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AI APPLICATION IN THE RETAIL FOOTWEAR INDUSTRY: A CASE STUDY OF NIKE'S RETAIL TRANSFORMATION

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Abstract:

The retail footwear industry has undergone tremendous expansion in the e-commerce sector as a result of technological advancement and the application of artificial intelligence. The development of specific AI technologies has tackled issues encountered during online purchases, such as poor fit and a lack of communication. AI provides a virtual try-on option for trying on footwear as well as chatbots for queries, simplifying decision making and increasing customer satisfaction. The present paper focuses on exploring the role of artificial intelligence in transforming the retail footwear industry. Additionally, the study will examine the case study on Nike's application of AI in its retail strategies.

Keywords: *Artificial Intelligence (AI), Footwear retail industry, Nike.*

Introduction:

The retail footwear sector is among the fastest-growing industries in India, evolving significantly over time. Initially reliant on hand manufacturing, it has transitioned to machine-based production, boosting productivity and efficiency. The adoption of e-commerce and artificial intelligence (AI) has further accelerated its growth by leveraging technology to enhance operations and consumer experiences.

E-commerce has revolutionized global trade, enabling consumers to shop conveniently from online retailers. Meanwhile, AI has transformed the footwear retail sector by helping businesses better understand consumer preferences. AI systems automate data collection on customer choices, product demand, and inventory needs, allowing retailers to maintain a well-organized supply chain. These innovations foster both efficiency and innovation in inventory management.

AI tools also enhance the shopping experience at every stage, from product discovery to payment. For instance, consumers can search for products by uploading images, use virtual try-on features, and interact with AI-driven chatbots for queries. Additionally, AI ensures secure payment gateways by detecting fraud and other security threats, creating a safer transaction environment.

The integration of AI in the retail footwear industry benefits retailers, consumers, and society alike. Retailers gain valuable insights into market trends and maintain supply chain efficiency, while consumers enjoy high-quality products and a seamless shopping journey, resulting in greater satisfaction. By fostering innovation and

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improving productivity, technology continues to drive the growth and success of the footwear industry.

Nike, as the global leader in the sports industry, serves as the focus of this study on AI applications in retail transformation. In order to stay ahead of the competition, Nike integrated AI technology across various aspects of its business. The company utilizes AI throughout the entire process, from product design to customer support and after-sales services. AI has become a key component of Nike's operations, enabling improved demand forecasting, inventory management, supply chain optimization, and customer service. As a result, Nike has enhanced product design quality, operational efficiency, productivity, and overall customer satisfaction.

Review of Literature:

Barkute (2023), in his article states that the rise of AI technology has led to great growth in the footwear industry and estimates that e-commerce footwear sales would account for 45% of total sales by 2025. AI developments can help businesses expand, optimize inventory by identifying demand and emerging trends, and improve customer satisfaction. Customers benefit from AI because it makes personalized recommendations based on past purchases, that grabs their curiosity. AI offers a chatbot that is available around-the-clock to assist with consumer inquiries.

Sahai and Goel (2019) investigated the impact of AI on the future of the footwear business, specifically on sports shoes. Researchers collected both primary and secondary data to analyse it using an experimental and descriptive research approach. Researchers discovered that AI has built the algorithm by allowing users to construct their profiles, which enables search data and attracts customers by providing products based on their preferences or previous purchases. The industry benefits from receiving information about consumer searches and being able to enhance footwear design. It also suggests the best time to make promotional offers to attract customers.

Pedrajas (2022), stated that selling footwear online met certain issues such as an unsuitable fit or the goods not being the same as depicted in the image, resulting in higher returns. AI has designed specific tools to assist in overcoming such issues along with increase in sales while reducing returns. AI has created designs that increase product image quality, provide detailed information, and accurately represent footwear. Customers can search for the product by uploading an image to the search page; this AI technology has made product searching easier, resulting in increased customer attractiveness and loyalty.

Kotelskaia (2023), conducted a comparative study of the footwear design process between traditional and digital methods. According to his research, traditional design methods are better for innovating new designs as the creative mind of a person cannot be matched by technology or digital methods. On the other hand, digital methods are superior because they save time, are more accurate, reduce waste, and increase efficiency. Researchers came to the conclusion that more digital design processes will be used in the future, that will enhance sustainability and efficiency.

Objectives of the Study:

- To explore the role of artificial intelligence in transforming the retail footwear industry.
- To examine Nike’s application of AI in its retail strategies.

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Research Methodology:

The research methodology outlines the framework for conducting the study to achieve the stated objectives. This study will rely on secondary data to gain a comprehensive understanding of the impact of AI on the retail footwear industry. Data will be sourced from reputable international conference papers, peer-reviewed journals, and official website of Nike.

The collected data will be align with the research objectives and adhere to ethical standards by being sourced from credible and official platforms. The analysis will involve both descriptive analysis and content analysis to derive meaningful insights from the data.

Role of artificial intelligence in transforming the retail footwear industry.

AI plays a multifaceted role in customer value creation by initially constructing user profiles to gather data, enabling a deeper understanding of consumer needs and preferences. These AI tools assist customers in filtering products tailored to their specific requirements, resulting in increased sales and enhanced shopping experiences through personalization. To further optimize operations, AI-powered inventory systems analyse historical sales data and market trends, allowing sellers to maintain adequate stock levels and prevent waste, thus avoiding issues related to over or under-storing products.

Additionally, AI provides virtual assistants accessible around the clock to aid customers with their purchases and offers features like virtual try-ons, enabling consumers to evaluate the look of the product. Chatbots enhance the purchasing experience by offering immediate responses to customer inquiries, creating an interactive and efficient platform for assistance. By analysing customer information, preferences, and recent searches, AI can personalize product recommendations, improving customer retention through a more tailored shopping experience.

AI's algorithms also forecast market trends and anticipate consumer needs, allowing employees to focus on other critical tasks. During the pandemic, AI-powered self-checkout and touchless payment options significantly improved operational efficiency, saving customer’s time and enhancing the overall shopping experience. By analysing algorithms related to customers' recent purchases, AI-driven tools assist in decision-making by presenting suitable product options, ultimately drawing in more customers.

In the realm of marketing, AI equips retailers with insights into their target market's needs, enabling enhanced efficiency and productivity. Retailers can leverage AI-generated emails, promotions, and other materials to attract their audience and improve customer experiences. Furthermore, AI aids in market segmentation and demand analysis, allowing for prompt supply responses and contributing to business growth by accurately forecasting sales, reducing waste, and increasing productivity.

Overall, the application of AI in the retail landscape, particularly in the footwear industry, has transformed how businesses understand consumer preferences and market trends. By effectively satisfying customer demands, solving issues, and improving customer satisfaction, AI has fostered revenue growth and the establishment of a robust online marketing platform.

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Nike's Application of AI in Retail Strategies:

Nike has applied AI in different aspects of its footwear business. Some of the notable approaches of Nike are discussed below:

1. Augmented Reality Design System

In 2015, Nike acquired a patent for its Augmented Reality Design System, a digital pen enabling users to design sneakers according to their preferences. Consumers could customize aspects such as color and texture, and the designs were then processed using AI technology to produce the final product within two hours. This innovation provided customers with unique designs tailored to their tastes, enhancing their shopping experience and boosting satisfaction. Additionally, Nike's "Nike+" program offered loyal customers early previews of upcoming releases, further fostering brand loyalty.

2. Impact on Sales and Efficiency

The integration of AI into Nike's retail strategies has led to improved product quality, reduced wastage, and increased efficiency. These advancements, combined with heightened consumer satisfaction, contributed to consistent growth in Nike's direct sales. Table 1 illustrates Nike's revenue growth over recent years:

Table 1: Nike's Revenue Growth

Year	Revenue ($ in Billions)	Yearly Growth (%)
2024	51.36	0.28
2023	51.22	9.65
2022	46.71	4.88
2021	44.54	19.08
2020	37.40	-4.38

Source: https://www.bullfincher.io/companies/nike/revenue

Nike's efficient AI-driven design and production processes have also led to a reduction in product returns. Improved customization and proper fit contributed to fewer returns, reducing logistics costs and enhancing overall operational efficiency.

3. AI-Driven Design: The Athlete Imagined Revolution (A.I.R.)

Nike introduced the Athlete Imagined Revolution (A.I.R.), a footwear design concept that evolves continuously using input from athletes, AI tools, and designers. This innovative program integrates athlete feedback, advanced AI technology, and design expertise to create footwear that aligns with athletes' personalities and preferences.

Phase One: Designing

Athletes were invited to create mood boards reflecting their footwear preferences. Nike designers consolidated 13 mood boards across four sports and fed the data into AI systems. This process accelerated creativity and productivity, according to John Hoke, Nike's Chief Innovation Officer.

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Phase Two: Prototype Development

AI algorithms analyzed the mood board data to generate various design concepts, combining form and texture. These designs were further refined into prototypes using insights from athletes, AI systems, and the expertise of Nike's innovators.

Phase Three: Feedback

The prototypes were provided to athletes for testing and feedback. Their input was carefully recorded and used to refine the designs further.

Phase Four: Iterative Redesign

The integration of athlete feedback and AI technology reduced the time required to create innovative designs. Mood boards and feedback became foundational elements in producing new products, fostering a strong bond between Nike and its athlete collaborators.

4. AI in Supply Chain Management

As a global leader in footwear supply, Nike faced challenges in inventory management, including surplus stock and shortages. Traditional demand analysis methods proved insufficient, leading to inefficiencies. AI transformed Nike's supply chain by:

- Predicting consumer demand accurately.
- Optimizing inventory levels and storage space.
- Reducing wastage.
- Ensuring timely delivery of products.

This AI-driven approach enhanced operational efficiency and improved Nike's ability to meet growing consumer demands globally.

5. AI-Powered Marketing Campaigns

Nike uses AI to personalize its marketing campaigns and adapt to the preferences of its diverse global customer base. AI capabilities enable Nike to:

- Send tailored promotional offers to customers based on geography, age, purchase history, and browsing behavior.
- Identify optimal product launch times using market trend analysis.
- Create region-specific innovative marketing campaigns.

This personalized marketing approach has increased the effectiveness of campaigns, optimized resource allocation, and enhanced Return on Investment (ROI).

6. Enhancing Consumer Experience with AI

To address the shift in consumer preferences toward online shopping and challenges such as sizing and fit, Nike integrated AI-driven solutions, including:

- Virtual Try-On Technology: Helping customers find the perfect fit.
- Chatbots: Assisting with queries and guiding product searches based on taste and purchase history.
- Real-Time Order Tracking: Allowing customers to monitor their orders.

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These AI-powered services improved customer satisfaction and streamlined the overall shopping experience. By leveraging AI across design, supply chain management, marketing, and customer experience, Nike has positioned itself as a market leader in innovation, efficiency, and consumer satisfaction.

Conclusion:

The integration of artificial intelligence (AI) into the retail footwear industry has proven to be a transformative force, with Nike emerging as a leading example of innovation and strategic application. This study highlights how Nike has effectively leveraged AI to redefine customer experiences, optimize operations, and maintain its competitive edge in a rapidly evolving market.

Nike utilises its data and create the mood boards and designs the prototype accordingly. This has enabled to design the product within minutes, increasing the productivity and efficiency. It enhances the design and prototype as per the demands of customers. Nike moves forward along with AI to fulfil the demands and be in the trend. The combination of athlete mood boards, innovators and AI has helped Nike achieve great skill sets, increased revenue and market share.

The findings of this study suggest that AI has the potential to revolutionize the retail footwear industry by driving efficiency, enhancing personalization, and fostering innovation. Nike's experience serves as a valuable blueprint for other retailers aspiring to harness the power of AI. As the technology continues to evolve, the scope for AI applications in the industry is likely to expand further, promising even greater opportunities for innovation and growth.

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