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Fashion communication and Artificial Intelligence: the case of Neural Fashion AI

Comunicación de moda e inteligencia artificial: el caso de Neural Fashion AI

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Abstract

Artificial intelligence presents to society as a revolutionary tool capable of generating a change as unique as the democratization of Internet access at the beginning of the 21st Century. The different applications of AI facilitate the development of marketing and communication strategies adapted to the needs of the public and the establishment of strong relationships with them. One of the most dynamic consumer markets is fashion communication, hence we decided to delimit the applications of AI to brands in this sector. The first objective is to identify the main resources and applications of AI that are being used to communicate with the different stakeholders of fashion companies, particularly with the final consumer. The second objective is to recognize benefits and positive aspects along with the brakes and barriers of this technology for communicating strategies of fashion brands. Thirdly, a case study is offered to help academics and professionals understand how the fashion sector is receiving the help of generative AI in the creation of campaigns. Through a combination of qualitative methods including 3 Delphi interviews, a hemerographic research of professional publications and the Neural Fashion AI case study, the capacity of AI to point out a differentiating factor in the market that has to do with sustainability, product customization and optimization of company resources has been demonstrated. The main results highlight the contribution that AI makes to the efficiency of processes and to the achievement of brand objectives (customer satisfaction, loyalty, strengthening of positioning and brand image), expansion into new markets and audiences, or the creation of innovative, impactful and attractive content.

Keywords

Fashion, AI, communication strategy, branding, retail, Neural Fashion AI.

Resumen
La inteligencia artificial se ofrece a la sociedad como una herramienta revolucionaria capaz de generar un cambio tan singular como fue la democratización del acceso a Internet a principios del siglo XXI. Las distintas aplicaciones de la IA están facilitando el desarrollo de estrategias de marketing y comunicación adaptadas a las necesidades de los públicos y al establecimiento de relaciones sólidas con estos. Uno de los mercados de consumo más dinámicos es el de la comunicación de moda, por lo que se eligió acotar las aplicaciones de la IA a las marcas de este sector. El primer objetivo es identificar los principales recursos y aplicaciones de IA que se están utilizando para comunicar con los distintos *stakeholders* de las empresas de moda, en particular con el consumidor final. El segundo objetivo es identificar los beneficios y aspectos positivos junto con los frenos y barreras que la aplicación de esta tecnología supone para las estrategias comunicativas de las marcas de moda. En tercer lugar, se ofrece un estudio de caso que ayude a académicos y profesionales a comprender como el sector de la moda está recibiendo la ayuda de la IA generativa en la creación de campañas. A través de una combinación métodos cualitativos que incluye tres entrevistas *Delphi*, una investigación hemerográfica de publicaciones profesionales y el estudio de caso de Neural Fashion IA, se ha evidenciado la capacidad de la IA para señalar un factor diferenciador en el mercado que tiene que ver con la sostenibilidad, la personalización de producto y la optimización de los recursos de las empresas. Como principales resultados se destacan la contribución que la IA aporta a la eficiencia de los procesos y en la consecución de objetivos de las marcas (la satisfacción del cliente, su fidelización, el fortalecimiento del posicionamiento y la imagen de marca), la expansión a nuevos mercados y audiencias o la creación de contenido innovador, impactante y atractivo.
Palabras clave
Moda, IA, estrategia de comunicación, branding, retail, Neural Fashion AI.

Introduction

The rise of a new audience has transformed in recent years the landscape of fashion brands and their communication. The new demographic of digital natives who prioritize experience, personalized attention and unique and sustainable experiences has become the new paradigm that demands innovative responses from brands to maintain their loyalty (Morris and Edges, 2024).

At the same time, the use of innovative technologies has played a fundamental role in the evolution of brand communication. Among these technologies, artificial intelligence (AI) has emerged as a strategic force, offe-

ring significant opportunities to redefine the relationship between brands and their consumers.

This work delves into the cross between fashion and AI, exploring how its implementation has become a crucial competitive advantage for fashion brands. In this context, it is essential to understand that the fashion industry is not only about garments and trends, but also about visual narratives and emotional connections. Integrating AI into brand building not only streamlines creative processes, but also provides a platform for personalization, inclusiveness, and the creation of unique experiences for consumers.

The main objective, therefore, is to demonstrate that AI is providing a competitive advantage for fashion brands in terms of communication with target audiences, their brand image and generate experiences that encourage the loyalty of potential consumers.

In addition, throughout its development it aims:

- To contextualize the origin of AI and its basic concepts.
- To explain how AI is being applied to the fashion industry, and the impact it is having on its communication.
- To understand the benefits and challenges associated with integrating this tool.
- To illustrate how AI can be a competitive advantage with the study of a success case: Neutral Fashion AI.

This research begins with a first analysis of the functions and uses of the so-called "Artificial Intelligence" (AI) technology applied to communication in the fashion sector to demonstrate its impact. The technical and legal challenges presented by the use of this tool due to its recent appearance and the absence of specific regulation were also pointed out. Through in-depth interviews with three experts from the fashion and technology sector (Karen Sastre Gonjar, Roser Bagó Ribaudí, and Diego Gómez García Carpintero) the context has been enriched with qualified information. At the same time, in order to illustrate the real applications, the study of the specific AI platform *Neural Fashion AI* that is presented as a success case has been carried out.

The study concludes with a detailed analysis of the collaboration campaigns between the pioneering image and avatar generation platform in Spain, Neural Fashion AI, and two emerging fashion brands, Sepiia and Carmen Says. This illustrates how AI can improve creativity and efficiency in the

development of visual content, aligning with the values of brands and strengthening their image and positioning in the market.

Origin and definition of AI

The origin of AI dates back to 1950, when Alan Turing and John McCarthy began studying the possibility of creating machines with cognitive abilities. Turing, also known as the "father of computer science," published in 1950 his book *Computational Machinery and Intelligence* where he raised the question: "Can Machines Think?" This question led to the formulation of the "Turing Test," designed to determine whether a machine could adopt human-like intelligent behaviors such as learning, perception, reasoning, and problem solving. According to Turing's proposal, the computer passes the test if a human evaluator is unable to distinguish whether the answers, to a series of questions posed, are from a person or not (Russell & Norvig, 2010).

John McCarthy coined the term AI in 1956 during the Dartmouth Conference, a gathering attended by some of the greatest scientists of the time, although its true origin dates back to the 1920s, when robots and intelligent machines first appeared on the big screen and literature, becoming key characters in popular entertainment. It was not until 1940 that mathematicians Norbert Wiener and John Von Neumann laid the groundwork while working on systems theory, for McCarthy shortly thereafter to define it as "the science and engineering of making intelligent machines, especially intelligent computer programs" (Gobierno de España (2021) *Recovery, Transformation and Resilience Plan*).

Currently, AI has become a tool with countless applications in various fields such as language processing, design, communication, medicine, research or, in general, problem solving. However, its main purpose is not to generate new knowledge, but to make the most of existing data to make informed decisions. To do this, it relies primarily on three elements: data, hardware and software. The data represents the information collected and organized that will be used to automate tasks, while the hardware provides the computing power needed to process this data more quickly and accurately. Finally, the software consists of a set of instructions and calculations that allow training systems to recognize patterns in the data and generate new information.

The algorithms

To understand how AI operates and its applications in the fashion industry, it is essential to understand the concept of algorithms: they are sets of instructions given to machines to guide their behavior with the aim of developing systems that emulate human reasoning and execute tasks performed by people. Within the scope of AI algorithms, two main subfields are distinguished.

On the one hand, machine learning, performed through the analysis of data or patterns, with which they "learn" from a large amount of information. In this way computers and machines can carry out specific tasks (processing at high speed, automating and optimizing analysis processes, leading to fast and accurate results) independently, just as a human would (Argyrou *et al*., 2024; Black Box Lab, n.d.).

This learning requires human intervention, as it is the experts who must provide the hierarchy of characteristics so that the machine can understand the differences between data inputs.

To achieve this goal, *Machine Learning* is divided into three types: supervised (1), unsupervised (2) and reinforcement (3) learning. Being the first fundamental for the contextualization of this work.

Supervised learning (supervised AI) is based on training the algorithm with data that has a known classification or category provided by a human. These labels will then be used to generate new classifications of the results obtained. Once the training is complete, the algorithm can apply new data and make predictions about what it has learned. As Centeno Franco (2019) explains, we talk about supervised learning when we have a set of data and we know, for those data, what the correct answer is. What we do not know is how to get from data to response. Supervised AI is mostly used for sorting or prediction tasks (e-mail spam detection, voice recognition, image sorting…). Some examples of applications of this technology are Alexa or Siri.

On the other hand, there are deep learning algorithms or Deep Learning, which could be classified as a subfield of Machine Learning. They process data through deep artificial neural networks called RNAs. It can be defined as the predictive capacity of the machine (Argyrou *et al.,* 2024).

In other words, as Karen Gonjar (2024) explains, "Deep Learning says that based on all this information that I have and that I have been able to learn

thanks to my Machine Learning ability I predict that this is going to be so, and that another thing is going to happen".

Both deep learning and neural networks are closely related to the human brain, as they are based on the neural functioning of humans. It aims to mimic, as accurately as possible, variable processing and decision-making. They work as a method that teaches computers to process data as a human would (Gallardo Lorenzo, 2023).

Researchers in this field refer to the existence of two types of neural networks: adversarial generative neural networks (1) and antagonistic generative neural networks (2). These give rise to Generative AI, which "is a revolutionary subsection of AI that not only processes information, but creates new and original content. It is the next step in the evolution of AI: an entity capable of designing, innovating and, in certain aspects, applying "creativity" (Morales, 2023; Linkedin.com.).

Generative neural networks "are a new way of using deep learning to generate images that seem real" (Lee, 2022 p. 3). Thus, these neural networks have led to the emergence of platforms such as Neural Fashion AI, which produces photographs of fashion collections based on previously designed garments. By adopting this technology, fashion companies could optimize their processes, reduce costs, and achieve a more efficient impact on their consumers, thus gaining a competitive advantage over their rivals.

French luxury label Gucci was noted for applying this technology in their collaboration with Trevor Andrew, called Guccighost, in which the digital artist created a collection of handbags and accessories whose designs had been generated by AI. As a starting point he took digital images of the garments of the brand itself and thanks to the adversarial generative networks he was able to play with them by manipulating patterns and forms to develop new designs.

In generative AI, unlike supervised AI, the algorithm is trained to generate data from a series of input data, without needing to label it. This ability to create new content is applied to speech synthesis or the generation of text and images and is mainly focused on creative tasks related to fields such as design, fashion, music or art.

As the chief technology officer of fashion brand Mango Moreno (2023) points out in a press release: "Generative AI is an extended intelligence, that is, a technology that will be a co-pilot for our employees and *stakeholders* and that will help us extend their capabilities".

AI in the fashion industry: the importance of data

In the evolution of the fashion industry "technologies have contributed to a continuous evolution in any of the areas that make up the textile company, either in improving production efficiency or in creating new communication channels" (Jin and Shin, 2021).

The arrival of the fourth industrial revolution associated with the emergence of the digital environment (industry 4.0), has had a notable impact on the fashion sector, thanks to the monitoring and analysis in real time of consumer preferences and tastes, where AI plays a crucial role thanks to sophisticated algorithms and access to large volumes of data (Giri *et al.* 2018; Amed *et al.* 2023). However, it has also become one of the most disruptive and controversial technologies as models are progressing faster and more powerful, accelerating the emergence of new dangers that are generating debate both among the scientific community and in the political instances (Luce, 2018; Saponaro *et al.,* 2018). The Government of Spain created at the end of 2022 the Spanish Agency for AI Supervision to establish a regulatory and supervisory framework to address the challenges and risks associated with the increasing use of AI in trademarks (Polo Mignani, 2024).

Initially, AI was used exclusively in *back-end* operations such as inventory management and supply chain logistics, however, its application was soon expanded to brand communication strategies.

Nowadays, companies face an infinity of data that exceeds the capacity of human analysis. A click, a change of web or any online interaction can be valuable for the brand. In this context, AI has become a critical tool by automating the process of collecting, cleaning, and analyzing all of that data through machine-learning algorithms or language-processing techniques.

The British luxury brand Burberry was a pioneer in incorporating this technology in its stores with the mission of improving the customer experience, thus retaining its buyers by replicating the advantages offered by online sales channels, and consequently, amplifying their sales. Consumers who go to their hybrid stores may have a customer record, generating data that "the brand can use to predict future purchases that can be made or even personalize those purchases" (Gonjar, 2024).

The strategy is to ask customers who have made a purchase to leave their details voluntarily through loyalty programs that provide them with rewards. These allow the brand to set profiles and segment consumers so that, as Me-

néndez (2021) explains, sales assistants can approach them with recommendations based not only on their own purchase history, but on thousands of people who fit a similar profile.

Data management has become a fundamental aspect of understanding what the public wants. As Amed et al. (2023) mention, efficient data management not only provides companies with a clearer view of the customer but also allows them to offer a personalized experience while extracting information about purchasing patterns, trends or style preferences and thus, scoring points in terms of loyalty in a context where consumers increasingly expect brands to understand their individual needs, going beyond simply offering product recommendations.

In today's digital age, where 85% of the Spanish population uses the Internet and spends around three hours a day on social networks (INE, 2024) users are exposed to countless stimuli from brands, for that reason consumers increasingly feel the need for a genuine connection with fashion brands.

Applications of AI in fashion brand communication

Technological innovation is redefining the way brands retain and position themselves in the minds of their consumers, from using data analytics to predict trends, segment markets and customize products to content design and advertising strategies.

The impact of Big Data

Predicting trends

As explained, AI can analyze large volumes of data, and anticipate audience references derived from social networks, blogs, shopping platforms, streaming events and walkways, among others, to be able to make informed decisions regarding communication, the design of advertising campaigns and products, based on personalization.

Machine learning algorithms and natural language processing identify trends in real time, giving brands the ability to anticipate. This way of harnessing the power of data is called predictive analytics, and it is a competitive advantage for fashion brands because it allows them to:

- Stay relevant and differentiate themselves in an increasingly saturated market by ensuring the alignment of their collections with the demands of the public.
- Improve their image and positioning in the minds of their consumers by creating personalized communication strategies and brand experiences, which also favors loyalty.

A good example is the American brand Tommy Hilfiger, which, together with IBM and the Fashion Institute of Technology (NYC), has implemented AI to analyze data derived from runways, social networks and even its own historical archive to detect and capitalize on trends in order to better understand the needs of the public and make the product development process more efficient.

Market segmentation

Targeting audiences is a key strategy to effectively target a specific audience and not saturate with random messages. Analyzing real-time information about purchasing behavior, demographics, interactions on social networks, among other sources, allows to detect specific audiences and adapt to their preferences in a more individualized way, maximizing the effectiveness of strategies and impacting them with product recommendations or promotional messages, for example.

The customer experience

Loyalty to customers is a goal shared by all fashion brands, hence it is crucial to build a satisfactory experience that strengthens the relationship with the audience (Saponaro *et al.,* 2018). After the first applications such as the use of neural language processing algorithms for product recommendation (through emailings, newsletters or notifications), platforms such as Stitch Fix, or Findme have been developed to analyze the online behavior of the consumer and act as personalized stylists.

Adolfo Domínguez stands out in this field, which has developed a "personal shopper" called ADN, which, based on a style test, selects garments to send home to its customers and can return those for free.

Zalando, as a solution to the challenge of missized returns faced by marketplaces, has implemented AI to help consumers find their size. Users pro-

vide body photos and AI detects the exact measurements to provide personalized recommendations. These programs have reduced the rate of returns to 10% (Oliveras, 2024).

In addition, the transmission of sustainable values and environmental awareness regarding the impact of returns reinforce their image, generating greater loyalty in their public and increasing the number of potential consumers.

In this context focused on achieving satisfactory brand experiences, chatbots or interactive virtual assistants are born. They are software designed to interact with the users of the websites through text messages with the aim of personalizing customer service and technical assistance regarding specific queries or problems.

These simulate human conversations and offer help through the brand's website or instant messaging platforms such as WhatsApp, Telegram or Facebook. "The key to their success (and failure so far) will be precisely how natural they are able to sound and to what extent they can understand the customer" (Gestal, 2023; Modaes.com).

El Corte Inglés pioneered the development of Corti, an AI-based robot that offers gift suggestions via Facebook, depending on age, sex or relationship with the person receiving the gift and other major brands such as Zara, which has also adopted this technology.

In China, WeChat is leading this trend and some of the biggest luxury brands such as Burberry, Louis Vuitton, or Yves Saint Lauren have a presence on this platform to know the location of stores, make payments or create loyalty programs.

The chatbots offer reduced waiting times, immediate responses, personalized attention and continuous availability, thus satisfying the demands of new generations who prefer to avoid telephone conversations. This adaptation of brands to the demands of new audiences is a very effective way to ensure their loyalty. It also reflects their commitment to adapt to market changes. This perception of modernity and accessibility also contributes to improving the image and generating a positive impact on the reputation of the brand after turning satisfied customers into defenders.

Product Design

AI has impacted the way fashion is designed, offering multiple advantages such as optimizing creative processes or reducing discarded materials.

In addition, predictive analytics that allow to detect trends or segment markets have made the decision-making on the design aligned with the preferences of the audience.

Generative AI tools can significantly shorten design lifecycles and spur innovation as well as reveal untapped market opportunities and overlooked consumer needs or expectations (Booth *et al.,* 2024).

One of the experts interviewed for this research, 3D digital designer Diego G. Carpintero, points out that "being able to perform efficient and fast experiments with colors, shapes or textures, not only encourages innovation, but also provides added value to attract new audiences who value creativity and technology".

Figure 1
G-Star Raw AI Denim Cape digital version

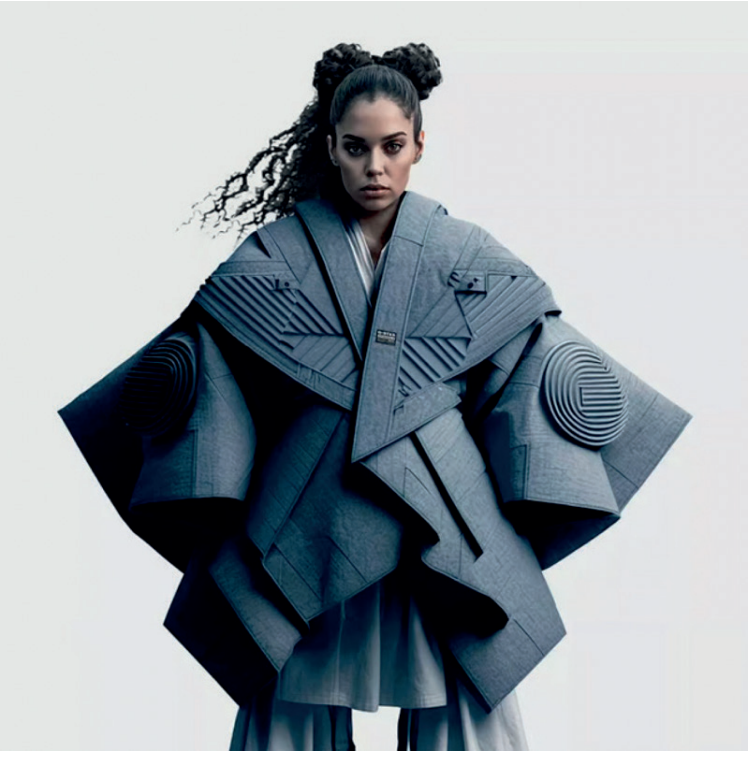
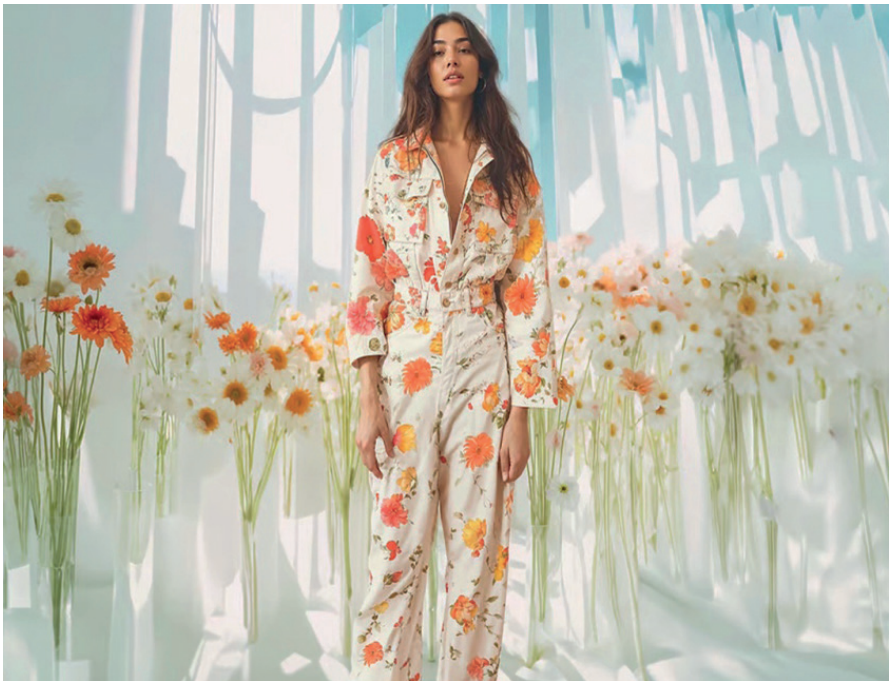


Figure 2
Digital version of one of the designs from Desigual's ' On Demand' collection



It is worth mentioning the collaboration of H&M and the startup Zysem to create the *Just Perfect* project whose tool *Ivy* uses AI to offer tailored garments to its customers. It consists of entering data such as height, weight or foot number, so that through machine learning algorithms the exact measurements of each user are calculated and sent to the workshops for manufacturing personalized garments.

Carpintero also highlighted the G-Star brand project produced by the *AI Denim Cape:* its first physical design generated by artificial intelligence, and the Desigual brand, which has just launched the fourth collection of its *On Demand* line, composed of designs created with AI that involve its community, evaluating its commitment to innovation through the development of products on demand.

The integration of AI in fashion design not only favors creative processes but plays a crucial role in terms of sustainability by optimizing the use of materials, which in communicative terms can be argued as environmental responsibility and become a competitive advantage.

Practical applications of AI to fashion brand communication

The communication and advertising landscape has been drastically altered with the arrival of new technologies (Huh and Malthouse, 2020). From traditional hand-printed posters to posts for online platforms like Instagram. This evolution culminates in the realization of collaborations with virtual influencers, representing the apex of technological innovation in this field.

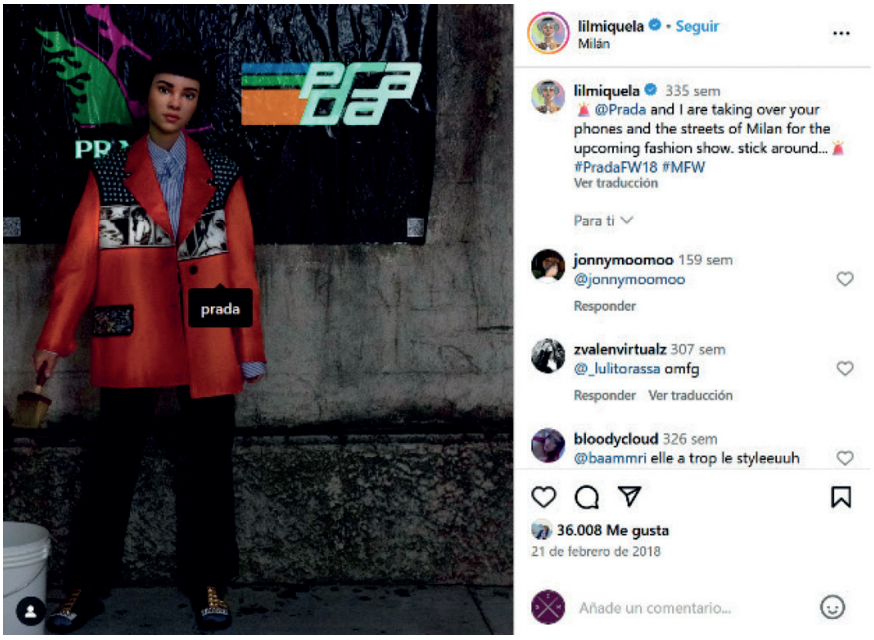
AI has played a key role in the change, enabling advertising agencies today to make efficient decisions based on historical data and audience behavior patterns (IBM, 2021). In fact, professionals in the sector increasingly value this tool for its ability to personalize messages, identify potential audiences, improve product placement and measure the performance of campaigns.

Models and digital influencers

In the current context of social media fashion, AI has facilitated an emerging phenomenon that challenges digital marketing: the proliferation of artificially generated influencers and models. These virtual profiles, according to research conducted by Casarotto in 2022 in the article "*AI Influencers: What is their role in digital marketing?"* at Rockcontent.com: "They are virtual individuals, whose management falls on brands or representative entities, conceived through the use of graphics processing technologies and machine learning algorithms."

Although they exist physically, they are generating so many reactions and opinions that they acquire a certain degree of reality. According to Esteban (2024), they have the advantage of not having schedules or feelings, they can work 24 hours a day, they do not age and, above all, they do not have a salary or independent cachet, but their creators establish it. However, as with real content creation professionals, there are different types of profiles, with differences in terms of the target audience and the types of brands for which they are effective, Gonjar, (2024).

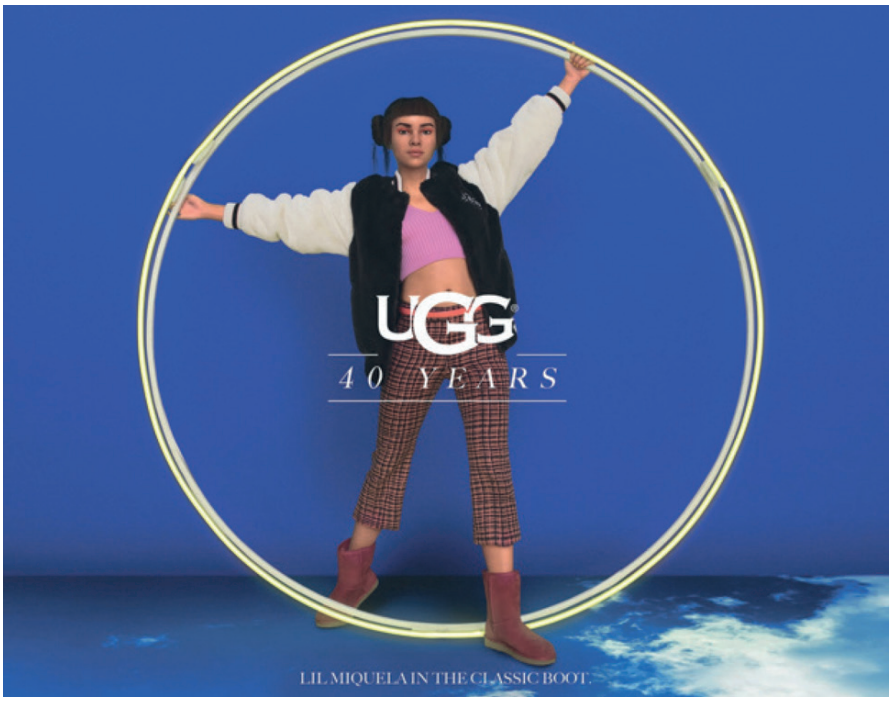
Figure 3
PRADA campaign image with Lil Miquela as model



Note. @lilmiquela

Lil Miquela is one of the most recognized profiles generated with AI. It was developed in 2016 by the company Brud and has achieved great popularity, acquiring more than 2.8 million followers on Instagram. Its enormous success has made it possible for it to be present at renowned music festivals such as Coachella and to be the image of some of the most recognized brands in the fashion industry. She has starred in a campaign for Prada in 2018, and the recent celebration of UGG's 40th anniversary, in addition to other campaigns for Diesel, Givenchy, Supreme, or Fendi.

Figure 4
Image from the "40 Years UGG" campaign with Lil Miquela



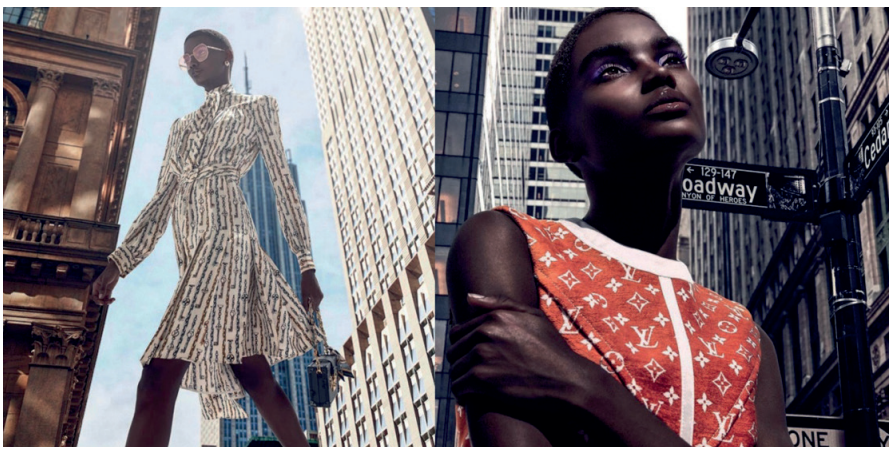
There are other influencers like Noonoouri and Imma Gram, designed to create a virtual community and establish relationships between brands and younger audiences, adopting a more robotic and prototypical avatar aesthetic. In the words of (Gonjar, 2024) "It is crucial for luxury brands to adapt to the preferences of new audiences opting for their imaginary to be able to reach it".

The success of these virtual figures lies in the ability to establish a relationship with their audience and always remain active in their social networks. However, their physical appearance and lack of reality present challenges in establishing emotional relationships.

In an effort to get closer to humanity and change the traditional structure of actions such as shootings, The Clueless was born, the first Spanish agency dedicated to model design with Artificial Intelligence. Their models are intended to establish a relationship with the public and to create a virtual

community of their own by focusing on topics such as fitness, cosplay and video games. Aitana López (@fit_aitana), her most successful profile, has more than 320,000 followers on Instagram.

Figures 5 and 6
The digital model Shudu Gram dressed by Louis Vuitton for the collaboration between Harper's Bazaar España and Elle España



Note. blog.mbadmb.com

There are agencies such as The Digitals that focus exclusively on modeling, creating virtual profiles of remarkable realism with the aim of being hired by brands to star in advertising campaigns and represent their image. Its most outstanding model is Shudu Gram, who has collaborated with brands such as Fenty Beauty, Sisheido, Louis Vuitton, or Paco Rabanne, among others. The success of these new content creators is based not only on their total availability to generate engagement, but also on the freedom of creation that they offer to brands to transmit their message accurately, thus sticking to the policies of the company, without risk of controversy on social networks.

Campaigns

As Sirera indicates (2023), who is Desigual's technology innovation leader, AI allows marketing departments to test different campaigns virtually before their final execution. This means that the efficiency of the process can

be increased by not being able to do without models, clothes or locations. An example of this is the campaign of the French lingerie brand Undiz, carried out with AI pretending to be underwater, which would have been much more expensive and complex to record in reality. Another example is the luxury brand White House, Paris, which fully realized its SS 2023 campaign with budget-saving virtual images and developing novel creativity for a much lower budget than would have been a similar production in the real world.

In interviews with experts, the initiative of the international brand Stradivarius and its collection "April" stand out. With the aim of "reinventing fashion", the brand has created images and digital models to promote garments for sale, as well as fictional items playing with a spring and dreamlike aesthetic. The campaign is "an exaggeration of the true collection and reflects what fashion would be if reality did not have the limitations of the real world" (Stradivarius, 2023).

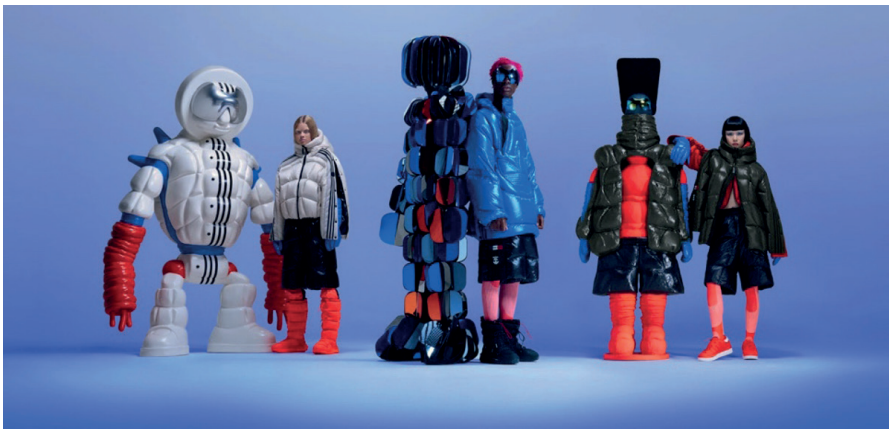
Figure 7
Image from the "April" collection designed with AI by the Stradivarius brand

Figure 8
Image of the Casablanca brand, made with AI

Luxury brands, in their quest to maintain a prominent and superior position in the market, are also adjusting to technological changes. The creative director of Etro emphasizes that, despite his initial doubts, working with the digital designer Silvia Badalotti has shown that AI can be used as another creative tool, even better than current ones (Vicenzo, 2024).

Experts also highlight the collaboration between Moncler and Adidas, "The Art of Explorers," which focuses on AI-generated explorers and dresses with looks inspired by the collection.

Figure 9
Image from Moncler and Adidas collaboration, "The Art of Explorers"



Note. moncler.com

The slogan *Where Originality Meets Extraordinary* and the application of this new technology manage to position both brands as leaders in innovation and creativity.

Affordable and accessible AI tools have enabled even individual users to generate viral spontaneous campaigns. This is the case of "El Papa Balenciaga", which shows Pope Francis wearing a coat of the Spanish brand. The image, generated by the Midjourney platform, significantly increased the visibility of the brand, reaching a global audience, as well as an increase in engagement by allowing users to create their own version.

Indirect interaction with the brand not only provided a customer experience, but also provided an opportunity for content dissemination, all without the need for active intervention by the company. In addition, the association of the brand with innovative, viral and creative content generated by users gives a fresh and positive image that can suppose a greater demand for their products, as well as an approach to new audiences.

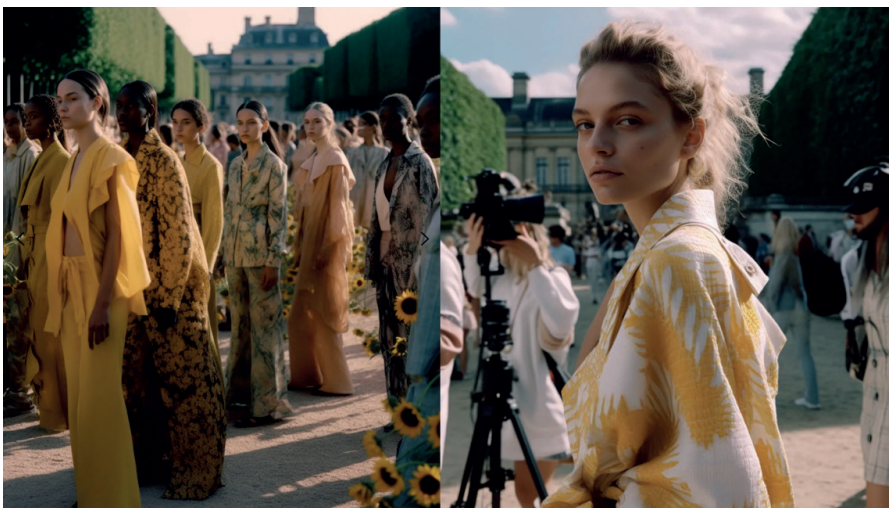
As seen, AI not only improves the positioning and image of fashion brands, but also allows the generation of high quality content that can be customized and optimized for different audiences.

In order to deepen this analysis, a success case will be studied on the Neural Fashion AI platform that uses AI for content generation with the aim of helping fashion brands to communicate more efficiently.

Fashion shows

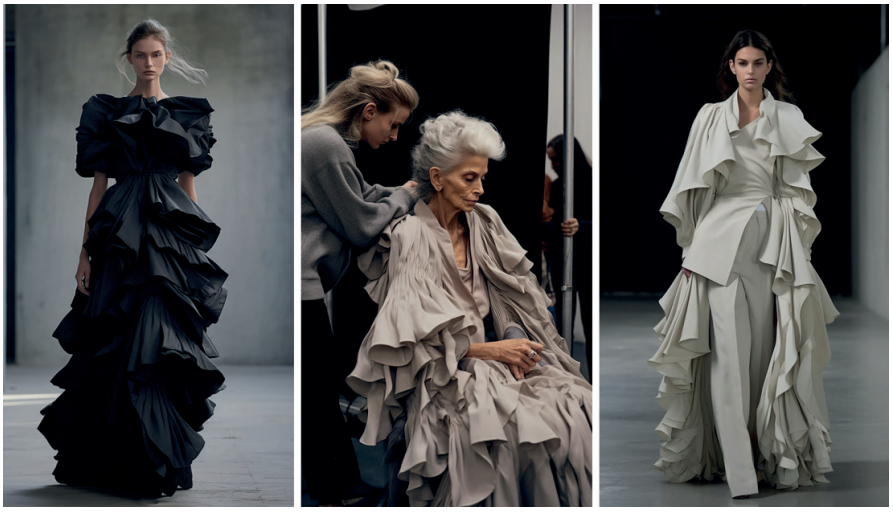
In April 2023, New York-based project design studio IA Maison Meta, partnered with online fashion pure player Revolve, launched the first fashion runway entirely generated through AI. On a biannual basis, this runaway is consolidating as the main platform to exhibit the collections of virtual designers who do not necessarily have to have a correlation with the real retail world.

Figures 10 and 11
Images of a parade created through AI by Portuguese visual artist Matilde Mariano for the AI FASHION WEEK SS 2024



In its brief tour, this runway has positioned itself as the international space in which emerging designers can stand out for their creativity and compete with prestigious international brands such as Adidas. AI Fashion Week offers fashion brands a place to interact, gain visibility and continue to consolidate brand and sales, as Revolve is committed to producing and showcasing the winning collections on the next edition of the runway.

Figures 12, 13, 14
Images from the Spanish designer Magno Montero's show that won the 2nd edition of the AI FASHION WEEK SS 2024



Methodology

To achieve the objective of this work in an emerging field in which there is almost no scientific literature, it has been decided to carry out a qualitative study of an exploratory nature.

First, a literature review was designed from the professional perspective on the impact of AI on the communication of fashion brands. For this purpose, an emptying of the sectoral publications of the fashion business field with greater recognition in Spain was carried out during the period 2020-2024 (exceptionally, some articles with previous date are cited for their relevance). The selected magazines were (1) Modaes, (2) The Business of Fashion, (3) Fashion Networks and (4) Fashion United. Analysis of these publications has identified discourses and extracted illustrative examples of how AI is being used and its impact on the relationship of brands to consumers. It also allowed the establishment of the main areas of communication in which AI is being applied.

Second, three in-depth interviews were conducted with industry experts to obtain detailed information on the integration of AI into fashion brands' communication strategies. The selection of the interviewees was made taking into consideration that the following aspects were covered:

- Theoretical and updated knowledge of the contributions of AI to the field of fashion.
- Direct experience of the needs and demands of fashion customers in their relationship with AI.
- Technical mastery and professional use of AI tools.
- Finally, it was decided to interview these three professionals:
- Karen Sastre Gonjar: Academic Manager of Elle Education and Teacher at ESIC Business & Marketing School. Digital designer, and professional user of AI platforms applied to the fashion sector.
- Roser Bagó Ribaudí: marketing director of Neural Fashion AI.
- Diego García-Carpintero: 3D industrial designer. He has worked for brands such as deLaCour, Zara, Massimo Dutti or deMarie. He understands AI as a tool to support artistic creation.

The interviews conducted between March and April 2024 were transcribed and a manual discourse analysis was carried out with the information obtained (with the support of the qualitative analysis tool MAXQDA) to evaluate the advantages and challenges of the application of AI, as well as to identify the possible disadvantages and difficulties of its use.

Thirdly, to demonstrate the possibilities offered by this tool in its concrete application to fashion brands, a case study of the Neural Fashion AI platform was developed, as well as two concrete examples of real works carried out by the company for fashion brands.

Analysis of expert interviews

A first aspect that Karen Gonjar highlights is that AI already occupies a fundamental space in the automation of communication and marketing tasks, with a particular interest in the personalization of the customer experience and consequently, their satisfaction. For Gonjar mastery of AI, it is essential to gain a competitive advantage, and position brands as innovative and creative. Undoubtedly, the most powerful application of AI in fashion is the

analysis of large amounts of data in real time, which allows the prediction of trends. In the expert's opinion, it is important to emphasize that brands no longer create trends but adapt to those created by consumers.

Secondly, García-Carpintero emphasizes the importance of AI in creative processes, allowing brands to generate complex, personalized and efficient content. Despite not being a marketing specialist, he recognizes the usefulness of this technology for conducting studies that determine which products work best.

Both agree that the use of AI, while normalizing, remains a differential advantage and will in the future become a standard and critical tool in the industry, while underscoring the crucial importance of human oversight.

They identify as main benefits greater efficiency and productivity, the development of creative skills, the foundation of decision-making and making professionals smarter. In return, they point to the limitation in predictive capacity, the need for supervision of work, or legal and ethical risks regarding data privacy.

For his part, Bagó Ribaudí provides an internal and detailed vision of Neural Fashion AI for studying the success case. He explains that it offers more sophisticated and realistic results than the rest of the existing platforms and highlights that AI is fundamental for competitiveness and innovation in the industry, coinciding with the others interviewed in the most relevant applications and future trends.

Finally, the three provide some recommendations such as overcoming the fear of technology, spending time understanding how tools work to optimize their possibilities and not dispensing with creative teams to complement them.

Positive attributes and challenges, limitations and brakes of the application of AI to the field of fashion communication

Based on the content analysis of the hemerographic review and in-depth interviews with professional experts, four main plot axes were obtained around the attributions of AI in the field of the fashion industry.

- Positive values and attributions:
  - Customization and trend prediction: Predictive analyzes of large amounts of data facilitate the exact development of what the customer is looking for, both in terms of product and attractive communication strategies.

- Market segmentation in a precise way: enabling fashion brands to target specific audiences effectively.
- Optimization of creative processes: AI favors rapid experimentation with colors, designs, textures, backgrounds (among other parameters) to detect their direct impact on the target audience.
- Efficiency in advertising campaigns: the use of AI to test campaigns virtually before their final execution to ensure their effectiveness.
- Informed decision-making: AI's ability to analyze large amounts of data makes decisions based on the preferences or tastes of as many users as possible.
- Reduced communication costs: the use of AI can significantly reduce the costs of localization, creativity, post-production of audiovisual materials, the use of models to name a few examples.

• Challenges of AI applied to the communication sector:

- Customer satisfaction: personalization allows a full achievement of the customer's objectives, which can lead to advantages such as generating greater engagement and consequently the loyalty of the target audience or increasing sales.
- Improved brand image and market positioning: the incorporation of AI offers a competitive advantage in terms of innovation, allowing brands to differentiate themselves by offering unique and personalized customer experiences.
- Expanding into new markets and audiences: AI's ability to analyze and segment audiences allows brands to compete in other markets. Likewise, the use of new technologies can bring fashion closer to younger audiences by making them feel that brands understand their lifestyle. A good example is offered by digital influencers.
- Training of sales teams: training professionals in the use of AI increases their motivation, encourages talent development and personal growth, and allows them to perceive AI as a positive and complementary tool. This training will increase the productivity of their work.
- Innovative content creation: AI contributes to the development of brand identity when applied to the generation of attractive content and adapted to current trends.

- Increasing sustainability and operational efficiency: Reducing material waste and optimizing processes by incorporating AI into design or production can improve the perception of a sustainable and environmentally conscious brand image.

- Limitations and risks arising from the use of AI technology:
  - Technical and predictive limitations: Machine learning algorithms must be trained by one person. In this sense, if there is a bias in the instructions, the use of data or the choice of certain initial research preferences, the results can be substantially altered.
  - Dependence on the human figure, as explained by Karen Gonjar since AI tools still do not have an exact precision due to their recent appearance (in particular free). The results may deviate from what is desired.
  - Consumers' perception of "unreality" or "coldness." Customers often interpret the models and environments used by AI as inert, empty-eyed, "plastic" in appearance, and unbelievable for their sheer perfection. The lack of small imperfections of reality makes people and models look like robots, rather than real people.
- Brakes and resistances for companies that apply AI to their communication strategies:
  - Technological dependency: the use of such automated technology could evolve into an excessive dependency for the accomplishment of tasks. Over time this could limit the company's ability to operate without the collaboration of the machines.
  - Resistance to technological adaptation: the fear that the incorporation of AI into creative processes will replace specialists (fashion designers, or art directors) who do not master this technology, can lead to a negative approach, placing the company one step behind its competitors.
  - Legal and ethical risks: the data that feeds predictive analytics includes consumers' personal information and inappropriate use of them or a cyber attack can lead to a reputational crisis.
  - High investment: Professional integration of AI tools adds extra costs that not all companies can afford.
  - Competition and market saturation: as recognized by the experts interviewed, the use of AI in communication is being standardized, which may reduce the differential factor.

Case study Neural Fashion AI

As the last part of the research on AI and fashion communication, it was decided to carry out an applied case study, on the Catalan company Neural Fashion AI (NFAI), specialized in communication of fashion brands. NFAI is a platform that offers software not only to create original images of models, scenarios and fashionable atmospheres, but its professionals are able to integrate real garments from the collections within the images and campaigns of the brands. They define their strategy as a partnership of values: sustainability, innovation, technology, quality, authenticity, collaboration, accessibility and personalization.

According to the company's marketing director, currently the most relevant AI applications in the fashion world are focused on the conceptualization of designs and campaigns, as well as the use of design tools and content generation (Bagó Ribaudí, 2024).

By analyzing two campaigns carried out by NFAI for Spanish brands (Carmen Says and Sepiia) it is possible to analyze the benefits in terms of image, positioning, and relationship with consumers that can be obtained by incorporating technological advances.

NFAI unifies two AI applications, explained in the introduction, to help fashion brands modernize and innovate their marketing campaigns and strategies:

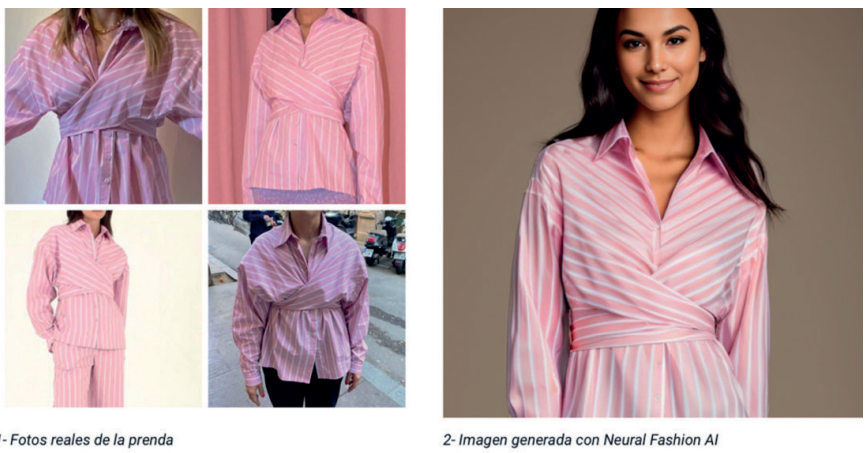
- Image development: creating images that can be generated from scratch or taking as reference real models selected by the client brand and subsequently be set in a specific space.
- Avatar development: offers the brand the possibility to choose the physical characteristics and style of the models to convey to the public personalization and exclusivity.

NFAI's own marketing director says:

> We are the first platform aimed at the fashion industry that helps brands create visual content for their marketing strategies. Brands that work with NFAI have access to the platform. First, they have to upload different images of the garment, which can be made with a mobile, so the platform can learn how the article is and then generate new images in which a model appears (which will be as the brand desires) wearing the clothes of the brand, in the set that the brand wants.

In response to the lack of knowledge and, sometimes, the distrust that fashion brands feel towards AI, NFAI seeks to promote learning and collaboration, so that technological changes are seen as a strategic ally, rather than a threat: "It is necessary for brands to open their minds and understand that to work with AI people have to work in a different way, it is not about replacing everything that is being done but complementing it".

Figure 15
Demonstration image of the Neural Fashion AI platform



Note. Raona.com

The main advantage of NFAI is the high visual quality of its images and the fidelity with the real garments of the brand. Here lies the fundamental difference with other brands that having applied AI has done so without integrating the real garments of their collections, remaining in a mere aesthetic exercise, which can like and entertain users of social networks, but not offer added value to customers.

Analysis of NFAI's collaboration with Sepiia and Carmen Says

To study the case and deepen the understanding of how AI is changing the way fashion brands communicate, constituting a strategic resource to es-

tablish links with consumers, an adaptation of the methodological approach proposed by Lasswell in 1940 was used.

The method developed by the American theorist Harold Lasswell helps identify key elements involved in the transmission of messages and their impacts on the audience from images. It is based on answering five simple questions:

- Who? Seeks to identify who are the key actors of the campaigns.
- What? It aims to know what the campaign or action is.
- Through what channels? Identifies dissemination through digital platforms, social networks or print media.
- To Whom? Identifies the type of audience that the brand wants to approach with a certain campaign.
- To what effect? Determines the impact of the campaign on the audience.

Sepiia x Neural Fashion AI

Sepiia is a Madrid brand, created in 2016 by the young entrepreneur from Alicante, Federico Sainz de Robles, dedicated to the manufacture of smart fashion, i.e., products that repel stains and wrinkles and that do not give off the bad odor derived from their use. It is an example of a brand that has grown thanks to the help of shuttles, incubators and microcredits, as well as rounds of financing to reach nearly 3 million euros annually. Its activity focuses on the creation of basic and functional garments designed for men and women who work and rest in a practical way.

Visually, the brand has a clean, minimalist, practical and uncomplicated aesthetic, which coincides with its conceptual positioning in the market. Positioning at the brand level is sustainability, technology and simplicity.

The reason for the collaboration between NFAI and Sepiia lies in the desire to improve the visual attraction of the brand since, despite the quality of its products, its current communication does not manage to capture the attention of the public effectively. The brand needs to capture the attention of a young and professional audience (23-40 years), which has not yet reached, since it is attracted by more aspirational badges and with a more consolidated brand image.

On the other hand, through this collaboration Sepiia and NFAI also intended to address professional-prescribers in the fashion sector to demonstrate the uniqueness of the use of AI in content creation and fashion marketing.

Sepiia's brand identity is based on an aesthetic focused on functionality, reflected in its mission, vision and values:

- Mission: to create a second smart skin capable of improving our lives and the health of the planet.
- Vision: to make people's lives easier through innovative garments under a planet and community-friendly approach.
- Values: commitment, research, responsibility, innovation.

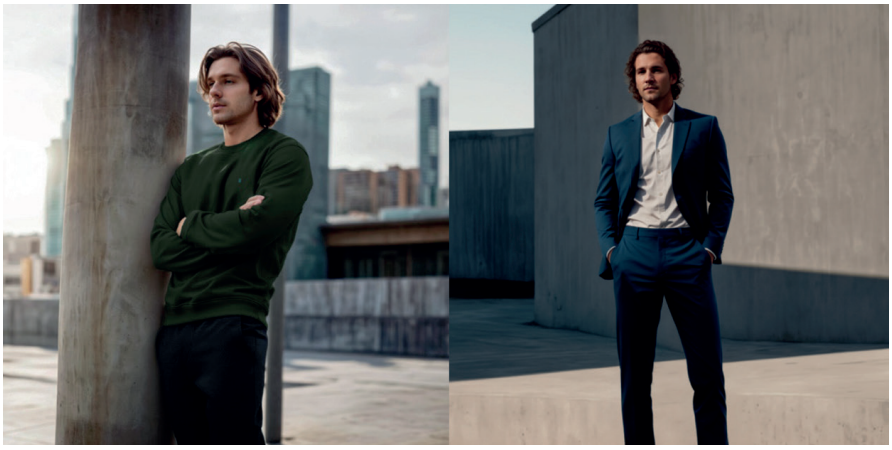
Analysis of the collaboration:

- **Who:** NFAI creates images of the clothes of the Madrid brand Sepiia, following its simple aesthetic with a modern approach that stands out in the models and scenarios created with AI. The images take place both in outdoor spaces, and in interiors all following an urban aesthetic with buildings and skyscrapers of a current city, with brutalist but luminous style.
- **What:** Sepiia brand product dissemination campaign based on the development of AI images, models and scenarios. It is an image campaign despite clearly showing product.
- **Through what channel:** collaboration spread through social networks such as Instagram or Linkedin by both Sepiia and NFAI.
- **To whom:** Sepiia seeks to consolidate the relationship with its young current followers by conveying the idea that it offers functional garments and is committed to sustainability: it is an innovative brand that cares about adapting to technological evolution. It is also aimed at other young professionals who do not yet know or have bought the brand but could do so if the aspirational dimension of it is reinforced.
- **To what effect:** with this collaboration, an instructive action has been achieved, since the positioning and image of the client brand in its current consumers has been reinforced and improved and it has been possible to bring the brand closer to a younger audience. In addition, it has been shown how technology is useful to implement more dynamic creativity and efficiency.

An innovative and attractive disclosure is crucial for a growing brand like Sepiia to achieve prominence in a highly competitive sector, so this collaboration represents a strategic opportunity to position Sepiia ahead of

its competitors. This alliance helps reinforce the brand identity by aligning its values and commitment to smart fashion with the visual aesthetics of its communication.

Figures 16 and 17
Images generated by Neural Fashion AI for Sepiia



As mentioned, Sepiia is a brand positioned as technological, innovative, sustainable and young. The fact of using a virtual model, with a young modern professional, but with a relaxed appearance, in an urban, architectural and clean environment, connects well with the communicative objectives of the company. The sobriety that characterizes the brand is there, but it is given a futuristic, current and innovative approach that makes it attractive to the target audience.

At the same time, the fact that it is an innovative experience facilitates its dissemination on social networks, giving a wide visibility to the brand.

Carmen Says x Neural Fashion AI

Carmen Says is a young brand created in 2021 in Barcelona by four Catalan entrepreneurs. It stands out for launching small collections of feminine style and specific themes every two weeks. It focuses its strength on colorful patterns and fabrics, often with a retro aesthetic. Its main communication and sales channel is the social network Instagram and being aware of the excess of ephemeral content generated by the competition, the brand opts for a vi-

sually clean, sober and simple communication, seeking to transmit authenticity and depth to its audience.

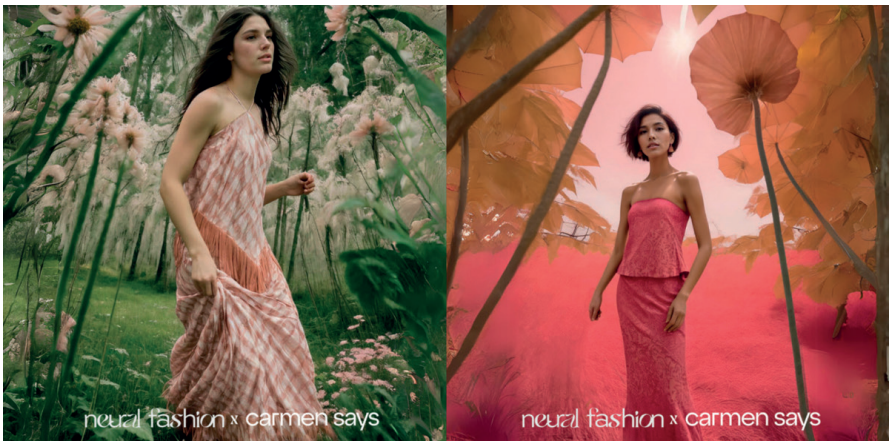
The collaboration with NFAI aims to improve and make visual content more attractive, through a dreamlike and storytelling atmosphere to create an immersive experience for its followers.

- Mission: to provide meaningful and enriching experiences through the fusion of fashion and narrative. Carmen Says seeks to offer authenticity and depth through authentic experiences in a world saturated with content.
- Vision: to be known as a brand that goes beyond conventional fashion, offering garments that not only dress, but tell stories.
- Values: fantasy, sustainability, creativity, authenticity.

Analysis of the collaboration:

- **Who:** NFAI develops images, avatars and scenarios for a Carmen Says capsule collection. The images take place in open spaces with giant-sized flowers and plants reminiscent of Lewis Carrol's tale *Alice in Wonderland*, and warm tones to reflect the brand's commitment to sustainability. Its approach revolves around fantasy and the imaginary. One could associate the aesthetics of collaboration with fairy worlds, in tune with the narrative experience that the brand wants to provoke.
- **What:** Carmen Says April Capsule Collection campaign based on the development of artificial intelligence images, models and scenarios.
- **Through what channel:** collaboration spread through social networks such as Instagram or LinkedIn, both by Carmen Says and NFAI.
- **To whom:** Carmen Says addresses its target audience of young creative women with a taste for fashion as a way to incorporate imagination into everyday life and at the same time, committed to sustainability. On the other hand, the association of NFAI and Carmen Says seeks to impact its consumer and others more open to technology, thanks to striking images with environments and models made with AI.
- **To what effect:** to achieve a reinforcement in the communicative actions of the Carmen Says brand by positioning the brand in the mind of its public within the territory of sustainability, inspiration and innovation.

Figures 18 and 19
Images generated by Neural Fashion AI for Carmen Says



Note. Linkedin.com/company/neural-fashion-ai

In this collaboration, it is shown that the integration of AI allows to more effectively represent the essence of a brand like Carmen Says. This intention is also reflected in the aesthetics of the images, where the representation of fantastic and natural environments underlines their concern for the environment while communicating their values and intention to make their collections a story.

Conclusions and recommendations

Conclusions of the case study

The case study shows that by unifying two of the most relevant applications of AI in the communication of fashion brands: the creation of content and the generation of avatars, the possibilities of modernization and innovation of their strategies are projected exponentially. This allows fashion brands to position themselves at the same level as the big giants in the industry.

The analysis of NFAI collaborations with Sepiia and Carmen Says shows that AI strengthens brand identity and makes the visual aesthetics of campaigns more attractive and efficient, while facilitating the loyalty of current audiences and the capture of new audiences.

In the cases analyzed, through the creation of novel content and avatars adapted to the preferences of consumers, it is possible to communicate more effectively and both brands are linked to the positive attributes of AI as a key technological element in fashion communication.

In conclusion, the results obtained support the idea that AI is providing a significant competitive advantage in terms of creative and communication strategies for fashion brands, by strengthening the relationship between them and their audience.

Benefits from the use of AI in fashion brand communication include the ability to customize, the ability to act on social trends extremely quickly, and the option to accurately segment markets. These gains have a direct impact on the efficiency of processes and the achievement of brand objectives such as customer satisfaction, customer loyalty, strengthening brand positioning and image, expanding to new markets and audiences or creating innovative, impactful and attractive content.

AI is a new tool that will have a substantial impact on the way fashion brands communicate to their audiences, and in general terms on the industry.

Recommendations

After carrying out this work, brands that want to incorporate this technology into their strategies are recommended the following aspects:

- Overcoming resistance to AI to understand that it does not amount to the transfer of responsibility in decision-making to machines; this technology acts as a tool and needs the human factor for its learning and development.
- Value the team of professionals who are experts in digital design, and train them to incorporate the resources (platforms and software) that arise in the market. In order to obtain good results, the proper use of the tools must be associated with the training and aesthetic taste of digital creators.

Limitations and future lines of research

At present, it investigates an extremely competitive tool and for this reason AI companies tend to be anonymous and are not usually visible to the general public. At the same time, due to the novelty of the subject, academic resources are quite limited. For this reason, it was decided to conduct three interviews with experts as the main primary source, and an analysis of the contents of online fashion magazines and a case study as secondary sources for obtaining data and information.

We found it interesting to highlight possible future lines of research for the near future:

- To study of the evolution of models and influencers created with AI.
- To research on specific AI tools for product design.
- To study on the psychological and social effects of the use of AI in fashion brands.
- To work on the integration of AI with augmented reality (AR) and virtual reality (VR).
- To work on improvements in the perception of the brand image and the change of positioning fashion brands, after the application of AI in their strategies.
- To analyze the evolution of ROI thanks to the application of AI in fashion communication.
- To study KPI's derived from the integration of AI in communication strategies and tactics of fashion brands.

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