

Visual Transformation of Retail Brands: Integrating Artificial Intelligence

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Abstract

INTRODUCTION: Digitalization and artificial intelligence (AI) are fundamentally transforming the way retail brands communicate with customers, particularly through visual identity and visual communication.

OBJECTIVES: The objective of this paper is to analyze the impact of artificial intelligence on the visual transformation of retail brands, with a focus on personalization, effectiveness, and adaptability of visual communication, and to propose a practical framework for the effective integration of AI in this field.

METHODS: The research is based on a qualitative analysis of current theoretical knowledge and selected case studies of successful AI implementation in retail branding. The study examines key AI applications such as automated content creation, predictive analysis of consumer behavior, and dynamic visual customization.

RESULTS: The results indicate that AI enables faster responses to customer preferences, increased consistency of visual identity, and more effective personalization of visual communication. At the same time, the analysis identifies challenges related to ethical issues, creative limitations, and the changing role of designers.

CONCLUSION: Artificial intelligence has significant potential to redefine visual communication standards in retail branding. When implemented responsibly and in synergy with human creativity, AI can enhance brand competitiveness, customer experience, and long-term sustainability in the digital age.

Keywords: Artificial Intelligence, Branding, Digital Transformation, Retail, Visual Communication

Received on 28 January 2026, accepted on 29 January 2026, published on 11 February 2026

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doi: 10.4108/_____

1. Introduction

Visual identity is the cornerstone that enables retail brands to build and maintain a strong and consistent relationship with their customers. A brand can have a powerful influence on the formation of human values, beliefs, preferences, and behavior, and this influence is particularly evident in the area of consumer behavior, where it can influence decision-making and the selection of products or services based on individuals' emotional and cognitive responses [1]. This aspect is particularly important at the

point of sale, where it plays a key role in shaping the customer experience and decision-making.

Brands use visual elements such as logos, colors, typography, illustrations, and more to express their uniqueness and value. We can therefore perceive it through various senses—it can be seen, touched, heard, or watched in motion [2]. Through these sensory perceptions, the brand communicates its values and mission to consumers. It focuses on satisfying their needs, thereby differentiating itself from its competitors' and increasing its prestige. In this way, it can become a strong brand that is competitive. This process plays a key role in brand differentiation in saturated markets [3].

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With increasing competition in the digital environment, it is becoming increasingly important for brands to ensure that their visual communication is not only aesthetically appealing but also resonates emotionally with the target audience [4]. The ability of visual communication to express the stories, values, and mission of a brand helps build trust and loyalty among consumers, which is important for long-term success in retail.

Artificial intelligence (AI) is increasingly permeating various aspects of our digital and physical lives, and this is also reflected in graphic design and branding. With the advent of AI-powered tools, we are experiencing revolutionary changes in design that are transforming the way visual materials are created and customized [5].

AI enables the creation of highly personalized and dynamic visual communication that can adapt marketing materials in real time based on customer behavior. Technologies such as predictive analysis of consumer behavior and automated content creation enable brands to respond flexibly to changing market demands, thereby increasing the effectiveness and relevance of their marketing strategies [6]. By leveraging AI, retail brands can also optimize their visual environment using tools to analyze consumer emotional responses, leading to better targeting and clearer communication of the value of products or services [4]. In this way, technologies such as AI and digital tools are fundamentally changing the way brands create and manage their visual identity in both online and offline environments.

2. AI in retail and branding

The retail industry is undergoing a fundamental transformation driven by the rapid integration of artificial intelligence (AI), changing the way it operates and interacts with consumers [7].

Artificial intelligence (AI) is a broad field of computer science that focuses on developing systems capable of performing tasks that traditionally require human intelligence, such as learning, pattern recognition, natural language processing, and decision-making. AI enables machines to "learn" and improve with each new data input. This process is called machine learning and involves algorithms identifying patterns based on historical data and applying them to predict future outcomes [7]. The volume and quality of inputs significantly influence the results we achieve. We can therefore say that the human factor is still very important.

AI is based on several technological pillars, such as algorithms and predictive analytics, which enable AI to analyze vast amounts of data and generate predictions based on this information. In the context of retail, we can say that predictive analytics uses historical data to predict consumer behavior, which helps retail brands optimize inventory, marketing campaigns, and pricing strategies [8]. Automation, another important principle of AI, is a process where algorithms are used to perform routine tasks without the need for manual intervention, thereby increasing efficiency and reducing costs [9].

This basic AI framework helps retail brands not only process data, but also generate useful information to predict consumer trends, improve marketing strategies, and personalize customer experiences.

2.1 Key AI applications in retail

AI brings many innovative applications to retail that are fundamentally changing the way brands operate and communicate with customers. The main areas of application include:

- **Personalization of customer experiences:** AI enables retailers to provide highly personalized experiences by analyzing large amounts of customer data, such as purchasing behavior, browsing history, and previous purchases. Machine learning systems can use this data to generate personalized product recommendations and marketing campaigns, which increases customer satisfaction and loyalty [7]. An example of successful personalization is Amazon, which uses recommendation algorithms to tailor its product selection to each customer, leading to higher conversion rates. For example, it can modify descriptions for a specific customer to match their current needs.

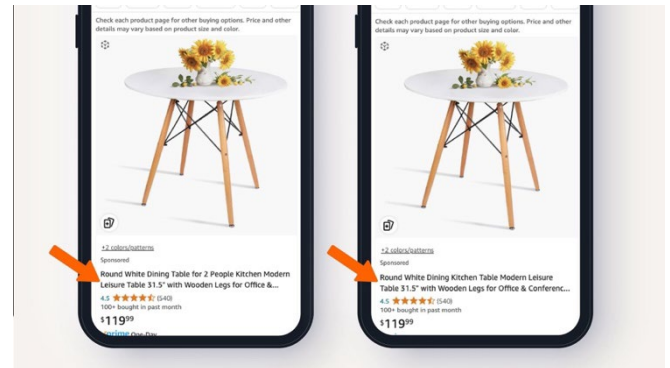


Figure 1. Use of personalization at Amazon

- **Dynamic pricing:** Dynamic pricing is another application of AI in retail that allows product prices to be adjusted in real time based on factors such as demand, competition, seasonality, and customer behavior. This approach is used to optimize margins and maximize profits, with prices adjusted to reflect current market conditions [8]. For example, brands such as Zara and H&M use AI to adjust prices based on current trends and demand, thereby optimizing their profits. This approach also yields positive results. In its sustainable growth report, H&M states that the introduction of AI for demand forecasting and

inventory optimization led to a 21% reduction in excess inventory within one year [24]. Walmart, on the other hand, found that using AI to predict sales reduced replenishment time by 30%, which directly resulted in improved product availability and increased sales [25].

- Automation of marketing campaigns: AI enables brands to effectively automate various marketing processes, from ad creation to performance analysis. Using algorithms and data analysis, retailers can target customers at the right time with relevant offers. Automated systems, such as chatbots and virtual assistants, provide customers with fast and effective support, which increases their satisfaction and engagement [4].
- Inventory optimization and demand prediction: AI is also invaluable in the areas of inventory optimization and demand prediction. Retailers can use predictive algorithms to forecast demand for products based on historical data, enabling them to better manage inventory and minimize the risk of overstocking or stockouts. Walmart and Zara are successfully using AI to analyze historical sales data and optimize their logistics processes [8].

In addition to the features already mentioned, such as personalization and dynamic pricing, there are many other ways AI can impact retail. It helps automate content creation, optimize the supply chain, segment customers, improve customer feedback, and detect fraud. In addition, it is used for virtual fitting rooms and employee training. Chatbots and virtual assistants also improve the shopping experience and reduce product returns, contributing to the overall efficiency and competitiveness of retailers [11]. As we can see, AI has many uses in retail and offers a wide range of benefits.

2.2 AI in visual identity

Design is a language, and like any language, it has its own grammar and vocabulary. When we design, we are essentially telling a story and using a set of tools and principles to effectively convey our message [10]. Currently, AI is another such tool. It plays an increasingly important role in creating and optimizing a brand's visual identity. Visual identity includes all visual elements that communicate brand values—logos, colors, typography, images or illustrations, patterns, icons [2], but also visual merchandising. AI allows brands to automate the creation and customization of these elements depending on consumer preferences and current trends. In terms of design and visual identity, we can mainly talk about areas such as:

- Generative design is an AI technology that uses algorithms to automatically create visual materials. Designers can focus on the more creative aspects of their work and experiment

with new solutions, as AI can now take over routine tasks almost entirely. AI can help them generate design variations, edit photos, and create vector graphics [5] and other marketing materials tailored to specific target groups and current market conditions. This process reduces the time needed to create visuals while ensuring that designs are in line with current trends and customer needs [6]. An example of this is a campaign for a festival in Portugal, which brought together nature, artists, and AI [12]. The result was an avant-garde, artistic, and differentiated campaign in line with the values of this electronic music festival.



Figure 2. Use of AI in creating a campaign for a festival in Portugal

- Augmented Reality (AR) and Virtual Reality (VR) are technologies that allow customers to interact with a brand in new ways. AI combined with AR and VR enables the creation of interactive visual experiences that improve the customer experience and reduce product returns. An example is IKEA, which uses an AR app to visualize furniture in customers' homes, enabling better purchasing decisions [8].
- Computer vision uses AI to analyze and process visual data such as images and videos. In retail, it is used to track customer interactions with products in stores, which helps optimize product placement and sales areas. For example, AI can analyze which products attract the most customer attention and use this data to adjust the placement of products on the sales floor [9]. AI can thus help with the preparation of visuals and plan the customer's visual journey.

3. Implementation of AI in retail visual identity

The implementation of AI is an inevitable step that has come with this revolution. Several brands are already gradually implementing this trend and incorporating it as a way to develop their visual identity.

3.1 Automation of processes and marketing campaigns

AI is becoming an invaluable tool in the automation of marketing campaigns and sales processes, which also directly affects design. Nike uses chatbots and virtual assistants to streamline communication with customers, ensuring that each customer receives personalized support, recommendations, and tailored product information.

According to Nike, up to 60% of people wear shoes that don't fit them properly, and more than 500,000 people a year admit to buying the wrong size. Nike attributes this problem to outdated two-dimensional methods of determining shoe size. The Nike Fit service uses a smartphone camera to scan customers' feet and offer accurate shoe size recommendations. Nike Fit captures 13 visual data points and creates an accurate 3D model of the foot, which helps in selecting the optimal size for future purchases [13]. The goal of this technology is to reduce the number of returned products and increase customer satisfaction by solving the problem of incorrect sizing. Based on this input data, interactive systems are able to generate real-time offers that adapt to customer interaction.

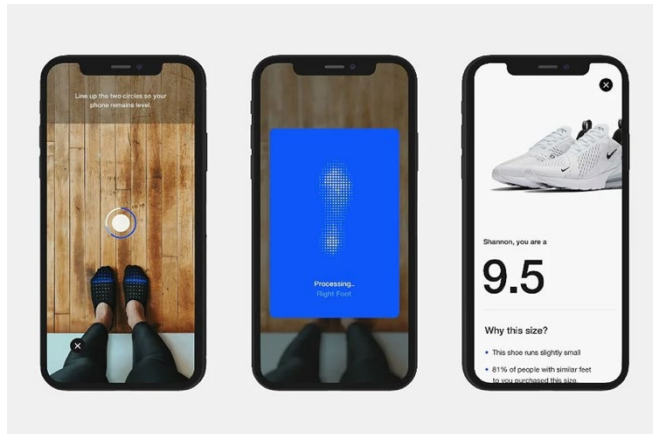


Figure 3. Nike's personalized app

Nike can boast positive results. The deployment of Nike Fit technology, which recommends the optimal shoe size by scanning the foot, has shown measurable results. According to Nike, its introduction has led to a reduction in product returns of approximately 20% and a 13%

increase in customer satisfaction, as measured by internal surveys [22].

This approach reduces the need for manual intervention, streamlines the process of creating and distributing visual materials, and maintains a consistent brand image. In addition, this data can also be used in the future. For example, based on historical data, AI can predict which products will be most sought after in the coming months and automatically adjust visuals to display them at points of sale and online. It also highlights the importance of input data, its accuracy, and customers' willingness to share it.

3.2 AI in visual creation and personalized visuals

Another way AI can influence retail and design is through the automatic creation of visuals and the customization of product displays. AI technologies can generate and edit visuals based on customer data, ensuring that visuals remain consistent while also being highly personalized. Nike uses advanced AI tools to automatically create digital visuals for its ads, product displays, and websites.



Figure 4. Personalized Nike House of Innovation store

These machine learning systems constantly analyze customer behavior and preferences to adapt to current trends. Nike stores use digital screens that use AI algorithms to customize content in real time based on current campaigns, trends, and customer preferences. Based on previous customer interactions and preferences, products, colors, and visuals are customized to meet the customer's current needs [14]. According to Digital Silk's analysis, these stores saw a 15% increase in conversion rates and an 18% increase in average time spent in the store after implementing personalized visuals [23]. AI can take into account seasonality, trends, and individual selection criteria, creating a visual environment that is not only attractive but also effective. This creates personalized visual communication that not only increases customer engagement but also maintains Nike's strong and consistent

visual identity. It is important that personalization does not circumvent established rules. The brand can adapt to customers, but always in a way that remains consistent and recognizable. It is therefore important to always adhere to the rules that have been defined in relation to the logo, color scheme, typography, and other elements.

3.3 Personalization of stores using AI

After personalizing marketing messages and visuals, it's time to focus on the store itself. In retail, personalization plays a key role in improving the customer experience and increasing the effectiveness of sales areas. It can help highlight and strengthen the customer's experience with the brand. Brands such as Nike are implementing artificial intelligence (AI) technologies to analyze large amounts of customer data, enabling them to dynamically customize not only visuals but also the actual layout of products in stores.

The Nike store in New York collects and uses extensive information about customers who log into the app—from their favorite colors and sports to their shoe size. This customer engagement system then uses this data to provide a highly personalized and quality shopping experience. So, they log in when they enter the store, and the store changes according to their preferences. Nike uses this information to optimize inventory in individual stores, deciding which sneaker models should be available in specific locations. The app also allows customers to scan clothing in the store and immediately request that the desired item in their size be sent to the fitting room [14].



Figure 5. Personalized Nike House of Innovation store

Nike uses AI to optimize product placement in stores and personalize visual communication in real time. Algorithms analyze customer behavior, such as where they linger, which products they view, or which products they purchase. Based on this data, personalized experiences are created in stores, where products, advertisements, and visuals are tailored to the customer's current preferences [15]. This approach creates an intense, private experience

where the customer feels that the store is truly tailored to them, increasing not only engagement but also loyalty and satisfaction. The personalized environment promotes feelings of exclusivity, leading to a deeper connection with the brand and higher sales results.

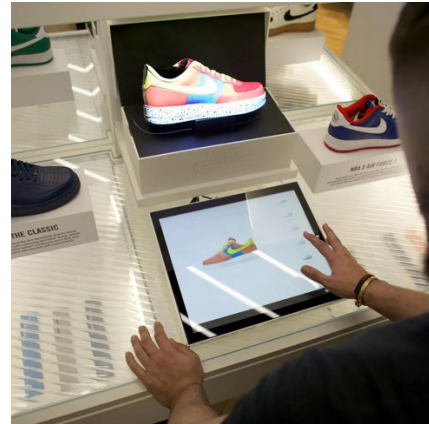


Figure 6. Personalized Nike House of Innovation store

As we can see, AI can be used to achieve a high level of personalization not only of the offer, but also of the entire store. By tracking customer movements and automatically adjusting the layout of products on store shelves, Nike significantly reduces the number of unsold products and maximizes the efficiency of sales floor space allocation, which is key to optimizing sales processes [15]. Based on AI analysis, products are displayed to customers in a context that matches their individual preferences and previous purchasing behavior, increasing conversion rates while creating an effective visual environment that promotes customer loyalty.

4. Discussion

With the advent of artificial intelligence (AI) in the retail sector, new opportunities are opening up for brands seeking to optimize their sales processes and improve the customer experience. AI offers a wide range of benefits, including improved personalization, increased efficiency and sales, and reduced costs. Brands such as Nike, which have implemented AI in their stores and online platforms, demonstrate how AI can contribute to significant improvements in business results. Thanks to AI's ability to analyze vast amounts of data, such as customer behavior, previous purchases, and preferences, retailers can tailor their products and marketing communications to the current needs of the customer in real time, leading to increased customer engagement and satisfaction.

On the other hand, the integration of AI into retail also brings several ethical and technical challenges that cannot be ignored.

Integrating artificial intelligence into retail branding requires not only technological readiness, but also a thorough approach to ethical issues. Key issues include personal data protection, algorithm transparency, and discrimination prevention. European legislation (GDPR) sets out the principles of data minimization and anonymization, but their actual implementation in practice requires the systematic application of the principle of privacy-by-design, i.e., the incorporation of privacy protection at the design stage of systems, not just ex post [16]. This means that the architecture of systems, data collection processes, and data processing must be set up from the outset in such a way that sensitive data is exposed to as little risk of misuse as possible. Retail brands should therefore invest not only in the technology itself, but also in training teams to put these principles into daily practice. Transparency, privacy, and security are aspects that should guide sales decisions, and it is essential to prevent abuse and discrimination against customers. It is also necessary to consider how to ensure that the data obtained is relevant and delivers the desired results.

Another important measure is the explainability and auditability of algorithms, which increases consumer confidence and allows for the fairness of AI decisions to be checked. Research suggests that customers are more willing to share data if they understand how it is processed and have the opportunity to provide feedback [17]. Transparent data reports, known as "model cards" or "data sheets," and independent model audits help prevent unintentional bias and discrimination against certain groups [18]. In the context of retail, explainability is important, for example, in the personalization of prices or product recommendations: customers should know the factors on which the product or price was offered to them. Such measures also strengthen the perception of the brand as a responsible partner, which can be a competitive advantage. This transparency should be important for the brand, as it can win over customers.

We must also consider the impact of AI on the environment. Another aspect is environmental sustainability, as training large AI models has a significant carbon footprint. Strubell, Ganesh, and McCallum show that training large language models can have emissions comparable to the lifetime operation of a car [19]. Therefore, it is important to optimize infrastructure, use renewable energy sources, and choose efficient architectures, as recommended by more recent studies on "green AI" [20]. For retail brands that often communicate their values through sustainability and eco-friendly design, switching to energy-efficient solutions can be not only an environmental but also a marketing advantage. For example, combining local data centers with renewable energy sources can significantly reduce the environmental footprint without compromising service quality. Many brands strive to present themselves as sustainable. This will be a new aspect that they will have to incorporate.

Environmental sustainability will no longer be just about recycling and using renewable resources, but will also enter the realm of AI.

Last but not least, fairness and inclusion need to be addressed—from the design of data sets to the testing of AI outputs on diverse user groups. Practical steps include diversifying training data and continuously monitoring model performance to detect systematic errors [21]. If recommendation algorithms are trained only on data from a dominant customer group, this can lead to smaller segments being overlooked or disadvantaged. Regular audits, publicly available reports, and the involvement of independent experts help to reduce these risks and maintain a balance between efficiency and social responsibility.

The development of these ethical and environmental measures builds on the broader framework of sustainable AI use in retail. When brands combine technological innovation with an emphasis on responsible data management, transparency, and environmental considerations, they can not only minimize potential risks but also strengthen their reputation and customer trust. This approach naturally ties in with other strategic considerations about the future of visual identity and its adaptability in a rapidly changing digital environment, opening up space for an even deeper connection between artificial intelligence and human creativity and long-term sustainability.

Predictions about the future of AI in retail suggest that this trend will continue to grow. With the advent of new technologies, even greater integration of AI into sales processes is expected. An interesting aspect of the use of AI in retail is the synergy between technology and human creativity. AI can serve as a tool to support design and branding strategies, but it cannot replace human creativity. For example, in the case of Nike and their "custom" stores, where AI optimizes products, visuals, and layout, AI is combined with a creative approach to design, creating a unique and personalized experience for customers. This example shows how important it is for technology to support human creativity, but not completely replace it. It is this dynamic relationship between technology and the human touch that can lead to innovative and effective solutions in retail.

The future of AI in retail looks promising, but it will be important for ethical, technical, and human factors to complement and balance each other. While AI offers enormous possibilities, it must be implemented sensitively and with regard to customer rights, transparency, and sustainability. It will continue to be crucial for human input to be present in this process, as this will bring truly valuable and creative results that are in line with the brand's values and vision.

5. Conclusion

The use of artificial intelligence (AI) in retail is bringing about fundamental changes in many areas, from personalizing the customer experience to improving the visual communication of brands. AI enables retailers to gain deep insights into customer preferences and behavior, allowing them to tailor products, marketing campaigns, and the sales environment in real time. The quantitative data presented in the article also shows that the implementation of AI brings not only visual innovation and personalization, but also a clearly measurable economic effect – from reducing costs and product returns to increasing sales and customer loyalty. Such statistical results confirm that AI is no longer just an aesthetic tool, but is becoming a strategic factor in competitiveness that directly affects sales and long-term growth.

The potential of AI in retail is immense, but as its use grows, so does the responsibility of brands. Future development must therefore go hand in hand with ethical principles – personal data protection, algorithm transparency, and prevention of discrimination. Retailers should implement measures such as privacy-by-design, regular algorithmic audits, and disclosure of data processing methods to maintain customer trust while meeting legislative requirements. It is also important to create mechanisms that allow consumers to better understand how their data is used and give them control over their own data. Transparent communication and the possibility of feedback strengthen the brand's relationship with the customer and increase their willingness to cooperate.

Environmental sustainability is equally important, as operating large-scale AI systems can be energy-intensive. Optimizing infrastructure, using renewable energy sources, and choosing more efficient models are ways to reduce carbon footprints and align technological development with brands' environmental goals. Retail companies that commit to reducing their energy consumption and actively inform their customers about this can not only gain a competitive advantage, but also contribute to shaping social responsibility in the field of digital technologies.

Another key aspect is maintaining human creativity in the process of creating visual identity. Although AI can effectively generate and adapt visual elements, original concepts, emotional depth, and cultural context remain the domain of human design. Cooperation between humans and technology should therefore be based on synergy: AI provides data and tools, while designers bring aesthetic and ethical decisions. This approach supports the long-term value of the brand and protects its identity from the uniformity that automated visual creation can bring.

From a long-term strategy perspective, retail brands should therefore strive to balance technological innovation with human creativity and social responsibility. Investments in AI should support not only a consistent and attractive visual identity, but also fair and secure data processing, with the human touch remaining key to creating meaningful and valuable customer experiences. Artificial intelligence integrated in this way can be an engine of innovation that improves the competitiveness of retail

brands, strengthens their relationship with customers, and contributes to more sustainable and ethical business practices, where technology and creativity work in balance.

Acknowledgements.

This paper was elaborated within a national research project supported by the Grant Agency of the Ministry of Education, Research, Development, and Youth of the Slovak Republic and the Slovak Academy of Sciences (VEGA) No. 1/0334/24, titled 'The Importance of Interaction Links Influencing the Purchase Decision-Making Process of a Selected Consumer Segment in the Context of Identifying Key Communication and Performance Metrics of the B2C Market'.

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