connections and trust weakens because of an imbalance between technology and human interaction (Harba, 2019).
Internet of Things (IoT) Devices	<b>IoT Ethics Principles:</b> Integrate privacy into IoT design, enhance security, respect user data ownership, and obtain informed consent.	User satisfaction with IoT devices may be negatively impacted by privacy, security, technological faults, complexity, pricing, and information overload.
Automation	<b>Ethical Automation Framework:</b> Assess job impact, support workers, and integrate ethics for responsible AI deployment.	Unethical because it can lead to job displacement, which has a detrimental influence on the reputation and credibility of the ecommerce (Starly, Cohen, and Raman, 2020).
Data Privacy Risks in Recommender Systems	<b>Recommender System Privacy Framework:</b> Implement strong anonymisation techniques, give users control over data, communicate transparently about data use in recommender systems, and conduct regular privacy audits.	If privacy standards are relaxed, it can lead to a loss of customer trust and legal ramifications (Vu et al., 2016).
Biometric Data Usage	<b>Biometric Data Ethics Guidelines:</b> Secure informed consent for biometric data collection, implement robust security, restrict data use to agreed purposes, and clarify ownership and control rights.	To gain and keep consumer trust, more restrictions and more open processes are required.

Virtual Reality (VR) Implementation	<b>VR Ethics and Privacy Framework:</b> Prioritise user awareness for VR experiences, safeguard privacy, enforce content standards, and ensure inclusive design.	Potential restrictions and restricted accessibility. It is critical for wider adoption to ensure compatibility with a bigger audience and address usability difficulties.
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## 9. Conclusion

To conclude, the Farfetch, ASOS, and Zalando analysis emphasises their use of technology, ethical procedures, and possible risks for investors. While each succeeds in some areas, such as Farfetch's AI-driven sales growth and ASOS's AR technology, issues like data security and inclusion arise. Maintaining a mix of innovation, sustainability, and inclusion is critical for long-term success. To make educated decisions in the evolving e-commerce environment, investors must carefully analyse the influence of technology on customer experiences as well as ethical issues and risks involved.

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