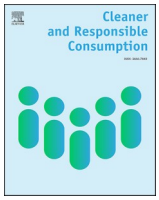
Cleaner and Responsible Consumption 15 (2024) 100228



Contents lists available at ScienceDirect

Cleaner and Responsible Consumption

journal homepage: www.journals.elsevier.com/cleaner-and-responsible-consumption



Insights into sustainability and circular economy trends in luxury fashion: A LinkedIn topic modelling study

Aya Abdelmeguid [a,1], Georgios Tsironis [b,2], Mohamed Afy-Shararah [a,1], Konstantinos P. Tsagarakis [c,3], Konstantinos Salonitis [a,*,1]

[a] Sustainable Manufacturing Systems Centre, School of Aerospace, Transport and Manufacturing, Cranfield University, United Kingdom
[b] Department of Environmental Engineering, Democritus University, Xanthi, Greece
[c] School of Production Engineering and Management, Technical University of Crete, Chania, Greece

ARTICLE INFO

Keywords:
Luxury
Fashion industry
Circular economy
Sustainability
LinkedIn
Latent dirichlet allocation

ABSTRACT

The fashion industry plays a pivotal role in societal evolution and economic growth, yet it also stands as a significant contributor to environmental degradation. In response, the concept of slow fashion has been gaining increased attention in recent years, offering sustainable and circular alternatives to fast fashion. Luxury fashion, traditionally known for its heritage, exclusivity, and craftsmanship, exhibits elements similar to slow fashion, thereby exerting considerable influence on industry trends and consumer behaviour. This study explores the drivers shaping the luxury fashion landscape and the evolving circular economy and sustainability trends within the UK, a key global influencer in the luxury fashion domain. Luxury fashion's impact extends beyond its niche market, often setting benchmarks for innovation and sustainable practices that influence the broader fashion industry. Leveraging readily available qualitative and quantitative data from LinkedIn profiles, this research employs Latent Dirichlet Allocation analysis to uncover relevant topics within a dataset comprising 1115 companies registered in the "Apparel and Fashion" and "Textiles" industries. Five key drivers emerge, including Artful Creations in Fashion, Time-Honoured Craftsmanship, The Art of Style and Design, The Pinnacle of Retail Excellence, and A Personalised Style Experience. Additionally, utilising the Google Collab Platform and Python language, this study identifies circular economy and sustainability trends within luxury fashion. While approximately 20% of the companies studied actively emphasise sustainability, circular economy requires comparable attention. This research provides industry stakeholders and scholars with valuable insights into sustainable and circular practices, thus guiding innovation and informed decision-making in the fashion industry.

1. Introduction

The fashion industry is significant in global culture, society, and the economy. In 2020, the fashion industry in the UK had approximately 800,000 employees and contributed to a total revenue exceeding 100 billion pounds (Office for National Statistics, 2020). The growing market competition and socioeconomic progress have led to the emergence of luxury and fast-fashion segments within the fashion industry, each characterised by distinct brand representations and inherent differences (Mrad et al., 2020). The current fashion industry adopts a linear fashion system, known as the "take-make-dispose" approach, resulting in resource-intensive and environmentally harmful practices (Abdelmeguid et al., 2022; Ki et al., 2021). As the Ellen MacArthur Foundation (2017) outlined, the industry's production has doubled, while clothing utilisation has experienced a decline of no less than 40%. This has led to increased global water waste of roughly 20% and carbon emissions of around 10% annually (Niinimäki et al., 2020).

As consumers and regulators increasingly demand environmentally responsible business practices, the luxury fashion sector is undergoing a transformation. Luxury fashion brands, traditionally known for their craftsmanship, exclusivity, and heritage, are exploring sustainable alternatives, aligning with concepts such as the circular economy (CE) and

* Corresponding author.
E-mail address: k.salonitis@cranfield.ac.uk (K. Salonitis).
[1] Cranfield University, Cranfield, Bedfordshire MK43 0AL, United Kingdom.
[2] Democritus University of Thrace, Campus 691 00, Greece.
[3] Technical University of Crete, Akrotiri Campus, Chania 731 00, Greece.

https://doi.org/10.1016/j.clrc.2024.100228
Received 24 July 2024; Received in revised form 21 September 2024; Accepted 23 September 2024
Available online 24 September 2024
2666-7843/© 2024 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

sustainable fashion. For example, slow fashion approach has been gaining increased attention in recent years, as opposed to fast fashion, emphasising long-lasting products, traditional production methods, and designs unrelated to specific seasons, which luxury brands naturally embody through their commitment to quality and artisanship (Jain et al., 2021; McKeown and Shearer, 2019; Pencarelli et al., 2019). This transition offers opportunities for luxury fashion to contribute to broader sustainability goals, particularly those outlined by the United Nations' Sustainable Development Goals (SDGs) (Abdelmeguid et al., 2023; Aramendia-Muneta et al., 2022).

The slow fashion approach has been gaining increased attention in recent years, as opposed to fast fashion, offering more sustainable and circular fashion solutions (McKeown and Shearer, 2019) to align with the changing values of consumers and the new regulations. According to Pencarelli et al. (2019), slow fashion refers to long-lasting products, traditional production methods, or design concepts unrelated to specific seasons. Moreover, their study highlights that luxury fashion features some aspects of slow fashion since luxury fashion brands are traditionally known for their exclusivity, craftsmanship, artisanship, and innovation (Jain et al., 2021). Those luxury brands emphasise attributes such as timelessness, durability, heritage, and a slow production cycle (Angel et al., 2018).

Although there is no universally agreed definition for a luxury brand, it is crucial to define some examples of what constitutes a luxury fashion brand to establish a foundation for understanding luxury fashion business models. For instance, Ko et al. (2019) proposed that five key attributes are essential for any luxury brand, including (1) high quality, (2) prestigious image, (3) authentic value, (4) premium pricing, and (5) capability to inspire deeper connections with customers. Furthermore, there are three dimensions of luxury brands suggested by Becker et al. (2018): superior products' physical attributes, consumers' psychological characteristics, and consumers' psychological relationship with luxury products.

Moreover, Hagtvedt and Patrick (2009) argue that luxury brands have a broader range of products and services because the promise of pleasure convinces consumers that luxury is inherently attractive across various categories. Therefore, luxury brands emphasise brand extensions and offer high-end experiences, mediating pleasure potential in this relationship. For instance, many luxury brands have expanded their product lines to include accessories, fragrances, and even hospitality services (Dallabona, 2014). Moreover, collaborations with celebrities, designers, and artists have become a popular creative and unique strategy for luxury brands to enhance the perceived value for consumers and increase media attention and coverage to influence a broad spectrum of audiences (Zelenskaya et al., 2022).

Luxury brands are highly recognised for their ability to provide consumers with distinctive and unique shopping experiences and products, as well as for their role as symbols of wealth and taste (Mrad et al., 2020). Therefore, consumers of luxury brands often experience a profound sense of pride, status, and self-worth (Yoo, 2023). Furthermore, the State of Fashion 2021 report by the Business of Fashion and McKinsey & Company highlights that with the pandemic accelerating the shift to online shopping and digital adoption such as customer service video chat, luxury brands are investing in robust e-commerce that delivers a seamless luxury experience while retaining the social experience (Amed et al., 2021). Moreover, digital technologies, including augmented reality (AR), virtual reality (VR), and artificial intelligence (AI), are enabling immersive luxury experiences, blurring the physical and digital worlds to enhance convenience and personalisation (Aleem et al., 2022). Therefore, luxury brands redefine how they engage with consumers, create experiences, and operate their businesses.

One of the most notable trends influencing the luxury fashion sector involves the growing emphasis on sustainability (Angel et al., 2018). The luxury fashion industry now embraces environmentally conscious approaches, reflecting consumers' changing preferences and values (Pencarelli et al., 2019). Also, luxury brands recognise the urgency of addressing the industry's environmental impact and adopting sustainable practices across the value chain. Simultaneously, the integration of circular economy (CE) principles is receiving considerable attention within the luxury fashion sector, offering a strategic approach to tackle the industry's environmental and social challenges (Calaza et al., 2023). Thus, social media is one of the ways that luxury brands use to facilitate exposure to sustainability concerns, as well as increase awareness and interest amongst individuals about the environmental footprints associated with the fashion industry and the need for a change in values (Angel et al., 2018).

Research has shown that social media and business social networking platforms, such as LinkedIn, can leverage brands to build brand awareness, strengthen their positioning, and connect with potential customers (Jain et al., 2021; Morra et al., 2018). However, upon a review of the literature, it became evident that more attention needs to be given to the role of social media and business social networking platforms in monitoring and gaining valuable insights regarding the luxury fashion industry's CE and sustainability trends. Therefore, this paper aims to explore the key drivers shaping the luxury fashion industry and the CE and sustainability trends through LinkedIn, focusing on the United Kingdom.

LinkedIn is recognised as a well-known business-oriented online networking platform, offering a source of data sets ready for comprehensive qualitative and quantitative analysis (Tsironis and Tsagarakis, 2023). With its emphasis on professional networking and industry insights, LinkedIn stands as an invaluable source for interpreting the complex dynamics of the business world (Tsironis et al., 2022). Thus, the wealth of data available on LinkedIn enables conducting data mining and market research more effectively. Researchers and businesses can analyse profiles, job titles, connections, and more content using different collaborative filtering to gain insights into demographics, industry trends, and competitive intelligence.

Furthermore, the decision to focus specifically on the UK in exploring the trends that shape the luxury fashion industry stems from several considerations. Firstly, the fashion industry in the UK stands as one of the largest and most influential sectors. A recent report by the UK Fashion & Textile Association (UKFT, 2023) reveals that the UK fashion industry directly contributes a substantial £62 billion to the UK's GDP, sustaining 1.3 million jobs throughout the country and generating over £23 billion in tax revenues, which plays a pivotal role in the economic landscape. Moreover, the UK's fashion and textile industry exports are estimated to be worth over £9 billion per year (Harris et al., 2021), making the UK one of the top exporters in the global market (Euratex, 2023). Thus, the UK's global fashion and textile industry reach extends globally, making it a key player in the global fashion landscape with significant international influence. Furthermore, the UK has demonstrated a growing commitment to CE and sustainability within the fashion and textile industry, making the UK one of the global leaders in supporting the transition to a more sustainable and circular industry (Tsironis and Tsagarakis, 2023; WRAP, 2023).

To fill the research gap and to fulfil the objective of this paper, the research is designed to explore and address the following research questions.

RQ1: What are the key drivers shaping the luxury fashion companies in the United Kingdom, as reflected in their LinkedIn profiles?
RQ2: What are the circular economy and sustainability trends identified from the LinkedIn profiles of luxury fashion companies in the United Kingdom?

The paper adapts the methodology of Tsironis et al. (2022) on CE-related companies in the EU and the UK, focusing on the power of social media and business social networking data, particularly from the LinkedIn platform. Leveraging this valuable resource, machine learning techniques are deployed for topic analysis, aiming to use the readily available data sets from LinkedIn business profiles operating within the

luxury territory in the fashion, apparel, and textiles industries in the United Kingdom. Latent Dirichlet Allocation (LDA) is also utilised to highlight the most prominent areas and concepts that emerge from business online profiles.

The findings of this paper underline that CE still needs to be better integrated into the luxury fashion industry. The luxury fashion industry's ability to influence global trends positions it as a key player in advancing specific SDGs. In particular, this study focuses on SDG 9 (Industry, Innovation, and Infrastructure), and SDG 12 (Responsible Consumption and Production), as these goals are deeply connected to the sector's practices. SDG 9 highlights the importance of fostering innovation and developing resilient infrastructure, both of which are central to the transformation of the luxury fashion industry toward sustainability. Luxury brands lead in adopting innovative materials and methods, such as recycled fabrics, synthetic fabrics and organic materials (Pencarelli et al., 2019). Digital technologies, including blockchain and RFID technologies, enhance transparency and traceability in the supply chain, supporting sustainable practices and strengthening fashion's infrastructure (Abdelmeguid et al., 2024; Thorisdottir et al., 2024). Furthermore, luxury fashion promotes durable, high-quality products and embraces circular economy principles, like reuse and recycling (Ko et al., 2019). The luxury sector has the potential to redefine consumer expectations by promoting sustainable luxury, where the value of a product is not only tied to its exclusivity but also to its environmental and social impact. This aligns with SDG 12 by reducing waste and encouraging a more thoughtful approach to consumption.

The remainder of this paper is organised as follows: Section 2 provides a comprehensive review of existing literature and relevant research findings. Section 3 outlines the research approach, the methodology adopted, and the analytical techniques employed in the investigation. Section 4 presents the research findings. Section 5 provides a thorough analysis and interpretation of the findings, offering insights into sustainability and circular economy strategies and key trends within the UK luxury fashion sector. Additionally, it outlines practical implications for industry stakeholders, addresses the limitations of the research, and proposes directions for future studies. Finally, Section 6 concludes the key takeaways from the research, emphasising the contributions to the field.

2. Literature review

This section establishes the theoretical background, exploring key frameworks and concepts relevant to sustainability and circular economy in fashion. It then examines sustainability in the luxury fashion industry, highlighting current practices, challenges, and trends within this sector from existing literature.

2.1. Theoretical background

In the context of the luxury fashion industry's transition towards sustainability, several key theoretical frameworks are commonly utilised to analyse and guide this transition.

The Triple Bottom Line (TBL) framework, proposed by Elkington (1997), provides a comprehensive approach for businesses to define their purpose and measure performance by balancing the three pillars of sustainability: economic, social, and environmental performance (Park and Kim, 2016; Rosário et al., 2024). TBL emphasises that business success is evaluated not only in terms of profitability but also by fulfilling social and environmental responsibilities (Bocken et al., 2014). This holistic assessment enables businesses to track their sustainability efforts over time, integrating these dimensions into their overall performance and demonstrating their commitment to sustainability (Hiller et al., 2017).

Building on the principles of TBL, Corporate Social Responsibility (CSR) focuses on how businesses take responsibility for their broader societal and environmental impact (Macgregor Pelikánová and Sani, 2023). CSR provides a more specific framework for examining the ethical and legal obligations businesses have toward their stakeholders, including employees, customers, suppliers, and the environment. CSR requires companies to comply with regulations and standards that enforce responsible practices (MacGregor et al., 2020). Therefore, CSR goes beyond profit maximisation, embodying both a company's legal and moral obligations to society. Fashion brands have increasingly embraced CSR initiatives in response to consumer demand for transparency and ethical production, often publicly communicating their commitment through their websites and online platforms that detail their core values, ethical principles, and corporate codes of ethics or conduct, which guide their business practices (Cerchia and Piccolo, 2019).

The adoption of CE principles is also gaining traction in luxury fashion to address environmental concerns and social challenges (Blasi et al., 2020). The concept of a CE has emerged as an alternative to a linear economy, focusing on sustainable production and consumption (Abdelmeguid et al., 2023; de Aguiar Hugo et al., 2023). Also, with the growing environmental awareness among consumers, the fashion industry is increasingly keen on embracing the CE approach (Abdelmeguid et al., 2022; Liu et al., 2023). Based on the Ellen MacArthur Foundation (2012), a CE is "the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems". CE promotes circular business models that extend product life cycles and reduce waste and environmental impact (Rosário et al., 2024). The most common CE strategies are suggested in the framework by Potting et al. (2017), which orders the strategies in an increasing power to achieve circularity: refuse, rethink, reduce, reuse, repair, refurbish, remanufacture, repurpose, recycle, and recover. These strategies can help improve resource efficiency by integrating innovative technologies, sustainable supply chains, and closed-loop systems (Rosário et al., 2024). However, the order of power is not always consistent since it may differ depending on the type of products and other conditions. Other studies argue that the leading CE strategies are the 3Rs: reduce, reuse, and recycle (Papamichael et al., 2023).

The waste management hierarchy further complements the analysis of luxury fashion's integration of the 3Rs. This hierarchy prioritises waste reduction strategies, encouraging businesses to focus first on minimising resource use before moving toward reuse and recycling (Kirchherr et al., 2017; Potting et al., 2017). Luxury fashion brands can adopt this framework by producing fewer, higher-quality products designed to last, thus reducing the overall demand for raw materials. Additionally, many luxury brands are beginning to embrace resale markets, offering consumers opportunities to extend the lifecycle of products through take-back schemes, second-hand platforms and repair services (Henninger et al., 2019; Henry et al., 2020; Pal and Gander, 2018). Repair plays a vital role in fashion's sustainability efforts by allowing clothing to be reduced and reused, as prioritised by the waste management hierarchy (McQueen et al., 2022). Although second-hand markets have traditionally been reserved for special occasions like weddings and proms, they have recently become a significant part of the fashion industry, recognised as both a trend and an approach to luxury (D'Adamo et al., 2022; Kirezli and Tuzcu, 2024). This shift is supported by technological innovations and commercial initiatives, including peer-to-peer platforms (Calaza et al., 2023; D'Adamo et al., 2022). Therefore, this not only aligns with sustainability and circularity goals but also taps into the rising demand for unique and pre-owned luxury pieces, as well as the desire to buy luxury products that have high retail prices for better prices (Borg et al., 2020; Henninger et al., 2017; Kirezli and Tuzcu, 2024). However, the focus in CE literature often revolves around recycling, even though it may not always be the most optimal or effective practice within the circular economy (D'Adamo et al., 2022), and this focus often neglects the more critical, top-priority components of the waste hierarchy (Kirchherr et al., 2017).

2.2. Sustainability in the luxury fashion industry

The luxury fashion industry is increasing its emphasis on sustainability due to recognising the urgency of addressing the industry's environmental impact and growing consumer concerns. In addition to the positive impact of sustainability on the brand image perceived by consumers, it also reflects the shift in consumer values. This makes it more effective for luxury brands than fast fashion brands (Blasi et al., 2020). Sustainability has also become increasingly linked to luxury due to its higher price and perceived intrinsic value (Angel et al., 2018). Thus, luxury fashion brands are now aligning with environmentally conscious practices and are adopting sustainable product development practices such as exploring innovative design and materials, including organic materials, natural dyes, bio-based materials, recycled textiles, and synthetic fabrics (Pencarelli et al., 2019; Yadav et al., 2024). These innovations reduce the industry's reliance on scarce resources and minimise its carbon footprint. Additionally, brands are adopting cleaner and more efficient manufacturing processes, including water-waste management techniques, green gas emissions control, energy-saving methods, and reduced chemical usage (Chow et al., 2018). Crucial to these sustainability efforts are factors like product durability, longevity, and the embrace of gender-neutral and timeless designs, all aimed at minimising consumption and reducing waste (Thorisdottir et al., 2024).

Luxury brands were found to be more discreet about their supply chain practices, maintaining complete control over the design, production, distribution, and retail, thereby retaining the brand's exclusivity (Strähle, 2017). However, the increase in regulations promoting more sustainable and circular approaches, such as the CE Action Plan introduced by the EU in 2015 (Papamichael et al., 2022). Extended Producer Responsibility (EPR) is a significant environmental policy approach that promotes the transition to a circular economy in the fashion industry by requiring producers to take full accountability for the entire lifecycle of their products, including collection, recycling, and disposal (Centobelli et al., 2022; Papamichael et al., 2022).

Transparency plays a crucial part in reporting sustainability and circularity practices and indicates the openness and willingness of the brand to progress further (Gardner et al., 2018). Consumers increasingly value transparency and demand transparency regarding the origin of materials, production processes, and labour conditions (Abdelmeguid et al., 2022). Digital technologies enable the traceability and transparency of fashion products along the supply chain, facilitating the transition to a more sustainable CE (Alves et al., 2022). For brands aspiring to engage consumers in environmentally friendly practices, it is essential to establish transparency by providing consumers with trustworthy details about the sustainability and circularity aspects of products and processes, which enables them to make informed purchasing, usage, and consumption decisions (Abdelmeguid et al., 2024; Rinaldi et al., 2022). Therefore, brands are pressured to ensure ethical sourcing and responsible production to achieve their sustainability and circularity business goals and to achieve consumer behavioural change (Bhaduri and Ha-Brookshire, 2017). However, as highlighted by Yadav et al. (2024), there are several challenges faced when transitioning from fast fashion to slow and sustainable fashion, including the development of products with shorter lifespans, a stronger emphasis on premium branding over green branding, low-durability designs, the attitude-behaviour gap among consumers, high carbon emissions in supply chains, and significant water wastage in textile manufacturing.

Existing research on sustainability and circularity within the fashion industry often generalises findings across all segments, overlooking the distinct characteristics of the luxury fashion sector (Macgregor Pelikánová and Sani, 2023). These characteristics, such as slower production cycles, higher quality, emphasis on exclusivity, and higher capacity for sustainable material use, may inherently align with sustainability and circularity principles (Kirezli and Tuzcu, 2024; Macgregor Pelikánová and Sani, 2023). Despite this, there is a lack of comprehensive research examining the drivers promoting slow fashion and shaping the luxury fashion industry, as well as the circularity and sustainability trends within this sector, which could enhance practices and innovations across the broader fashion industry (Yadav et al., 2024).

Additionally, there is a significant gap regarding the data-driven analysis from social media and most importantly LinkedIn. The latest is considered the prominent leader in business profiling with over 68 million company profiles based on the latest search in September 2024. The vast amount of data is suitable for big data analytical methods utilising machine learning techniques like LDA topic modelling. In this context, this work aims to shed light on the most recent trends in the luxury fashion domain based on corporate data found on LinkedIn company profiles in the UK. This approach enables a business-oriented mapping of the sector as it employs public qualitative and quantitative data. Thus, the main goal revolves around the investigation of the current business landscape and the level of alignment with the most important sustainable practices related to the fashion sector.

3. Methodology

This work employs an LDA model to shed light on the existing topics in luxury fashion. Exploring LDA's sectorial applications, it has been deployed over multiple datasets ranging from significant text inputs (Avasthi et al., 2023) to short text Twitter data (Murshed et al., 2022) with the second case posing the need for model optimisation to tackle the obstacles met in short text analysis. Furthermore, the model's value becomes apparent through the investigation of datasets from sources with different characteristics, such as surveys (Buenano-Fernandez et al., 2020), large journal hosting platforms (Gupta et al., 2022; Yang et al., 2022), and combined data from scientific journals and social media posts (Daglis et al., 2023). Yadav et al. (2024) also use LDA to analyse past research on sustainable fashion, offering an interdisciplinary assessment of the literature and identifying key research trends within the field. Various researchers have used LDA modelling across various industries and in different contexts (Ekin et al., 2023; Kukushkin et al., 2022a; Sharma et al., 2022). Significant work has been implemented in digital twins, indicating the concept's immaturity while highlighting the existence of 100 distinct topics (Kukushkin et al., 2022b). Another important sector is AI, which has held high potential for unveiling over the past few years. LDA successfully pointed out 40 AI-related topics in this scope and further helped researchers and scholars define optimised research directions (Yu and Xiang, 2023). Finally, the education sector has been researched by Ekin et al. (2023), addressing the evolution of games in science and physical education, revealing the most important trends.

LinkedIn data have been widely used for academic research over the past few years with significant studies indicating the existing value in them. Diverse topics have been studied in the past ranging from personal profiles and recruiting patterns (Garg et al., 2016; Zide et al., 2014) to more recent studies on public health and pandemics monitoring the evolution of companies in the United States of America (Daglis and Tsagarakis, 2024). Further, LinkedIn has started to be researched through the prism of CE and Sustainability with a strong focus on the organisational aspects of the topics across different countries, regions and related keywords (Caferra et al., 2023; Knäble and Tsagarakis, 2024; Tsironis et al., 2022, 2024a). In this context, the current methodology extends the aforementioned approaches by utilising LDA topic modelling. Apart from the traditional statistical methods of analysis, there are numerous options including Cross-Panel Data in regional and national datasets (Zaman and Zaman, 2023), Panel time-series to investigate links among keywords (Daglis et al., 2023), and finally unsupervised machine learning models capable of revealing the most prominent topics in the sectors (Mishra et al., 2024; Tsironis et al., 2024b; Xue et al., 2024).

The methodology is organised into three sub-sections. Firstly, it involves online search and data mining, utilising LinkedIn's search engine, defining search terms, and outlining the text mining process. Secondly,

it delves into text pre-processing and the deployment of the LDA model. Lastly, after careful evaluation of the initial outcomes, an analysis of the free-text descriptions of companies is conducted to identify mentions related to sustainability and the circular economy. An overview of the methodological framework is presented in Fig. 1.

3.1. Data acquisition

Defining the search query is the first step of this study. Since "luxury fashion" is the focus of this study, an optimal search query to get the best possible output in terms of accuracy and quantity had to be found. Thus, the search keyword has been set to "luxury," and the additional filters are "United Kingdom" for the location and "Apparel & Fashion" and "Textiles" for the industry. In this way, more profiles related to the topic are retrieved since most of the companies may not refer exactly to "luxury fashion" but include the term "luxury" and are registered in the fashion or textiles industry. The data collection took place in 2023 and resulted in 957 and 158 profiles registered in the "Apparel and Fashion" and "Textiles" industries, respectively. These two datasets have been merged into a single dataset and further analysed.

After defining the search query, the text-mining process was initiated, and the data was stored in CSV files. The profile sections used in this study are the company's name, location, industry, number of followers, staff range, staff count, specialities, description, and the foundation year. These fields provide text and numerical data that enable qualitative and qualitative analysis.

3.2. Data analytics

This step includes the evaluation of the collected data aiming to identify different data types, languages, and missing entries. As discussed earlier, LinkedIn hosts personal or business profiles with similar structure. Regarding the business profiles, diverse organisational aspects can be registered for business activity dissemination and showcasing. The "description" section is the most important data pool for the analysis as the LDA model for topic analysis on the luxury fashion industry in the United Kingdom. Thus, the free text registries are collected in a single text corpus that sets the basis of the topic modelling process. For this purpose, the Jupyter Notebook online platform is utilised within a Windows OS computer's Google Chrome web browser, providing an easy and productive coding environment highly suitable for data analytics (Pimentel et al., 2021; Project et al., 2024). Furthermore, Python 3 programming language is used for every step related to text cleaning and model deployment. Initially, the Pandas Python library is imported into the code to enable data readability and data frame creation. In this way, the Python script can read data directly from the Excel file and create the data frame that can be modified and processed within the programming environment.

The first step is the creation of a corpus of individual words with any other free text element removed. This process includes the removal of punctuation, symbols, and HTML line breaks, followed by eliminating 93 words that make a default set of vague words in the stopwords library. Notably, mentions have been found in languages different from English. The data extraction process transforms some international characters into symbols that are eliminated. It is essential to mention that only English words are taken into consideration as a way to improve the selected methodology. Many of the LinkedIn descriptions include emojis that are also extracted as symbols to the Excel file and are removed with dedicated code. In addition, two sets of words are added manually after evaluating the results of the initial filtering. The model is configured in two stages to identify the most accurate set of stopwords. The definition of the additional set of stopwords is based on the monitoring of the most frequent words found in the text corpus. Finally, the word "luxury" is also excluded in both configurations since it is included in 920 descriptions and created noise in the results. This analysis aims to identify and evaluate other luxury-related topics in the fashion and textiles industries. To further refine the dataset for topic modelling, tokenisation is conducted, a critical step in text analysis. Tokenisation involves breaking the text into individual words or tokens (Mielke et al., 2021). More precisely, it refers to the process of breaking a stream of textual data into words, terms, sentences, symbols, or some other meaningful elements called tokens. This process allows for an

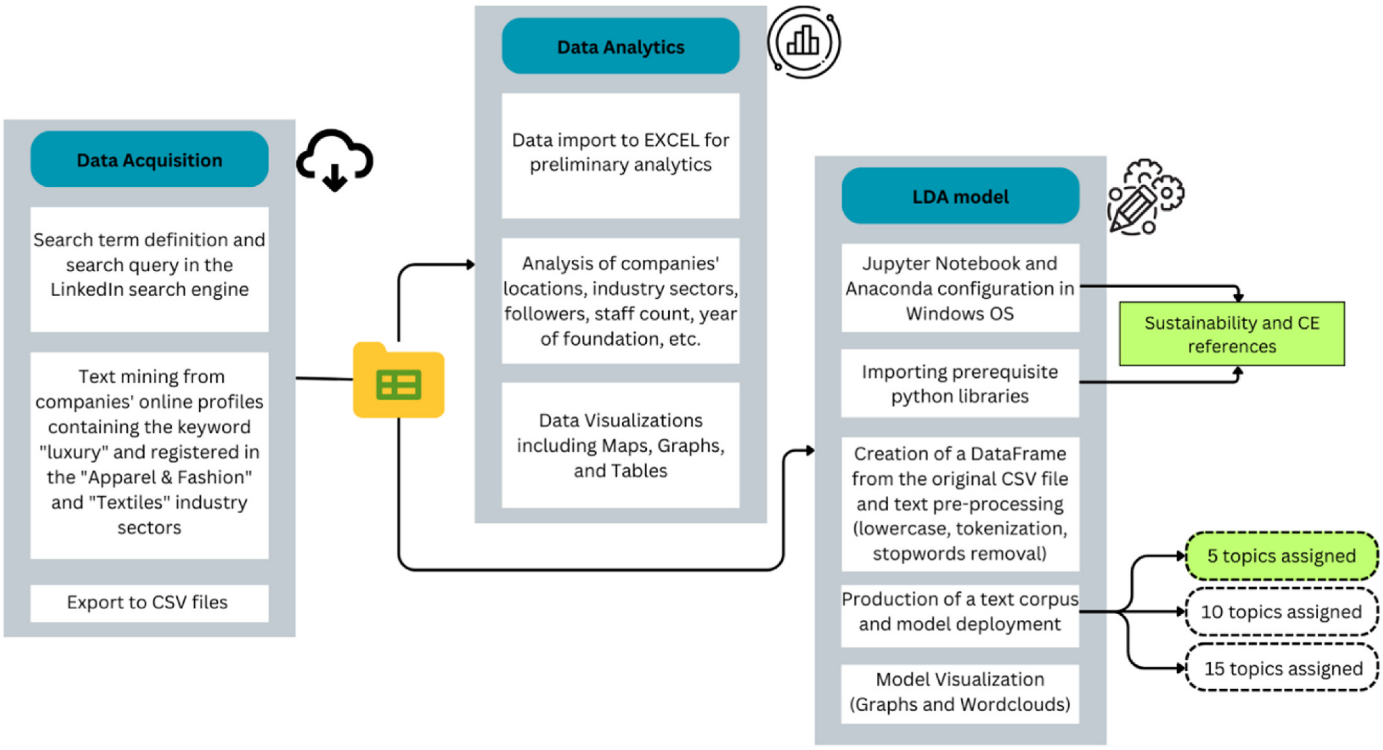


Fig. 1. Methodological framework for the three phases of data collection and analysis.

examination of the content and is essential for generating meaningful insights using topic modelling techniques. In the analysis, the Genism library is utilised to implement tokenisation. The code has been also adapted to convert every token to a string including alphanumerical values. The tokenisation process is followed by lemmatisation which is a process in natural language processing (NLP) that reduces words to their base or dictionary form, called the lemma, while preserving the meaning of the word in its context. Unlike stemming, which often cuts off prefixes or suffixes to reduce a word to its root form, lemmatisation considers the morphological analysis of the word and ensures that the reduced word is a valid one in the language.

One of the most determining factors in the model's accuracy is the exclusion of stopwords. After using a preselected set of stopwords provided by the NLTK stopwords Python library, the results are evaluated to improve the model's accuracy. Excluding specific words from the dataset, especially domain-specific stop words and standard terms, can positively and negatively affect the LDA model's performance and the interpretability of topics (Schofield et al., 2017). The positive impact of domain-specific stopwords and common term removal can often lead to more coherent and interpretable topics. By excluding words like 'fashion' and 'luxury', noise in the data is reduced, and the model focuses on more meaningful and specific terms. In contrast, the absence of standard terms can help reduce overfitting, where the model captures noise or common language patterns irrelevant to your analysis.

On the contrary, excluding certain words may result in a loss of context in some topics. For example, 'UK,' 'British,' and 'London' may be necessary for identifying UK luxury fashion industry topics. Removing them may have some implications for distinguishing such topics. Despite that, it is already established that most companies refer to the UK, so excluding location-relevant words has been more efficient. Further, excluding words like 'world,' 'year,' and 'years' may limit the model's ability to capture temporal or global aspects of the data. Further, excluding 'http,' 'www,' and 'com' is generally a practical approach as they could be more informative in topic modelling. However, it is important to ensure that special characters like 'â' and 'nan' do not carry any useful information which has been confirmed for the research needs

Therefore, excluding certain words can enhance the quality of topics by reducing noise, but it should be done thoughtfully. It is essential to

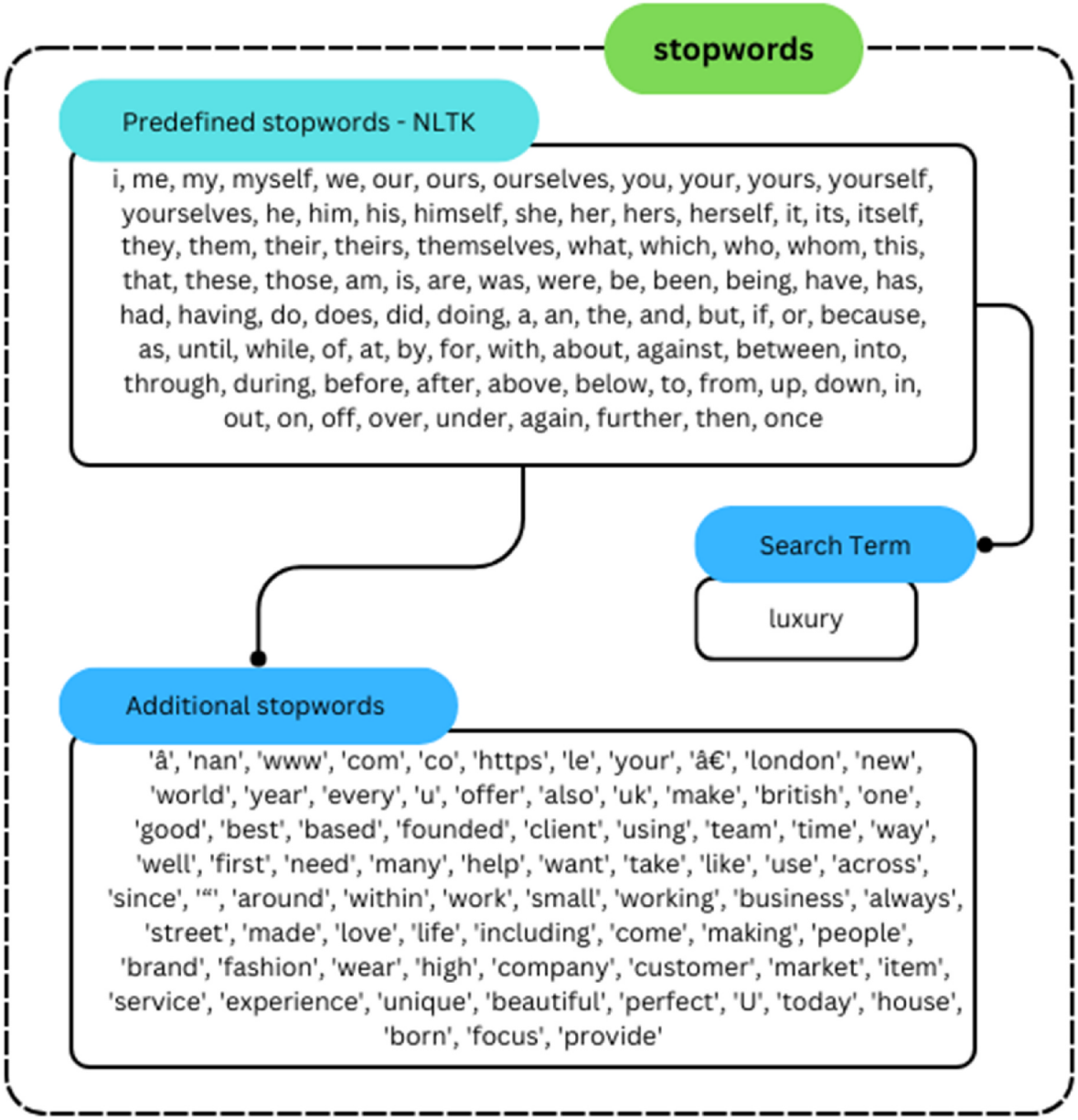


Fig. 2. Final set of stopwords excluded based on the NLTK stop words Python library and coherence score on each configuration.

consider the research goals and the context in which these terms appear. The final set of stopwords has been defined after numerous trials considering the coherence score on each configuration (Fig. 2). After removing the selected stopwords, the text corpus consisted of 64141 tokens.

3.3. Latent Dirichlet Allocation topic modelling

LDA is a popular topic modelling technique used to uncover the underlying themes in a collection of documents, initially proposed by Blei et al. (2003). This method holds significant precedence over several other approaches, mainly due to the Bayesian nature of this technique, providing a better topic modelling generalisation (Egger and Yu, 2022). More precisely, LDA operates on the assumption that each document in the dataset is a mixture of topics, and each topic is a collection of words. The basic logic of LDA is to model how words are generated within documents probabilistically. The LDA model has two key components: topics and documents. Topics represent the themes or concepts in the corpus, while documents are mixtures of these topics.

Furthermore, "alpha", which controls the document-to-topic distribution, and "eta", which governs the topic-to-word distribution, are the primary hyperparameters of the LDA model (Fig. 3). Specifically, "alpha" regulates how many topics are expected within a document, with lower values encouraging sparsity and higher values encouraging document diversity. On the other hand, "eta" influences the distribution of words within topics, where lower values favour word sparsity, and higher values result in word diversity within topics. By adjusting these hyperparameters, researchers can tailor the LDA model to emphasise different aspects of topic modelling, allowing for flexible and insightful exploration of document collections.

To gain a comprehensive understanding of the dataset and to explore the granularity of topic discovery, LDA topic modelling was performed for different numbers of topics. Thus, conducted for 5, 10 and 15 topics, each representing a distinct level of topic resolution. This standard method helps researchers evaluate the optimal number of topics given each dataset (Gan and Qi, 2021). The different model configurations indicated the highest model accuracy for the five topics. As such, a detailed investigation of the specific configuration was conducted.

After running each LDA model, the resulting topics were examined, consisting of lists of keywords associated with each topic. More precisely, an empirical investigation of the most salient words per topic was implemented to understand each topic's direction. This led to identifying words that needed to be excluded by adding them to the stopwords list. The interpretation of these topics involved qualitative analysis to assign meaningful labels to each topic. The top keywords and the context in which they appeared were considered to determine the most appropriate labels.

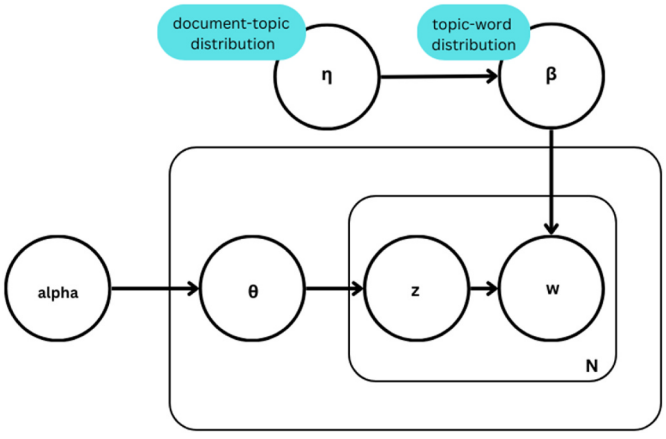


Fig. 3. LDA model architecture including the key parameters affecting the model's performance.

Additionally, the coherence and relevance of topics were assessed to ensure their meaningfulness. Relevant evaluation metrics, such as coherence scores and topic distinctiveness, were also considered to aid in selecting the optimal number of topics. These metrics provided quantitative insights into the quality and separation of topics generated by each LDA model.

4. Findings

In this section, the topics identified for the 5-topic configuration and the circular and sustainable mentions are presented.

4.1. LDA topic modelling

An initial list of the dominant words in the dataset is represented in Table 1. Terms like luxury and fashion have been mentioned more than one thousand times and, subsequently, were excluded. Table 1 has been the intermediate step between corpus finalisation and LDA model deployment. The list of words was used to evaluate the corpus after each stopword set configuration.

The dominance of the term "design", followed by "quality," showcases their significant value in the luxury industry. Interestingly, companies focus more on women in their products and services related to luxury fashion. This is witnessed by the significantly higher count of the word "woman" (347) compared to "men" (123). Another important topic in the dataset has been related to fabrics, with leather (141), cashmere (112), cotton (90), and silk (75) having the highest count in the dataset, thereby demonstrating the industry's commitment to high-end and luxurious quality.

The different configurations based on the number of topics have been

Table 1
Most salient keywords in the LinkedIn profiles dataset for the UK Luxury fashion companies.

Word	Count	Word	Count	Word	Count
design	725	detail	124	retailer	86
quality	488	men	123	manufacturing	86
product	482	hand	122	timeless	84
collection	461	lingerie	121	ethical	83
style	362	exclusive	121	fit	83
designer	356	global	119	award	83
woman	347	established	117	classic	83
fabric	323	dress	117	shop	82
piece	308	feel	113	vision	80
brand	308	cashmere	112	passion	80
accessory	261	craftsmanship	106	personal	79
create	257	home	105	attention	79
clothing	255	wardrobe	105	providing	78
industry	234	colour	104	individual	78
designed	206	traditional	101	heritage	77
garment	199	international	100	bridal	76
material	198	leading	100	studio	76
modern	191	created	99	world	76
sustainable	185	aim	97	shopping	76
customer	180	shoe	97	retail	76
bespoke	156	natural	96	launched	76
textile	150	trend	95	handmade	76
creative	149	value	93	price	75
creating	145	inspired	93	sustainability	75
leather	141	luxurious	92	silk	75
lifestyle	140	clothes	92	print	75
finest	139	tailoring	92	service	74
art	139	boutique	91	community	73
store	137	family	91	comfort	73
production	136	highest	91	suit	72
online	135	cotton	90	bag	71
label	133	believe	89	stylish	71
look	127	innovative	88	inspiration	70
client	125				

evaluated according to the coherence scores, which indicated the 5-topics as the best fit. Moreover, a comprehensive interpretation of the findings is conducted regarding the 5-topic model configuration, aiming to find the best-performing model. Therefore, different configurations of the model's hyperparameters were examined, including *alpha* and *eta* (beta). These two hyperparameters can range from 0 to 1 and auto or symmetric. Thus, following a trial-based evaluation of the model, the best-performing configuration has been alpha = 0.1 and eta = symmetric, with coherence equal to 0.3382 (Table 2). It is essential to mention that the same 5-topic configuration with the default stop word set reached a maximum coherence of 0.2950.

The interpretation of the findings led to a closer investigation of whether the model provided valuable findings in terms of topic identification. The presence of common words across multiple topics in topic modelling results is not necessarily an indicator of bad model deployment. It is expected to have overlapped or shared words among topics, primarily when the topics are related or when certain words are highly prevalent in the dataset (Lehew and Patwary, 2018). The importance of shared words should be evaluated in context, and it does not necessarily reflect negatively on the model's performance. Thus, similar words appearing in two or more topics but with different rankings or prominence can provide valuable insights into the topic aspects and relationships within the dataset. This issue can reveal nuances in how specific terms are associated with multiple themes or concepts. The different ranking of words can indicate the relative importance of those terms within each subtopic or that these terms have varying degrees of relevance or significance in different contexts. This reflects words' variability and adaptability to multiple meanings or themes. Additionally, some topics may overlap or share standard terms because real-world concepts often have fuzzy boundaries. The model attempts to capture these nuances in how words relate to different topics. Finally, terms at the top of a topic are likely to be more strongly associated with that topic, while terms lower in the list may be less specific.

The 5-topic model resulted in relevant and valuable topics for the specific research (Fig. 4). Following the examination of each topic individually, the key terms and percentage of tokens are presented (Table 3).

Table 3 shows that only topics 5.1 and 5.3 explicitly incorporate sustainability in their key terms, but none of the topics specifically address or mention CE in their focus.

4.2. Circular and sustainable mentions

In this section, the dataset for any references to the concepts of CE and sustainability is further examined thoroughly. In this context, Google Collab and Python have been utilised as exploratory tools. Individual code blocks have been executed to find the number of profiles that mention those two concepts in their description and specialities sections. Compared to the LDA modelling, both sections are examined as they contain free text and comma-separated keywords, respectively. Initially, the search was configured to find the lemmatised term "sustainab*" and "circular*". In this way, every relevant word could be tracked, including sustainability, sustainable, sustainably, circular economy, and circularity.

The findings suggest that the concept of sustainability is discussed much more extensively with 225 companies, compared to only 26 for CE (Fig. 5). This does not only demonstrate the growing awareness of environmental and ethical concerns within the industry, but also shows that CE principles have yet to gain the same level of attention. This analysis aims to get a clear view of the level of business interest in these concepts. Since there is no certainty if an organisation that refers to CE or Sustainability adopts its principles, it is assumed that any mentions indicate at least an interest in these concepts, which can indicate potential strategy adjustments.

Considering the existing 4R framework (Kirchherr et al., 2017; McQueen et al., 2022; Papamichael et al., 2023), the terms Recycle, Reduce, Repair, and Reuse have been searched. This set of keywords describes the fundamental principles of CE for the fashion and textiles industry. A search for any mention related to these keywords was conducted, including recycle, recycled, recycling, recyclable, reuse, reusing, reused, reusable, reduce, reduced, reduction, and reducing. An additional pre-processing step must be taken in this part since some companies may include one or more of those terms in both sections. In this case, it is counted as a single value to get the number of companies that mention any of those terms in their profiles, regardless of the section or the times mentioned (Table 4).

The distribution of mentions within the cohort of companies incorporating circular or sustainable keywords revealed distinct emphases on the 4Rs (Fig. 6). Among the identified keywords, "recycle" emerged prominently, with 26 companies referencing it, constituting 43.3% of the companies within this category. Following, "reduce" was mentioned by 17 companies, representing 28.3% of those incorporating circular or sustainable keywords. "Repair" gained attention from 10 companies, making up 16.7% of the companies. At the same time, "reuse" exhibited a comparatively lower predominance, being mentioned by 7 companies, accounting for only 11.7% of the companies incorporating circular or sustainable keywords. These findings highlight the distribution of sustainable and circular practices within companies, emphasising the varying degrees of emphasis placed on different practices of circular and sustainable initiatives on their LinkedIn profiles.

However, it was particularly surprising to observe that recycling received a more significant number of mentions on the companies' profiles despite being demonstrated in existing literature and research as the least preferred principle in the waste management hierarchy (Kirchherr et al., 2017). Furthermore, exploring the interconnectedness of the 4Rs (reduce, reuse, recycle, and recover) with the concepts of sustainability and circular economy (CE) aimed to determine whether companies perceive these strategies as part of circular or sustainable practices. This further analysis highlights that while the industry remains committed to its core values of quality, design, and style, it is also adapting to meet contemporary demands. Therefore, sustainability and CE principles are gradually gaining ground in response to consumer expectations and environmental concerns.

Since an initial picture of the number of companies related to these concepts was formed, the focus was on understanding the interconnection of the 4Rs with the concepts of sustainability and CE. In this way, the analysis of whether companies perceive these strategies as circular or sustainable practices was performed. More precisely, the advanced search indicated that in 20 profiles, the recycle and sustainability terms were found together, followed by reduce and sustainability, reuse and sustainability, and repair with sustainability with 13, 3, and 1 profile(s), respectively (Fig. 7a).

Finally, out of the 225 profiles referencing sustainability, 37 also included an R-strategy. On the other hand, significantly fewer profiles containing the CE term have been found. More precisely, only 26 profiles included the term CE, with 5 having both CE and recycle. Further, CE has also been found in combination with reduce, repair, and reuse with 1, 5, and 3 profile(s), respectively.

Therefore, CE mentions were much fewer, but more than 50% included a 4R strategy compared to the sustainability mentions, with less than 20% included one of the 4R strategies (Fig. 7b). Including the

Table 2
Coherence scores based on different hyperparameters' configuration tests. The optimal coherence corresponds to more interpretable topics.

Alpha/eta	auto	symmetric	0.01	0.1	1
auto	0.3215	0.3255	0.3220	0.3121	0.3110
symmetric	0.3033	0.3208	0.3079	0.3158	0.3138
0.01	0.3143	0.3181	0.3257	0.3312	0.3173
0.1	0.3333	***0.3382***	0.3187	0.3263	0.3196
1	0.3295	0.3254	0.3372	0.3269	0.3262

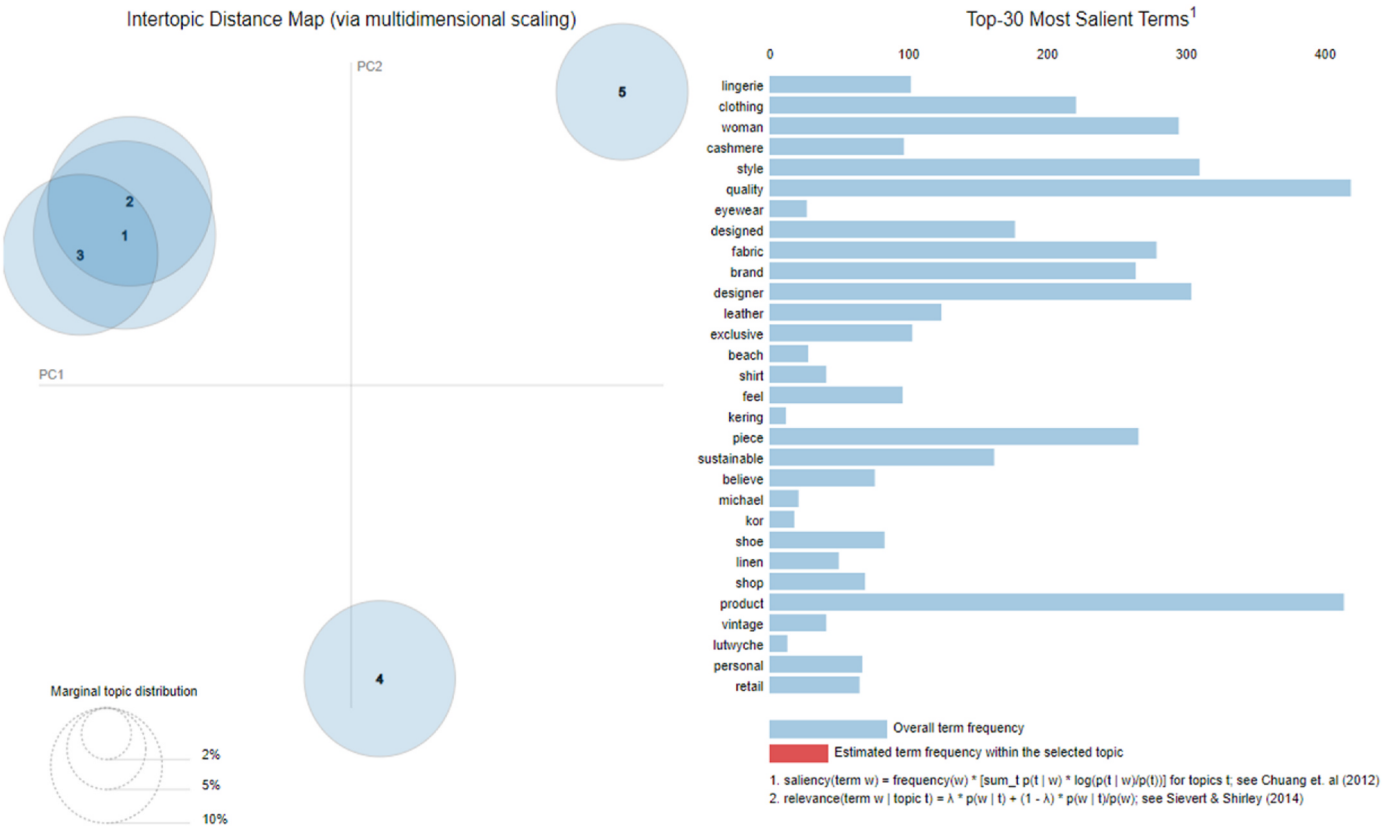


Fig. 4. LDA 5-topic configuration visualising the intertopic distances and most salient words for the analysed text corpus.

4Rs principles suggests a proactive approach within some brands to align with circularity or sustainability and embrace a comprehensive strategy that addresses reduction, reuse, repair, and recycling. This shows these brands' depth of motivation and commitment to circularity and sustainability. Controversy, mentioning sustainability or circularity without the 4Rs principles may indicate a superficial commitment, raising questions about the depth of engagement and the potential presence of marketing-driven or greenwashing strategies within the brand's sustainability narrative.

5. Discussion

This section provides a comprehensive analysis of sustainability and circular economy strategies in the UK luxury fashion sector. It examines key trends, compares current approaches, and outlines practical implications for the luxury fashion industry and policymakers. Finally, the section addresses limitations and proposes directions for future research.

5.1. Comparative analysis of sustainability and circular economy strategies in UK luxury fashion

The findings of this study build on existing literature regarding the luxury fashion industry's adoption of sustainability and circular economy practices. Previous studies highlight the industry's shift from a linear system toward circular fashion principles, aligning with slow fashion and responsible consumption (Kirezli and Tuzcu, 2024; Sarokin and Bocken, 2024). A deeper comparative analysis shows that the 4Rs explored are pivotal elements for driving sustainability within this sector.

The findings show that recycling is a prominent practice among UK luxury fashion brands aiming to minimise environmental impact by repurposing waste materials, such as textiles and leather, into new products. The findings highlight that brands are adopting innovative recycling technologies, such as converting textile waste into 100% recycled materials. This aligns with SDG 12, as it reduces the need for virgin resources and promotes responsible production. Additionally, recycling addresses SDG 9 by fostering innovation in sustainable materials and production methods. However, recycling presents challenges in maintaining the premium quality expected in the luxury sector. Moreover, as emphasised by prior literature and from the perspective of the waste management hierarchy, the energy-intensive nature of some recycling processes can limit their overall environmental benefits (D'Adamo and Colasante, 2022; Kirchherr and van Santen, 2019; Potting et al., 2017). Nevertheless, these efforts contribute to a circular economy, reducing waste and supporting sustainable development.

The principle of reduce involves minimising resource use at the production stage, a core aspect of SDG 12 (Potting et al., 2017). The brands explored in this study are reducing waste by offering smaller carefully curated collections produced in limited quantities. These brands also emphasise their sustainable material choices, such as recycled or upcycled fabrics. Additionally, some of those brands are aligning their production schedules with seasonal designs that avoid excess stock. These practices reflect a commitment to reducing overproduction and waste, which is central to responsible consumption (Abdelmeguid et al., 2024). However, the tension between luxury's exclusivity and consumer demand presents a challenge in scaling these reduction efforts. Nevertheless, reduction efforts are crucial for minimising environmental impact and ensuring that luxury production aligns with the principles of sustainability.

The reuse strategy is particularly effective in extending the lifecycle of luxury products and aligns closely with SDG 12. The findings show the increasing prominence of second-hand luxury markets and product rental services, which allow consumers to access high-quality items at a reduced environmental cost (D'Adamo et al., 2022; Lang and Zhang, 2019). Extending product lifespans can significantly lower environmental impact, which is a key metric used by many of the brands

Table 3
Key terms and percentages of tokens per topic based on LDA topic modelling.

Topic ID	Key Terms	Percentage of tokens (%)	Topic
5.1	Design, collection, fabric, piece, style, product, garment, sustainable, quality, designer, woman, create, accessory, designed, modern, material, brand, bespoke, creating, industry, customer, creative, leather, clothing, look, production, textile, finest, suit, tailoring	26.6	Artful Creations in Fashion
5.2	Design, quality, clothing, product, collection, brand, style, piece, industry, accessory, woman, designer, leather, create, designed, fabric, production, textile, modern, customer, material, lingerie, online, traditional, craftsmanship, men, creative, hand, lifestyle, garment	21.6	Time-Honoured Craftsmanship
5.3	Design, quality, product, designer, collection, fabric, style, woman, create, art, industry, shoe, accessory, dress, brand, material, modern, sustainable, home, bespoke, customer, label, textile, piece, bridal, creating, detail, creative, aim, print	19.4	The Art of Style and Design
5.4	Collection, design, product, brand, woman, designer, quality, industry, cashmere, accessory, clothing, piece, store, style, customer, material, create, leading, retail, modern, label, lifestyle, exclusive, client, finest, award, online, eyewear, production, manufacturing	18.4	The Pinnacle of Retail Excellence
5.5	Style, woman, design, designer, quality, piece, brand, fabric, product, designed, accessory, collection, lingerie, create, feel, exclusive, clothing, lifestyle, material, believe, shop, trend, clothes, bespoke, store, client, creating, garment, personal, cotton	14	A Personalised Style Experience

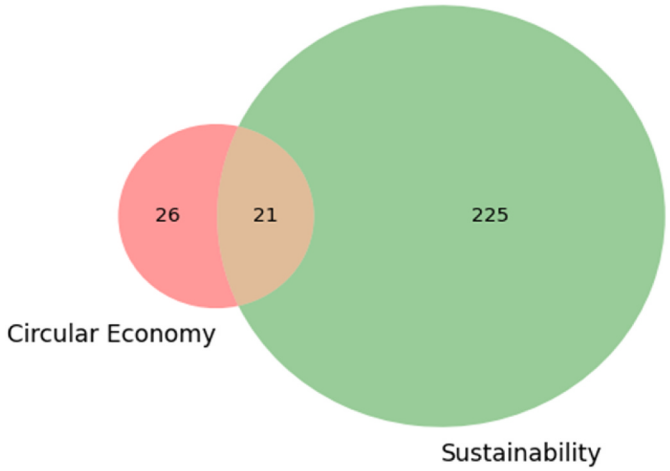


Fig. 5. Overlap between CE and Sustainability mentions on the LinkedIn profiles of UK Luxury fashion companies.

Table 4
Number of UK luxury fashion companies mentioning circular or sustainable keywords on their LinkedIn profiles.

Term	Number of companies
Circular Economy	26
Sustainability	225
Recycle	26
Reduce	17
Repair	10
Reuse	7

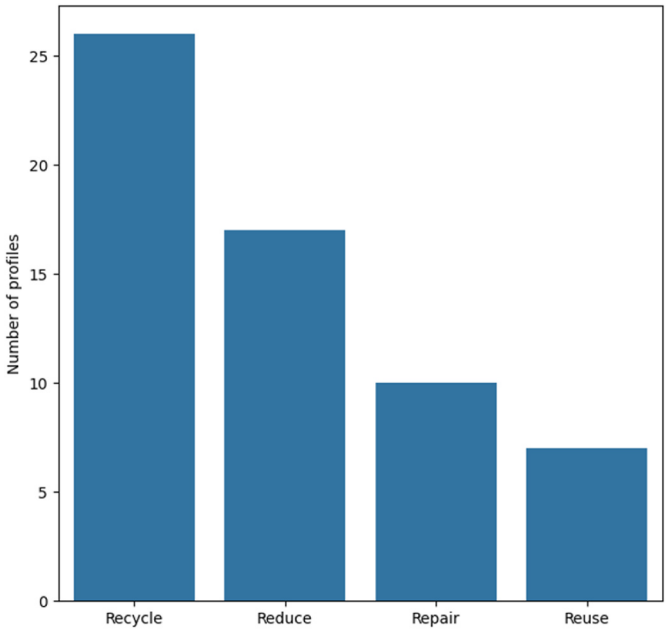


Fig. 6. Number of R strategies mentions found on the LinkedIn profiles of UK luxury fashion companies.

explored in promoting circularity, aligning with existing literature (Henninger et al., 2019; Pal and Gander, 2018; Rosário et al., 2024). Some of the companies explored also focus on promoting reclaimed cashmere products, turning waste into new luxury collections. However, while reuse aligns with circular economy principles and sustainability goals, some brands remain hesitant due to concerns over maintaining brand premium and exclusivity (Henninger et al., 2017; Kirezli and Tuzcu, 2024; Yadav et al., 2024).

The repair practices reinforce the luxury sector's commitment to extending product lifespans and contribute to SDG 12 by reducing waste (Pal and Gander, 2018). Some of the companies explored offer extensive repair and restoration services, ensuring their products remain in use for extended periods. For instance, one brand repairs and rewaxes tens of thousands of jackets annually, prolonging the life of their products and reducing the need for new purchases. Offering warranties and free repair services has become a crucial part of maintaining customer loyalty while reinforcing sustainability. These services ensure that luxury items remain in use for longer periods, reducing the need for new production and minimising environmental impact (Abdelmeguid et al., 2024; McQueen et al., 2022). However, convincing consumers to repair instead of replace can be a challenge, especially in an industry that often emphasises novelty.

5.2. Sustainability and circular economy trends in UK luxury fashion

The empirical interpretation of the most salient words in each of the five topics resulted in the formulation and identification of the 5 sub-domains of the luxury fashion industry, including 5.1 Artful Creations

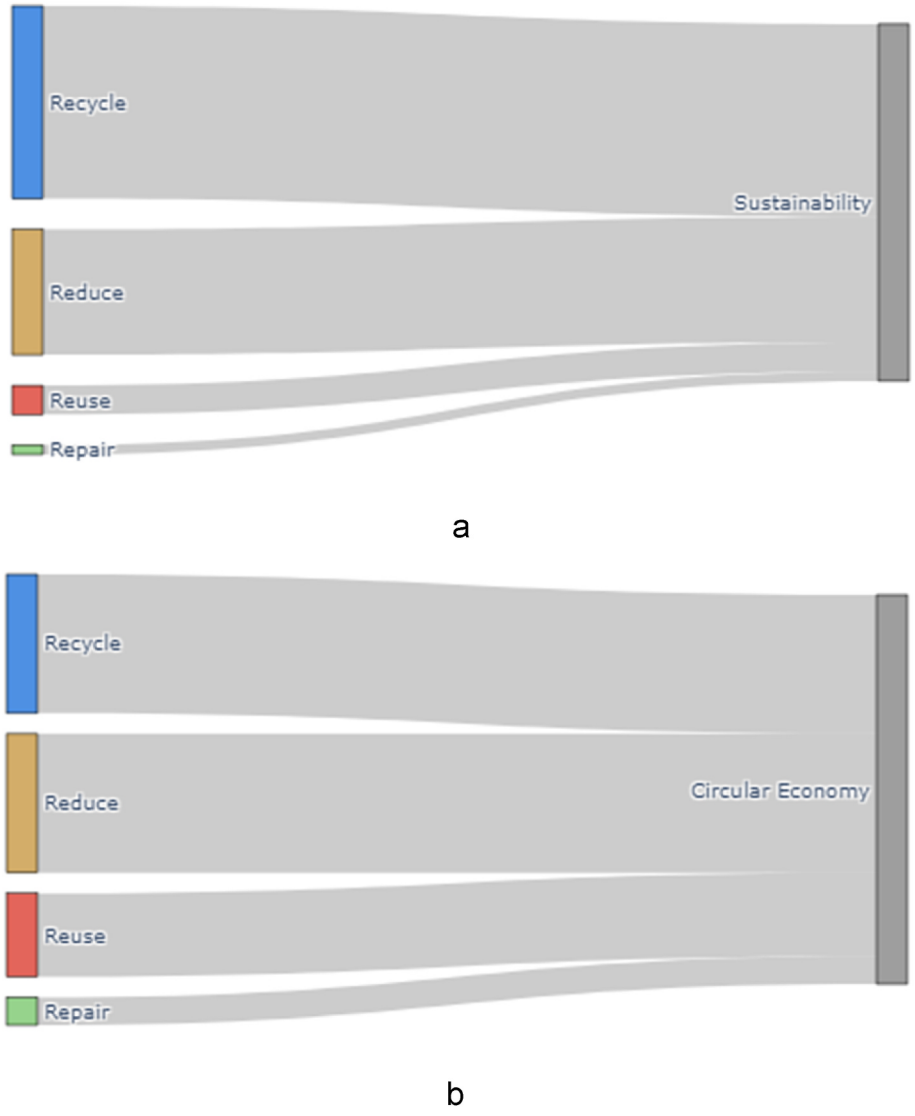


Fig. 7. Co-occurrence of R-strategies and mentions of (a) Sustainability and (b) Circular Economy on the LinkedIn profiles of UK Luxury fashion companies.

in Fashion, 5.2 Time-Honoured Craftsmanship, 5.3 The Art of Style and Design, 5.4 The Pinnacle of Retail Excellence, and 5.5 A Personalised Style Experience. The alignment between these five identified topics, the characteristics of traditional business models of luxury brands, and the principles of sustainability and circular economy is evident.

5.2.1. Artful Creations in Fashion

Luxury brands are leveraging artistic elements to distinguish themselves in the market. By incorporating creative and artistic elements into their creations, luxury brands appeal to traditional clientele and attract a more diverse audience. For example, as highlighted by Zelenskaya et al. (2022), collaborating with celebrities, designers, and artists serves as a creative and unique strategy, enhancing the perceived value of luxury brands and influencing a broad spectrum of audiences. Moreover, artful creations can incorporate elements of upcycling or repurposing, where existing materials or garments are transformed into new and innovative pieces. This reduces waste and adds a unique, artistic touch to fashion while embracing sustainable practices. Encouraging consumers to value and care for these unique pieces fosters a mindset of responsible consumption, thereby helping to maintain and extend the lives of fashion items (Henninger et al., 2019). Therefore, combining art and fashion is not merely an aesthetic choice but a strategic move with implications for brand visibility and consumer attraction, engagement, and loyalty in the luxury fashion industry.

5.2.2. Time-honoured craftsmanship

Luxury fashion brands are dedicated to traditional craftsmanship. This persistent commitment shapes the core identity of luxury brands, influencing their products, brand narratives, and consumer perceptions. Furthermore, this emphasises that luxury fashion brands tend to invest in skilled employees and time-intensive production processes, ensuring that their products surpass not only in design but also in durability and attention to detail. This is in line with existing literature, underlining that the recognition of luxury brands is frequently attributed to their utilisation of high-quality materials, skilled craftsmanship, and slow production cycles (Jain et al., 2021; Karaosman et al., 2020; Ko et al., 2019). This indicates that luxury fashion brands present qualities that align with sustainability and CE approaches (Angel et al., 2018), without overtly highlighting them on their LinkedIn profiles. Additionally, the focus on craftsmanship is crucial in reinforcing the narrative of exclusivity and heritage associated with luxury brands. It becomes a storytelling tool, enabling brands to communicate the values of tradition, identity, and artisanship and the pursuit of emotional connections with existing and potential consumers (Abdelmeguid et al., 2024; Yoo, 2023). Therefore, in a market saturated with fast fashion and mass production, this differentiation becomes a source of competitive advantage and

establishes a unique positioning in the market.

5.2.3. The Art of style and design

The identity of the luxury fashion sector is predominately shaped by durability, creativity, uniqueness, and aesthetics. Creating a unique style is crucial in the luxury fashion landscape in the UK. Brands work on developing and curating their recognisable and aspirational style that resonates with their target audience. Luxury brands invest significant resources in creating a design beyond current trends, making long-lasting pieces that stand as testaments to craftsmanship (Karaosman et al., 2020). In line with these values, many luxury fashion brands are now aligning with environmentally conscious practices. They are integrating sustainable product development practices, including the use of innovative and eco-friendly materials such as organic fabrics, natural dyes, bio-based materials, recycled textiles, and synthetic (Pencarelli et al., 2019; Yadav et al., 2024). This approach reflects a broader commitment to sustainability while maintaining the high standards of quality and exclusivity that define the luxury market. Moreover, the emphasis on product durability, longevity, and timeless design is crucial in minimising consumption and reducing waste (Thorisdottir et al., 2024). By designing products for durability, ease of repair, and end-of-life recyclability, luxury brands not only enhance their appeal but also contribute to reducing environmental impact. Embracing gender-neutral and timeless designs further supports these sustainability goals, ensuring that products remain relevant and desirable over longer periods. This integration of sustainable practices into luxury fashion underscores a commitment to both high-quality craftsmanship and environmental responsibility. It demonstrates how the sector is evolving to meet consumer values and sustainability standards while reinforcing its traditional values of excellence in design and style (Blasi et al., 2020).

5.2.4. The Pinnacle of Retail Excellence

Luxury brands are committed to developing immersive and exclusive retail experiences, investing considerable effort to ensure that each purchase offers consumers a luxurious and unforgettable experience. This trend goes beyond the products themselves, extending to the ambience, service, and overall atmosphere of luxury retail spaces. As Hagtvedt and Patrick (2009) suggested, luxury brands have a more comprehensive range of categories, leading to diversification strategies. Hence, luxury brands focus on expanding their brand offerings and delivering high-end experiences, capitalising on the potential for pleasure in these brand-consumer relationships (Hagtvedt and Patrick, 2009; Mrad et al., 2020). The brand extension strategies not only cater to a broader customer base but also contribute to their international success and highlight their adaptability to evolving consumer demands and preferences in the luxury fashion industry (Jain et al., 2021).

By prioritising excellence in the retail sphere, luxury brands aim to create lasting impressions and reinforce their commitment to providing a unique and elevated consumer journey. For example, existing literature demonstrates that luxury fashion is witnessing a radical shift through the rapid integration of digital technologies, fundamentally changing how luxury brands engage with consumers, create immersive experiences, and manage their business operations (Aleem et al., 2022; Happonen and Ghoreishi, 2022). The UK luxury fashion brands also recognise the significance of their online presence, enabling access to global consumers. This ensures brand longevity and establishes connections with a more extensive and diverse consumer demographic (Jain et al., 2021; Yoo, 2023). Therefore, luxury brands recognise the importance of creating a desirable and aspirational brand image that resonates with consumers worldwide (Blasi et al., 2020; Keller, 2009). This strategic focus on the retail landscape acknowledges the evolving nature of consumer expectations, positioning luxury fashion brands as leaders in delivering unparalleled, experiential value to their clientele preferences.

5.2.5. A personalised style experience

Luxury brands are moving from generic and one-size-fits-all approaches to embracing personalised customer experiences. This trend aligns with the broader evolution toward consumer-centric business models, emphasising the importance of catering to individual preferences and needs in the luxury fashion landscape. For example, the findings show a greater emphasis placed on women's products than men's in luxury fashion, which may reflect the industry's adaption to market segmentation and consumer preferences. The move towards personalised style experiences enhances customer satisfaction and reflects a strategic adaptation to changing consumer expectations and preferences within the industry. As demonstrated in existing literature, luxury brands are renowned for providing consumers with distinctive and unique shopping experiences and products, hence playing a significant role as symbols of wealth and taste (Mrad et al., 2020). Consequently, consumers of luxury brands often enjoy a profound sense of status and exclusivity (Yoo, 2023). For example, advanced technologies such as AR, VR, and AI are pivotal in creating immersive luxury experiences. This integration of technologies reflects a commitment to staying at the forefront of innovation and meeting consumers' evolving expectations in the luxury fashion landscape (Calaza et al., 2023; Rosário et al., 2024).

5.3. Practical implications

The findings highlight several practical implications for stakeholders in the luxury fashion industry, aligning with SDGs 9 and 12. The industry leaders need to prioritise reducing resource use by focusing on sustainable materials to minimise waste, directly supporting SDG 12. This approach requires refining production processes and improving supply chain transparency to balance exclusivity with environmental responsibility. Effective communication about these practices can shift consumer expectations toward more responsible consumption.

Additionally, adopting reuse models, such as second-hand markets and product rental services, presents an opportunity to reduce waste while generating new revenue streams. Embracing digital technologies like blockchain to verify the authenticity of second-hand items further aligns with SDG 9 by promoting innovative solutions and supporting transparent and efficient processes within the industry. Moreover, brands should invest in repair infrastructure and educate consumers about the benefits of repair versus replacement. Scaling these services while maintaining a luxury experience will require significant planning, collaborations and investments, which aligns with SDG 9 by driving industry advancements and infrastructure development.

Recycling remains a valuable practice but should complement reduction and reuse efforts. Brands should continue developing recycling technologies but must also address challenges related to maintaining product quality and minimising environmental impacts. Clear communication about recycling initiatives should support, rather than overlook, the primary focus on reducing and reusing.

Luxury brands should focus on incorporating artful creation practices to differentiate themselves and appeal to a broader audience. This strategy not only enhances brand value but also promotes responsible consumption, aligning with SDG 12 by fostering sustainable practices through creative and artistic approaches, which can be communicated as part of a brand's commitment to sustainability. Emphasising time-honoured craftsmanship underscores the importance of investing in skilled craftsmanship and high-quality materials. Brands should continue to emphasise their dedication to traditional techniques as a key differentiator in a competitive market, enhancing both product durability and brand prestige. Moreover, integrating circular principles into design processes is crucial. Therefore, luxury brands should focus on creating durable, repairable, and recyclable designs that align with consumer expectations for sustainability, while maintaining their signature style and elegance. This aligns with SDG 12 by promoting sustainable consumption through innovative design practices.

Investing in immersive retail experiences and digital technologies is also essential for engaging consumers and expanding global reach. Luxury brands should enhance their physical and digital retail environments to provide exceptional consumer experiences and strengthen brand loyalty to meet evolving consumer preferences. This supports SDG 9 by driving innovation and infrastructure development within the retail sector. Additionally, offering personalised style experiences through advanced technologies like AR, VR, and AI is essential for catering to evolving consumer demands for personalised shopping experiences and services. This positions brands at the forefront of innovation in the luxury market and aligns with SDG 9.

For policymakers, supporting the development and adoption of advanced recycling technologies through grants or subsidies can drive industry-wide improvements, aligning with SDG 9 by fostering innovation. Clear standards and regulations for recycled materials can help maintain consistency and consumer trust, contributing to SDG 12. Policymakers should also create favourable conditions for sustainable production practices by offering incentives and implementing frameworks for monitoring and reporting waste reduction efforts.

Supporting circular economy models through favourable regulations and consumer education can promote second-hand and rental markets, aligning with SDG 12 by encouraging responsible consumption and production practices. Tax incentives for companies engaging in these models can encourage broader adoption. Investment in repair services should be incentivised, and regulatory frameworks should ensure transparency and fairness in these practices, supporting SDG 9 by driving innovation and infrastructure development in repair sectors.

Promoting traditional craftsmanship and artistic collaborations through grants or initiatives can preserve these valuable practices while supporting sustainability. Encouraging innovation in retail through support for digital infrastructure and e-commerce platforms can facilitate luxury brand expansion and enhance global consumer engagement, reflecting SDG 9 by driving industry innovation. Additionally, fostering advancements in personalised technologies while ensuring strong data protection regulations will be crucial for safeguarding consumer privacy and maintaining trust. This aligns with SDG 9 by promoting technological innovation while respecting privacy concerns.

These practical implications are significantly connected with the TBL approach, which emphasises the balance of environmental, social, and economic outcomes. The industry's shift towards CSR is evident in the adoption of ethical and sustainable practices. Additionally, aligning with the waste management hierarchy by prioritising reduction and reuse over recycling ensures a comprehensive approach to minimising environmental impact. Addressing these practical implications and embracing these frameworks can help align the luxury fashion sector with sustainability goals and consumer expectations, driving positive change within the industry and supporting broader environmental and social objectives. However, for both industry stakeholders and policymakers, it is crucial to foster cross-sector collaborations to accelerate the transition toward a circular economy. Public-private partnerships can drive innovation and provide the necessary infrastructure to support large-scale recycling and reuse initiatives, advancing both SDG 9 and SDG 12.

5.4. Limitations and future research

Acknowledging the approach's strengths, it is essential to recognise the limitations posed by the dataset used for topic modelling. The description section in companies' LinkedIn profiles allows a free-text input with no fixed length. Therefore, descriptions for companies can be as short as five words or as long as 100 words, depending on the companies' preferences. The variability in the length of the description section in the companies' LinkedIn profiles introduced challenges, impacting the model's coherence score. This emphasises the need for a precise interpretation of the findings. Another significant limitation revolves around the data collection as LinkedIn search queries only return the first 1000 results across any of the available filters (People, Jobs, Companies). This requires the search query division into smaller subsets through the application of additional search filters.

Another important point for discussion revolves around the subjectivity of the provided information within social media. More specifically, LinkedIn usually includes less subjective statements compared to opinion-based platforms like X or Facebook. This raises questions about the data quality, but LinkedIn can stand as a solid and valid data source for diverse analytical methods. This approach follows a survey-based approach since the companies usually provide statements on their activities that cannot be directly validated. Additionally, this study aims to map the current business trends in the selected sectors that provide insights into the business and research interests of organisations. Thus, this work provides a detailed view of the topics addressed by the companies in the UK that can affect stakeholders to understand which technologies, tools, and strategies are implemented or at least discussed by organisations as this is also an indicator of organisational interest that affects decision-making. It is essential to mention that "greenwashing" can be a clear problem in studies evaluating corporate data addressing the circular and sustainable performance of organisations. Some businesses will specifically lean on their sustainability credentials or refer to some sustainable aspect they claim to uphold to gain customer trust or new clients when the action has no sustainable benefit. Greenwashing in some instances can benefit a company's public profile, regardless of the amount of pollution a company contributes, its sector, or its size (Zhang et al., 2023). For this reason, this approach does not provide an end-to-end evaluation of the business landscape but instead can act as the starting point of the high-level mapping of trends and potential directions of different sectors and concepts, globally.

Future research could conduct comparative studies across different geographical regions to enhance the generalisability of findings. Investigating luxury fashion industries in various countries or regions would enable a better understanding of regional variations in consumer behaviour, industry practices, and sustainability efforts. Additionally, there is significant potential for this methodology to be applied in fixed time intervals (e.g., 6 months, 1 year) to monitor the evolution of luxury sector trends over time in future work. This approach would allow for ongoing evaluation and adaptation of the study's findings as the industry evolves. Moreover, the study primarily relies on quantitative data analysis. While LDA provides valuable insights into prevalent topics, it may need more depth of qualitative analysis and the exploration of more recent variations of the model. These variations refer to fine-tuned versions that can be more precise in documents (inputs) with specific characteristics. However, the coherence score achieved in this work can be considered as a sufficient starting point for future optimised analysis. Future studies could also employ hybrid methodologies, combining quantitative machine-learning techniques with qualitative approaches. Integrating in-depth interviews, focus group discussions, or case studies can offer richer insights and understanding into luxury fashion brands' motivations, strategic decisions, and the attributes of the identified trends, complementing the quantitative findings.

6. Conclusions

To reveal the trends shaping the landscape of luxury fashion, this study undertook a comprehensive exploration focusing on the United Kingdom. By analysing 1115 LinkedIn business profiles of luxury fashion brands in the UK, machine learning techniques, specifically Latent Dirichlet Allocation, were used to interpret the dominant themes and concepts within this dynamic sector. The analysis uncovered five predominant topics that capture the essence of luxury in fashion, apparel, and textiles. These topics are (1) Artful Creations in Fashion, (2) Time-Honoured Craftsmanship, (3) The Art of Style and Design, (4) The Pinnacle of Retail Excellence, and (5) A Personalised Style Experience. These five topics reflect the diverse and versatile nature of the industry, capturing the essence of craftsmanship, design, retail excellence,

exclusivity, and personalised experiences. The analysis of LinkedIn profiles also revealed intriguing trends within luxury fashion brands in the UK.

Most of the five topics are closely connected to sustainability and circularity, yet only two of the topics explicitly incorporated sustainability as one of their key terms, and none included circularity. Therefore, using the Google Collab Platform and the Python language facilitated a more streamlined and effective data analysis process, enabling the exploration of CE and sustainability within the luxury fashion landscape. The LinkedIn company profiles analysis revealed a growing consciousness of environmental and ethical concerns within the industry. While nearly 20% actively highlighted sustainability, the CE received less attention. Recycling, although the least favoured in the waste management hierarchy, emerged as a dominant focus, raising questions about whether this emphasis reflects brand priorities or consumer expectations. This indicates a need for luxury brands to further shift their CE strategies toward waste reduction and reuse, which offer more substantial environmental benefits.

The evolution of sustainability and circular economy trends in the luxury fashion industry demonstrates both progress and challenges. Over time, the sector has shifted from isolated sustainability initiatives to more integrated business models. The rise of second-hand luxury markets reflects a growing consumer interest in sustainable consumption and reuse, promoting longer product lifecycles. However, the challenge of maintaining the quality and exclusivity associated with luxury goods when adopting recycled materials remains. The adoption of advanced technologies, including AI and blockchain, has further enabled brands to enhance supply chain transparency and strengthen their sustainability claims, aligning with SDG 9 (Industry, Innovation, and Infrastructure).

Luxury brands must continue to innovate, particularly in reuse and repair practices, which are essential for meeting SDG 12 (Responsible Consumption and Production). As digital technologies advance and consumer awareness of sustainability grows, the luxury sector has the potential to lead global efforts in sustainability. This aligns with SDG 9, emphasising the need for continued investment in innovative materials, eco-friendly production processes, and sustainable infrastructure. By embracing such advancements, the industry can reduce its environmental impact and contribute meaningfully to both SDG 9 and SDG 12.

The outcomes of this study underscore the luxury fashion industry's alignment with SDGs 9 and 12. These findings also serve as a valuable resource for industry practitioners, policymakers, and scholars, guiding future discussions and innovations within the luxury fashion domain. Ultimately, the research signifies a step towards a more informed understanding of the industry's dynamics, shaping a path for a sustainable and innovative future.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

CRediT authorship contribution statement

Aya Abdelmeguid: Writing – original draft, Project administration, Investigation, Formal analysis, Conceptualization. **Georgios Tsironis:** Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Mohamed Afy-Shararah:** Writing – original draft, Visualization, Validation, Supervision. **Konstantinos P. Tsagarakis:** Writing – review & editing, Visualization, Supervision, Methodology. **Konstantinos Salonitis:** Writing – review & editing, Validation, Supervision, Project administration.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

References

Abdelmeguid, A., Afy-Shararah, M., Salonitis, K., 2022. Investigating the challenges of applying the principles of the circular economy in the fashion industry: a systematic review. Sustain. Prod. Consum. 32, 505–518. https://doi.org/10.1016/j.spc.2022.05.009.

Abdelmeguid, A., Afy-Shararah, M., Salonitis, K., 2023. Mapping of the circular economy implementation challenges in the fashion industry: a fuzzy-TISM analysis. Circular Economy and Sustainability. https://doi.org/10.1007/s43615-023-00296-9.

Abdelmeguid, A., Afy-Shararah, M., Salonitis, K., 2024. Towards circular fashion: management strategies promoting circular behaviour along the value chain. Sustain. Prod. Consum. 48, 143–156. https://doi.org/10.1016/j.spc.2024.05.010.

Aleem, A., Loureiro, S.M.C., Bilro, R.G., 2022. Luxury fashion consumption: a review, synthesis and research agenda. Spanish Journal of Marketing - ESIC. https://doi.org/10.1108/SJME-06-2021-0105.

Alves, L., Ferreira Cruz, E., Lopes, S.I., Faria, P.M., Rosado da Cruz, A.M., 2022. Towards circular economy in the textiles and clothing value chain through blockchain technology and IoT: a review. Waste Manag. Res. 40 (1), 3–23. https://doi.org/10.1177/0734242X211052858. SAGE Publications Ltd.

Amed, I., Berg, A., Balchandani, A., Hedrich, S., Rölkens, F., Youg, R., Jensen, J.E., Peng, A., 2021. The State of Fashion 2021.

Angel, M., Subramanian, G., Muthu, S., 2018. Environmental footprints and eco-design of products and processes sustainable luxury cases on circular economy and entrepreneurship. http://www.springer.com/series/13340.

Aramendia-Muneta, M.E., Ollo-López, A., Simón-Elorz, K., 2022. Circular fashion: cluster analysis to define advertising strategies. Sustainability 14 (20). https://doi.org/10.3390/su142013365.

Avasthi, S., Chauhan, R., Acharjya, D.P., 2023. Extracting information and inferences from a large text corpus. Int. J. Inf. Technol. 15 (1), 435–445. https://doi.org/10.1007/s41870-022-01123-4.

Becker, K., Lee, J.W., Nobre, H.M., 2018. The concept of luxury brands and the relationship between consumer and luxury brands. Journal of Asian Finance, Economics and Business 5 (3), 51–63. https://doi.org/10.13106/jafeb.2018.vol5.no3.51.

Bhaduri, G., Ha-Brookshire, J., 2017. The role of brand schemas, information transparency, and source of message on apparel brands' social responsibility communication. J. Market. Commun. 23 (3), 293–310. https://doi.org/10.1080/13527266.2015.1040441.

Blasi, S., Brigato, L., Sedita, S.R., 2020. Eco-friendliness and fashion perceptual attributes of fashion brands: an analysis of consumers' perceptions based on twitter data mining. J. Clean. Prod. 244. https://doi.org/10.1016/j.jclepro.2019.118701.

Blei, D.M., Ng, A.Y., Edu, J.B., 2003. Latent dirichlet allocation Michael I. Jordan. In: Journal of Machine Learning Research, vol. 3.

Bocken, N.M.P., Short, S.W., Rana, P., Evans, S., 2014. A literature and practice review to develop sustainable business model archetypes. J. Clean. Prod. 65, 42–56. https://doi.org/10.1016/j.jclepro.2013.11.039.

Borg, D., Mont, O., Schoonover, H., 2020. Consumer acceptance and value in use-oriented product-service systems: lessons from Swedish consumer goods companies. Sustainability 12 (19), 1–19. https://doi.org/10.3390/su12198079.

Buenano-Fernandez, D., Gonzalez, M., Gil, D., Lujan-Mora, S., 2020. Text mining of open-ended questions in self-assessment of university teachers: an LDA topic modeling approach. IEEE Access 8, 35318–35330. https://doi.org/10.1109/ACCESS.2020.2974983.

Caferra, R., Tsironis, G., Morone, A., Tsagarakis, K.P., Morone, P., D'Adamo, I., 2023. Is the circular economy proposed as sustainability in firm mission statements? A semantic analysis. Environ. Technol. Innovat. 32. https://doi.org/10.1016/j.eti.2023.103304.

Calaza, M.G., Varela Casal, C., Valencia, J.M.C., 2023. Second-hand selling apps and the notion of luxury: trend networking and circular economy. International Journal of Fashion Design, Technology and Education 16 (1), 70–78. https://doi.org/10.1080/17543266.2022.2118376.

Centobelli, P., Abbate, S., Nadeem, S.P., Garza-Reyes, J.A., 2022. Slowing the fast fashion industry: an all-round perspective. Curr. Opin. Green Sustainable Chem. 38. https://doi.org/10.1016/J.COGSC.2022.100684.

Cerchia, R.E., Piccolo, K., 2019. The ethical consumer and codes of ethics in the fashion industry. Laws 8 (4). https://doi.org/10.3390/laws8040023.

Chow, P.-S., Chiu, C.-H., Yip, A.C.Y., Tang, A.K.Y., 2018. Springer series in fashion business contemporary case studies on fashion production, marketing and operations. http://www.springer.com/series/15202.

D'Adamo, I., Colasante, A., 2022. Survey data to assess consumers' attitudes towards circular economy and bioeconomy practices: a focus on the fashion industry. Data Brief 43. https://doi.org/10.1016/J.DIB.2022.108385.

D'Adamo, I., Lupi, G., Morone, P., Settembre-Blundo, D., 2022. Towards the circular economy in the fashion industry: the second-hand market as a best practice of sustainable responsibility for businesses and consumers. Environ. Sci. Pollut. Control Ser. 29 (31), 46620–46633. https://doi.org/10.1007/s11356-022-19255-2.

Daglis, T., Tsagarakis, K.P., 2024. A LinkedIn-based analysis of the U.S. dynamic adaptations in healthcare during the COVID-19 pandemic. Healthcare Analytics 5. https://doi.org/10.1016/j.health.2023.100291.
Daglis, T., Tsironis, G., Tsagarakis, K.P., 2023. Data mining techniques for the investigation of the circular economy and sustainability relationship. Resources, Conservation and Recycling Advances 19. https://doi.org/10.1016/j.rcradv.2023.200151.
Dallabona, A., 2014. Brand Extensions into the Hospitality Industry by Luxury Fashion Labels and National Identity: the Cases of Hotel Missoni Edinburgh and Maison Moschino. Nottingham Trent University.
de Aguiar Hugo, A., de Nadae, J., da Silva Lima, R., 2023. Consumer perceptions and actions related to circular fashion items: perspectives of young Brazilians on circular economy. Waste Manag. Res. 41 (2), 350–367. https://doi.org/10.1177/0734242X221122571.
Egger, R., Yu, J., 2022. A topic modeling comparison between LDA, NMF, Top2Vec, and BERTopic to demystify twitter posts. Frontiers in Sociology 7. https://doi.org/10.3389/fsoc.2022.886498.
Ekin, C.C., Polat, E., Hopcan, S., 2023. Drawing the big picture of games in education: a topic modeling-based review of past 55 years. Comput. Educ. 194. https://doi.org/10.1016/j.compedu.2022.104700.
Ellen MacArthur Foundation, 2012. The circular economy in detail. https://www.ellenmacarthurfoundation.org/explore/the-circular-economy-in-detail.
Ellen MacArthur Foundation, 2017. Fashion and the circular economy. https://www.ellenmacarthurfoundation.org/explore/fashion-and-the-circular-economy.
Euratex, 2023. Spring report: analysis of the EU textile & clothing external trade in 2022. www.euratex.eu.
Gan, J., Qi, Y., 2021. Selection of the optimal number of topics for LDA topic model—taking patent policy analysis as an example. Entropy 23 (10). https://doi.org/10.3390/e23101301.
Gardner, T.A., Benzie, M., Börner, J., Dawkins, E., Fick, S., Garrett, R., Godar, J., Grimard, A., Lake, S., Larsen, R.K., Mardas, N., Mcdermott, C.L., Meyfroidt, P., Osbeck, M., Persson, M., Sembres, T., Suavet, C., Strassburg, B., Trevisan, A., et al., 2018. Transparency and sustainability in global commodity supply chains. World Dev. 121, 163–177. https://doi.org/10.1016/j.worlddev.2018.05.025.
Garg, P., Rani, R., Miglani, S., 2016. Mining professional's data from LinkedIn. In: Proceedings - 2015 5th International Conference on Advances in Computing and Communications, pp. 98–101. https://doi.org/10.1109/ICACC.2015.35. *ICACC 2015*.
Gupta, R.K., Agarwalla, R., Naik, B.H., Evuri, J.R., Thapa, A., Singh, T.D., 2022. Prediction of research trends using LDA based topic modeling. Global Transitions Proceedings 3 (1), 298–304. https://doi.org/10.1016/j.gltp.2022.03.015.
Hagtvedt, H., Patrick, V.M., 2009. The broad embrace of luxury: hedonic potential as a driver of brand extendibility. J. Consum. Psychol. 19 (4), 608–618. https://doi.org/10.1016/j.jcps.2009.05.007.
Happonen, A., Ghoreishi, M., 2022. A mapping study of the current literature on digitalization and industry 4.0 technologies utilization for sustainability and circular economy in textile industries. Lecture Notes in Networks and Systems 217, 697–711. https://doi.org/10.1007/978-981-16-2102-4_63.
Harris, J., Begum, L., Vecchi, A., 2021. Business of Fashion, Textiles & Technology: Mapping the UK Fashion, Textiles and Technology Ecosystem.
Henninger, C.E., Bürklin, N., Niinimäki, K., 2019. The clothes swapping phenomenon – when consumers become suppliers. J. Fash. Mark. Manag. 23 (3), 327–344. https://doi.org/10.1108/JFMM-04-2018-0057.
Henninger, C.E., Ryding, D., Alevizou, P.J., Goworek, H., 2017. Sustainability in fashion: a cradle to upcycle approach. In: Sustainability in Fashion: A Cradle to Upcycle Approach. Springer International Publishing. https://doi.org/10.1007/978-3-319-51253-2.
Henry, M., Bauwens, T., Hekkert, M., Kirchherr, J., 2020. A typology of circular start-ups: analysis of 128 circular business models. J. Clean. Prod. 245. https://doi.org/10.1016/j.jclepro.2019.118528.
Hiller, Connell, Kim, Y., Kozar, Joy M., 2017. Introduction to special issue on sustainability and the triple bottom line within the global clothing and textiles industry, 4, 16. https://doi.org/10.1186/s40691-017-0100-6.
Jain, S., Mishra, S., Mukhopadhyay, S., 2021. Critical success factors for luxury fashion brands in emerging markets: insights from a qualitative study. Journal of Global Fashion Marketing 12 (1), 47–61. https://doi.org/10.1080/20932685.2020.1845765.
Karaosman, H., Perry, P., Brun, A., Morales-Alonso, G., 2020. Behind the runway: extending sustainability in luxury fashion supply chains. J. Bus. Res. 117, 652–663. https://doi.org/10.1016/j.jbusres.2018.09.017.
Keller, K.L., 2009. Managing the growth tradeoff: challenges and opportunities in luxury branding. J. Brand Manag. 16 (5), 290–301.
Ki, C.W., Park, S., Ha-Brookshire, J.E., 2021. Toward a circular economy: understanding consumers' moral stance on corporations' and individuals' responsibilities in creating a circular fashion economy. Bus. Strat. Environ. 30 (2), 1121–1135. https://doi.org/10.1002/bse.2675.
Kirchherr, J., Reike, D., Hekkert, M., 2017. Conceptualizing the circular economy: an analysis of 114 definitions. Resour. Conserv. Recycl. 127, 221–232. https://doi.org/10.1016/j.resconrec.2017.09.005. Elsevier B.V.
Kirchherr, J., van Santen, R., 2019. Research on the circular economy: a critique of the field. Resour. Conserv. Recycl. 151. https://doi.org/10.1016/j.resconrec.2019.104480. Elsevier B.V.
Kirezli, Ö., Tuzcu, M., 2024. A touch of circular economy on luxury fashion industry: analyzing the second-hand luxury fashion rental platform in Turkey. In: In Transition to the Circular Economy Model: the Case of Turkey, pp. 57–74.
Knäble, D., Tsagarakis, K.P., 2024. 'Made in Germany' how companies approach circular economy on linked-in. Eur. Plann. Stud. 32 (5), 927–951. https://doi.org/10.1080/09654313.2023.2228343.
Ko, E., Costello, J.P., Taylor, C.R., 2019. What is a luxury brand? A new definition and review of the literature. J. Bus. Res. 99, 405–413. https://doi.org/10.1016/j.jbusres.2017.08.023.
Kukushkin, K., Ryabov, Y., Borovkov, A., 2022a. Digital twins: a systematic literature review based on data analysis and topic modeling. Data 7 (12). https://doi.org/10.3390/data7120173.
Kukushkin, K., Ryabov, Y., Borovkov, A., 2022b. Digital twins: a systematic literature review based on data analysis and topic modeling. Data 7 (12). https://doi.org/10.3390/data7120173.
Lang, C., Zhang, R., 2019. Second-hand clothing acquisition: the motivations and barriers to clothing swaps for Chinese consumers. Sustain. Prod. Consum. 18, 156–164. https://doi.org/10.1016/j.spc.2019.02.002.
Lehew, M.L.A., Patwary, S., 2018. Investigating consumption practices of sustainable fashion bloggers: leading the way or leading astray?. In: Third International Conference of the Sustainable Consumption Research and Action Initiative (SCORAI) https://drive.google.com/file/d/0B5L61s7LfvFNQXBsSVNvdjgteGhRQjlmVUx6S2JTcmZk.
Liu, C., Bernardoni, J.M., Wang, Z., 2023. Examining generation Z consumer online fashion resale participation and continuance intention through the lens of consumer perceived value. Sustainability 15 (10). https://doi.org/10.3390/su15108213.
Macgregor Pelikánová, R., Sani, M., 2023. Luxury, slow and fast fashion: a case study on the (un)sustainable creating of shared values. Equilibrium. Quarterly Journal of Economics and Economic Policy 18 (3), 813–851. https://doi.org/10.24136/eq.2023.026.
MacGregor, R.K., Sroka, W., Pelikánová, R.M.G., 2020. The CSR perception of front-line employees of luxury fashion businesses. Organizacija 53 (3), 198–211. https://doi.org/10.2478/orga-2020-0013.
McKeown, C., Shearer, L., 2019. Taking sustainable fashion mainstream: social media and the institutional celebrity entrepreneur. J. Consum. Behav. 18 (5), 406–414. https://doi.org/10.1002/cb.1780.
McQueen, R.H., McNeill, L.S., Huang, Q., Potdar, B., 2022. Unpicking the gender gap: examining socio-demographic factors and repair resources in clothing repair practice. Recycling 7 (4). https://doi.org/10.3390/recycling7040053.
Mielke, S.J., Alyafeai, Z., Salesky, E., Raffel, C., Dey, M., Gallé, M., Raja, A., Si, C., Lee, W.Y., Sagot, B., Tan, S., 2021. Between words and characters: a brief history of open-vocabulary modeling and tokenization in NLP. http://arxiv.org/abs/2112.10508.
Mishra, M.K., Sharma, C., Sharma, S., Kumar, S., Srivastav, A.L., 2024. Exploring antecedents, consequences, research constituents and future directions of circular economy: a predictive analysis in the preview of text mining. Journal of the Knowledge Economy. https://doi.org/10.1007/s13132-024-02184-5.
Morra, M.C., Gelosa, V., Ceruti, F., Mazzucchelli, A., 2018. Original or counterfeit luxury fashion brands? The effect of social media on purchase intention. Journal of Global Fashion Marketing 9 (1), 24–39. https://doi.org/10.1080/20932685.2017.1399079.
Mrad, M., Majdalani, J., Cui, C.C., El Khansa, Z., 2020. Brand addiction in the contexts of luxury and fast-fashion brands. J. Retailing Consum. Serv. 55. https://doi.org/10.1016/j.jretconser.2020.102089.
Murshed, B.A.H., Abawajy, J., Mallappa, S., Saif, M.A.N., Al-Ghuribi, S.M., Ghanem, F.A., 2022. Enhancing big social media data quality for use in short-text topic modeling. IEEE Access 10, 105328–105351. https://doi.org/10.1109/ACCESS.2022.3211396.
Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., Gwilt, A., 2020. The environmental price of fast fashion. Nat. Rev. Earth Environ. 1 (4), 189–200. https://doi.org/10.1038/s43017-020-0039-9.
Office for National Statistics, 2020. Employment in the fashion industry in London - office for national Statistics. https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/adhocs/11367employmentinthefashionindustryinlondon.
Pal, R., Gander, J., 2018. Modelling environmental value: an examination of sustainable business models within the fashion industry. https://doi.org/10.1016/j.jclepro.2018.02.001.
Papamichael, I., Chatziparaskeva, G., Pedreño, J.N., Voukkali, I., Almendro Candel, M.B., Zorpas, A.A., 2022. Building a new mind set in tomorrow fashion development through circular strategy models in the framework of waste management. Curr. Opin. Green Sustainable Chem. 36. https://doi.org/10.1016/j.cogsc.2022.100638. Elsevier B.V.
Papamichael, I., Voukkali, I., Loizia, P., Rodrıguez-Espinosa, T., Pedreño, J.N., Zorpas, A. A., 2023. Textile waste in the concept of circularity. Sustainable Chemistry and Pharmacy 32, 100993. https://doi.org/10.1016/j.scp.2023.100993.
Park, H., Kim, Y.K., 2016. An empirical test of the triple bottom line of customer-centric sustainability: the case of fast fashion. Fashion and Textiles 3 (1). https://doi.org/10.1186/s40691-016-0077-6.
Pencarelli, T., Taha, V.A., Škerháková, V., Valentiny, T., Fedorko, R., 2019. Luxury products and sustainability issues from the perspective of young Italian consumers. Sustainability 12 (1). https://doi.org/10.3390/SU12010245.
Potting, J., Hekkert, M., Worrell, E., Hanemaaijer, A., 2017. Circular Economy: Measuring Innovation in the Product Chain Policy Report.
Rinaldi, F.R., Di Bernardino, C., Cram-Martos, V., Pisani, M.T., 2022. Traceability and transparency: enhancing sustainability and circularity in garment and footwear. Sustain. Sci. Pract. Pol. 18 (1), 132–141. https://doi.org/10.1080/15487733.2022.2028454.
Rosário, A.T., Lopes, P., Rosário, F.S., 2024. Sustainability and the circular economy business development. Sustainability 16 (14), 6092. https://doi.org/10.3390/su16146092.

Sarokin, A.N., Bocken, N.M.P., 2024. Pursuing profitability in slow fashion: exploring brands' profit contributors. J. Clean. Prod. 141237. https://doi.org/10.1016/j.jclepro.2024.141237.
Schofield, A., Magnusson, M., Mimno, D., 2017. Pulling out the stops: rethinking stopword removal for topic models. 15th Conference of the European Chapter of the Association for Computational Linguistics 2, 432–436.
Sharma, K., Sharma, C., Sharma, S., Asenso, E., 2022. Broadening the research pathways in smart agriculture: predictive analysis using semiautomatic information modeling. J. Sens. 2022. https://doi.org/10.1155/2022/5442865.
Strähle, J., 2017. Green fashion retail. Spring. http://www.springer.com/series/15202.
Thorisdottir, T.S., Johannsdottir, L., Pedersen, E.R.G., Niinimäki, K., 2024. Social, environmental, and economic value in sustainable fashion business models. J. Clean. Prod. 442. https://doi.org/10.1016/j.jclepro.2024.141091.
Tsironis, G., Daglis, T., Tsagarakis, K.P., 2022. Social media and EU companies' engagement in circular economy: a LinkedIn approach. Sustain. Prod. Consum. 32, 802–816. https://doi.org/10.1016/j.spc.2022.06.006.
Tsironis, G., Daglis, T., Tsagarakis, K.P., 2024a. The 21 most practiced RE-s of circular economy from LinkedIn company profiles on a global scale. Resources, Conservation and Recycling Advances 21. https://doi.org/10.1016/j.rcradv.2024.200202.
Tsironis, G., Daglis, T., Tsagarakis, K.P., 2024b. The circular economy through the prism of machine learning and the YouTube video media platform. J. Environ. Manag. 368. https://doi.org/10.1016/j.jenvman.2024.121977.
Tsironis, G., Tsagarakis, K.P., 2023. Global online networking for circular economy companies in fashion, apparel, and textiles industries, the LinkedIn platform. Curr. Opin. Green Sustainable Chem. 41. https://doi.org/10.1016/j.cogsc.2023.100809. Elsevier B.V.
UKFT, 2023. The fashion and textile industry's footprint in the UK: executive summary. https://www.ukft.org/industry-footprint-report/.
WRAP, 2023. Textiles 2030: Annual Progress Report 2022/23.
Xue, Y., Kambhampati, C., Cheng, Y., Mishra, N., Wulandhari, N., Deutz, P., 2024. A LDA-based social media data mining framework for plastic circular economy. Int. J. Comput. Intell. Syst. 17 (1). https://doi.org/10.1007/s44196-023-00375-7.
Yadav, S.S., Kar, S.K., Trivedi, S.K., 2024. Investigating emerging trends in sustainable fashion research: topics, challenges, strategies, and future directions. IEEE Trans. Eng. Manag. 71, 5600–5615. https://doi.org/10.1109/TEM.2024.3362403.
Yang, N., Jo, J., Jeon, M., Kim, W., Kang, J., 2022. Semantic and explainable research-related recommendation system based on semi-supervised methodology using BERT and LDA models. Expert Syst. Appl. 190. https://doi.org/10.1016/j.eswa.2021.116209.
Yoo, J.J., 2023. Visual strategies of luxury and fast fashion brands on Instagram and their effects on user engagement. J. Retailing Consum. Serv. 75. https://doi.org/10.1016/j.jretconser.2023.103517.
Yu, D., Xiang, B., 2023. Discovering topics and trends in the field of Artificial Intelligence: using LDA topic modeling. Expert Syst. Appl. 225. https://doi.org/10.1016/j.eswa.2023.120114.
Zaman, K.A., Zaman, K., 2023. Note on cross-panel data techniques. In: Latest Developments in Econometrics (Vol. 1, Issue 1).
Zelenskaya, E., Druzhinina, E., Berezina, A., 2022. Brand artification beyond luxury: evidence from Russian brand-and-artist collaborations. Creativ. Innovat. Manag. 31 (4), 710–721. https://doi.org/10.1111/caim.12515.
Zhang, K., Pan, Z., Janardhanan, M., Patel, I., 2023. Relationship analysis between greenwashing and environmental performance. Environ. Dev. Sustain. 25 (8), 7927–7957. https://doi.org/10.1007/s10668-022-02381-9.
Zide, J., Elman, B., Shahani-Denning, C., 2014. Linkedin and recruitment: how profiles differ across occupations. Employee Relat. 36 (5), 583–604. https://doi.org/10.1108/ER-07-2013-0086.



https://dspace.org/

Insights into sustainability and circular economy trends in luxury fashion: a LinkedIn topic modelling study

Abdelmeguid, Aya; Tsironis, Georgios; Afy-Shararah, Mohamed; Tsagarakis, Konstantinos P.; Salonitis, Konstantinos

2024-12
Elsevier
https://doi.org/10.1016/j.clrc.2024.100228
Abdelmeguid A, Tsironis G, Afy-Shararah M, et al., (2024) Insights into sustainability and circular economy trends in luxury fashion: a LinkedIn topic modelling study. Cleaner and Responsible Consumption, Volume 15, December 2024, Article number 100228

Downloaded from a DSpace repository. https://dspace.org/