


RESEARCH ARTICLE

Business strategy and innovative models in the fashion industry: Clothing leasing as a driver of sustainability

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Abstract

The fashion industry is ranked as the second largest cause of environmental pollution. In this context, circular business models emerge as key tools to address the negative impacts of the textile industry. The aim of this work is to identify alternatives to the currently dominant model followed by fast fashion, through the proposal of a circular business model based on leasing. The methodology of the work, based on the take-make-waste model, is based on a multicriteria analysis with the local–global approach using academic experts and fashion and retail experts. The results show that the criteria of the access-based model and best care are the most relevant. The highest sustainability value is assigned to leasing, which guarantees ethical conditions for workers, followed by the use of raw materials (recycled or bio-based materials) and the reduction of overproduction. The implications of this work determine that leasing can support circular fashion and that the social component of sustainability should be given more attention in production models. Strategic partnerships and sharing platforms are tools that can support a real transition of the fashion industry towards sustainability.

KEYWORDS

business strategy, circular fashion, innovation, leasing, multi-criteria decision analysis, sustainability

1 | INTRODUCTION

The Ellen MacArthur Foundation (2013) described the circular economy as “an industrial system that is restorative or regenerative”. More specifically, in the circular economy, the traditional end-of-life is replaced by practices of reduction, reuse, repair, remanufacturing and recycling (Pinheiro et al., 2022; Sawe et al., 2021). SDG 12 aims to

reduce the ecological footprint by improving production and consumption patterns of goods and natural resources and is positively influenced by circular economy practices (Roy et al., 2022; Viles et al., 2022). However, consumers tend to own more clothes than they actually need (Zhou et al., 2021). This over-consumption of clothes means that the sector is responsible for 10% of global CO₂ emissions and produces about 20% of global wasted water, whereas 85% of textiles end up in landfills or are incinerated (United Nations Climate Change, 2018). It is, therefore, suggested that the fashion industry wears the circular economy and sustainability, particularly towards achieving SDG 12 (Morone et al., 2023). The circular

Abbreviations: A, alternative; AHP, analytic hierarchy process; AVG, average; CR, consistency ratio; E, expert; M, make; MCDA, multicriteria decision analysis; PSS, Product Service System; SDG, Sustainable Development Goal; T, take; T&C, textile and clothing; W, waste.

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approach to fashion aims to extend product life, reduce the demand for new resources and maximise the value of the resources consumed. A change that also requires the extensive involvement of customers (Elf et al., 2022) but also by companies (Kazancoglu et al., 2020). In this way, sustainable supply chain management is an approach that is necessary for the textile and clothing (T&C) sector (Chowdhury et al., 2023; Fontana et al., 2024).

The literature has proposed several circular business models for textiles. The first classification identifies four models (Bocken et al., 2016): i) Longevity and durability, ii) Access-based models (including renting, leasing and garment sharing), iii) Collection and resale and iv) Recycling and reuse of materials. Another classification identifies three models (Huynh, 2022): i) a blockchain-based model, focusing on material and product traceability in the supply chain; ii) a service-based model, focusing on the leasing, renting and subscription of garments; and iii) a demand-driven pull model, counteracting fast fashion. Access-based models aim to reduce resource utilisation by increasing the utilisation rate of the product stock (Coscieme et al., 2022) and service-based business models enable the extension of the life cycle of garments through increased reuse of clothes and recycling of textile fibres (Huynh, 2022). Leasing and subscription models may be suitable for items that are unlikely to be used several times, such as clothes for rapidly growing children (Gray et al., 2022). However, circular redesign of clothes, leasing and renting fashion subscription models, textile reuse and recycling are still considered unknown territories for textile companies (Hartley et al., 2022). Thus, the identification of business strategies within the fashion industry appears to be a central issue in the literature in order to achieve sustainable goals (Hageman et al., 2023; Kang et al., 2023).

Thus, the literature suggests that leasing is an option that could be analysed but has not been fully implemented (Bartl & Ipsmiller, 2023; Sacconi et al., 2023; Tsironis & Tsarakis, 2023). For this reason, our literature review highlighted a gap and that a pragmatic approach is required to assess whether or not this business strategy is suitable. This work aims to support the development of circular economy models by focusing on leasing in the fashion industry and assessing the perspectives of different stakeholder categories (academic experts and fashion and retail experts). To this end, starting from the factors of the take-make-waste model, weights and values are assessed to measure different sustainable alternatives concerning different sides of the value chain as raw materials, transport, human conditions, waste and production as well as assessing fast fashion. The application of a multi-criteria approach identifies priorities and assesses the feasibility of achieving sustainability in the fashion industry.

The work is divided as follows. A literature review on the topic of circular fashion is proposed in section 2 and the methodology of this work, based on multicriteria decision analysis (MCDA) using different categories of stakeholders, is included in section 3. The results obtained from MCDA for different leasing strategies are proposed in section 4 while the discussions and implications of this work are presented in section 5. The conclusions drawn from the present work are included in section 6.

2 | LITERATURE REVIEW

The T&C sector plays an important role in the European manufacturing industry, generating a turnover of 166 billion € and employing 1.7 million people (European Commission, 2022). The literature pays much attention to the combination of T&C and sustainability through a natural resource-based view (Coppola et al., 2023) and the resolution of social barriers (Shaw et al., 2022). However, it is undeniable that even T&C can be contaminated by the phenomenon of greenwashing (Adamkiewicz et al., 2022).

The exploitation of human resources employed in outsourced production units in low-labour-cost countries is the other primary concern besides water and carbon emissions (Shrivastava et al., 2021). In addition, negative social impacts can be generated throughout the supply chain (Stanescu, 2021) and the unproductive use of garments (Piontek et al., 2020) results in increased waste generation leading to increased landfill storage (Bick et al., 2018).

The challenge is quite complex as the fashion industry has short product life cycles, high product variety, unpredictable and volatile demand and long and inflexible supply chains (Şen, 2008). A sustainable approach within the industry will require the application of the 'take, make, waste' principle in all supply chains, given their degree of complexity and interconnectivity (Brydges, 2021). Consequently, there is a need for fashion brands to implement initiatives to reduce the perceived gap between fashion and sustainability. Such initiatives could include using recycled materials, reducing CO₂ emissions and conserving water or energy (Grazzini et al., 2021). Sustainable fashion solutions come not only from recycling but also from reusing clothes (Kumar et al., 2021). In addition, the use of bio-based products is also desirable, but only if circularity can be demonstrated throughout the entire product life cycle (D'Itria & Colombi, 2022). Particular attention is given to younger generations who seem to show a conscious intention to buy fashion with sustainable characteristics (Pencarelli et al., 2020), evaluating brands based on their production history and their commitment to social responsibility and environmental sustainability, often influenced by Instagram micro-celebrities (Gazzola et al., 2020; Shrivastava et al., 2021).

In addition, companies must pay close attention to consumer demands. In fact, increasingly aware and demanding consumers are no longer satisfied with garments that look good to wear. They also want to know how such garments are produced and to ensure that the ways, times and places of production do not contribute to the deterioration of the planet's environmental conditions and the working conditions of production staff (Pencarelli et al., 2020).

Renting or leasing clothes instead of buying them is a viable option to slow down the resource cycle as this reduces the need for virgin materials and resources. This is known as a PSS (Product Service System) in which the availability of a product is not owned by the customer (Baines et al., 2007). PSS is based on whole life cycle analysis (Sassanelli et al., 2018) and is useful for improving knowledge management (Sassanelli et al., 2021). PSS, like repair, leasing and rental models, provide a new way of extending product life by focusing on usage (Jacometti, 2019). Developing durable and fashionable

clothes and making them available through sharing platforms can change the way clothes are bought and consumed and their environmental impact (Dissanayake, 2022). Retailers can meet customers' needs with fewer garments, decreasing the production of new products and their entry into the market (Kongelf & Camacho-Otero, 2020). Rental and leasing models have proven to be profitable for some segments of apparel, where high-profit margins and lower rental prices can be achieved if the product is rented several times (The Ellen MacArthur Foundation, 2017). Collaborative consumption facilitated by appropriate sharing platforms encourages customers to use a variety of fashion items on a short-term basis, keep up with the latest trends while reducing resource consumption, easily dispose of garments that are no longer desired and prevent these garments from ending up in landfills and continue to reuse them (Dissanayake, 2022). However, specific surveys on consumer habits have shown that an increased cognitive and affective awareness of sustainability does not automatically translate into purchasing behaviour in the absence of policy support (Zhang et al., 2021). In addition, immediate action is needed to develop effective communication strategies (Blazquez et al., 2020), as projections show that circular fashion will be the dominant future trend, with the second-hand market assuming a significant role (Kim et al., 2021). All this highlights the importance of the circular economy in the fashion industry and the need to focus on the product life cycle to demonstrate the positive relationship between circular economy and sustainability (Colucci & Vecchi, 2021). A sustainability bias emerges in the fashion industry, with distorted decisions being made by consumers. An analysis of the circular premium shows that it is verified for clothes that are produced in a worker-friendly manner or made from bio-based materials, and to a lesser extent also with those made from recycled materials. Instead, the result associated with second-hand is negative (Colasante & D'Adamo, 2021). In this way, consumer collectives have the power to change how consumers feel about circular products and raise their willingness to pay a premium for them (Luukkonen et al., 2024).

A circular supply chain is a pre-requisite for the fashion industry (Saccani et al., 2023) and it is therefore necessary to identify new strategies for achieving sustainable targets (Ramamany & Subramanian, 2021). In this context, it is therefore crucial to study the relationship between different categories of stakeholders to identify positive and negative correlation points (D'Adamo et al., 2022; Karadayi-Usta, 2023; Quiles-Soler et al., 2023). Possible synergies could foster a greater sharing of the goals to be achieved.

3 | MATERIALS AND METHODS

Multi-criteria decision analysis (MCDA) is a decision-making process to evaluate and compare different alternatives based on multiple criteria. The goal is to identify the most appropriate strategy among different alternatives to support the development of apparel leasing within sustainable practices. These alternatives compare several features of leasing with the fast fashion solution. Clothing leasing represents a new vision that goes beyond the traditional idea of ownership.

Instead of buying clothing to wear only occasionally, leasing offers the opportunity to rent high-quality clothing for a specific period, helping to reduce waste and the accumulation of unused clothing (Gray et al., 2022; Monticelli & Costamagna, 2023).

The decision-making process (Figure 1) is based on the identification of academic experts (section 2.1) whose contributions allow for a comparison of the alternatives chosen to analyse the different leasing characteristics (section 2.2). The alternatives are evaluated based on specially selected criteria (section 2.3). The analytic hierarchy process (AHP) based on academic expert judgement allows the criteria to be assigned a weight (section 2.4). A new selection step involves the selection of fashion and retail experts (section 2.5) who assign values to the criteria for each alternative examined (section 2.6).

The aggregation phase of the different evaluations makes it possible to construct a row vector, which deduces the weight of the criteria and is thus obtained by the academic experts, and a column vector, which proposes the values for each alternative according to the examined criterion obtained by the fashion and retail experts. The product between the row vector and the column vector identifies a unique value, called sustainability value according to the literature (D'Adamo et al., 2023).

3.1 | Selection of academic experts

Expert selection plays a key role in the quality of AHP analysis. This study involved a panel of 10 academics (D'Adamo et al., 2023) who were selected as follows. An initial screening process was carried out in which the Scopus database was consulted and authors with backgrounds in sustainability and circular fashion were identified. It was verified that these authors had at least ten years of experience and an email was sent to them, explaining the purpose of the work, and the methodology used and indicating that only the first 10 positive responses are considered (Table S1). Regarding the gender of this sample, it was 30% female.

3.2 | Description of alternatives

The fashion context is constantly evolving, and with it grows the importance of adopting sustainable practices that take into account the environment and social conditions. Clothing leasing emerges as a creative and environmentally friendly response to these challenges (Buchel et al., 2022; Johnson & Plepys, 2021). In order to assess the contribution of leasing to the sustainability challenge, six distinct scenarios, each describing a business strategy, were identified within the leasing model applied to clothing. The aim was to identify which aspects of clothing leasing have the greatest potential to positively influence fashion industry behaviour by encouraging choices that respect the environment and the people involved in production. The choice of alternatives included an initial discussion phase with two of the 10 previously selected experts (section 3.1) in order to identify an effective description of the alternatives and to assess that all aspects of sustainability were considered (Table 1). The choice of alternatives

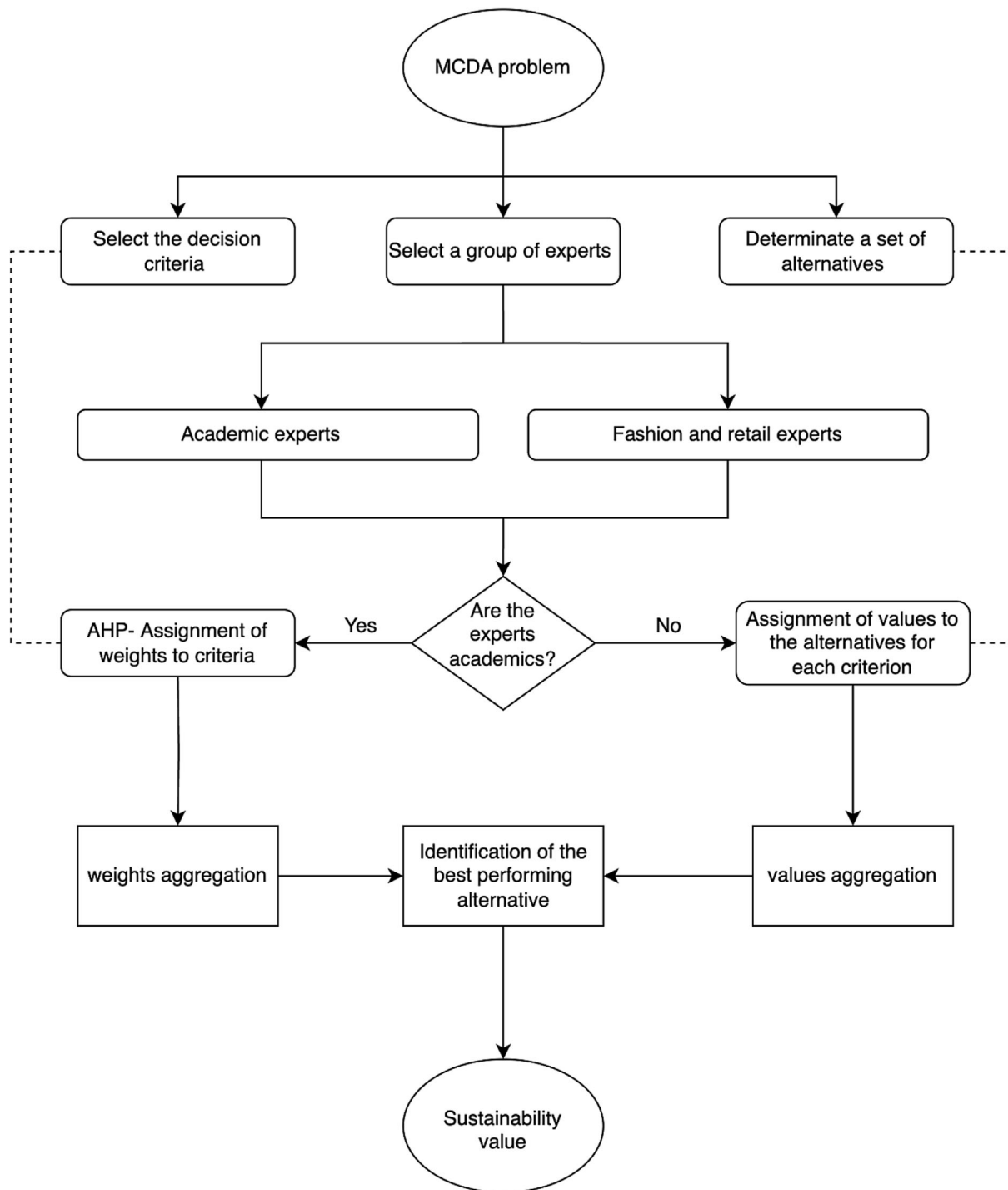


FIGURE 1 Flow chart of the MCDA-based study.

was made in order to consider the different phases of a strategy and to the best of our knowledge we had not identified a framework. Therefore, it was essential to consolidate the choices on the basis of expert judgment.

In addition to the identification of alternatives, a description was also given to help understand the choice that had been made. The different alternatives are listed below.

- Fast fashion: consumer does not care about anything (A1)

This alternative explores the fast fashion segment, in which consumers are driven primarily by convenience and the latest trends, often neglecting sustainability issues. This option considers more relevant the action of a selling and production style such that a consumer prioritises affordability and convenience without fully considering the

TABLE 1 Description of alternatives.

Number	Alternative	Description
A1	Fast fashion	Total waste of products
A2	Raw materials	Leasing that looks at the nature of the raw materials used (e.g. recycled fibers, bio-based materials)
A3	Transport	Leasing looks at the stages by which transportation takes place in the various steps, including the energy perspective
A4	Human conditions	Leasing that looks at human conditions
A5	Decrease in waste	Leasing that looks at decreasing waste concerning also the design phase
A6	Decrease in production	Leasing that looks at the decrease in the production of the same item

environmental or social impacts associated with mass production and accelerated fashion cycles.

- Leasing that looks at the nature of the raw materials used (A2)

This option focuses on promoting the sustainability of raw materials used in the fashion industry through a leasing approach, specifically through the sale of 100% sustainable garments on specific platforms. This approach aims to incentivise companies to produce clothing using environmentally friendly and sustainable materials, thereby increasing their profit opportunities. This alternative recognises that this strategy offers an opportunity to push companies toward adopting greener and more responsible materials in the production of their products. This transition can help reduce the use of non-renewable resources and limit the overall environmental impact. This perspective is based on the idea that the choice of raw materials plays a key role in creating sustainable products in the life cycle of the products themselves.

- Leasing that looks at the stages by which transportation takes place in the various steps, including energy perspective (A3)

This alternative focuses on optimising transportation at different stages of the production process through the leasing model. This option recognises that energy-intensive transportation can have a significant impact on the environment. Here, the focus is on reducing carbon emissions and improving energy efficiency during the transportation of raw materials and finished goods, contributing to a more environmentally sustainable fashion industry.

- Leasing looking at human conditions (A4)

This alternative focuses on the social aspect of sustainability in the fashion industry through the leasing model. This option recognises the importance of ensuring ethical and fair working conditions

TABLE 2 The description of the criteria.

Number	Criteria	Description
TAKE		
T1	Recycled natural fibers	Promote the use of natural fibres, avoiding fabric blends
T2	Quantifying emissions	Quantify the effects of manufacturing operations on the environment
T3	Reducing emissions	Reduce the influence of production on the environment, such as by reducing wastewater or the amount of chemicals used in dyeing procedures.
T4	Production transferred	Transfer employees to bring them closer to raw material suppliers
MAKE		
M1	Seasonless collection	Changing seasonal collections to non-seasonal collections
M2	Waste-free design	Use design and branding strategies that help products maintain their value in secondary markets
M3	Sustainable relationships	Establish relationships with manufacturers to promote more environmentally friendly procedures in garment production facilities
M4	Production monitoring	Work with intermediaries to facilitate supervision and monitoring of production facilities.
WASTE		
W1	Access-based model	Create in-house garment rental and/or resale programs, or partner with start-up companies to extend the life of garments
W2	Best care	Encourage customers to take care of their clothes by washing them less frequently and/or mending them when necessary
W3	Withdrawal of clothing	Establish or expand clothing pickup initiatives.
W4	Investing in textile recycling	Investing in textile recycling initiatives to promote circularity and reduce landfill waste

throughout the entire production chain. Here, the goal is to push companies to commit to the welfare of workers by eliminating exploitation and poor working conditions in order to sell such products in leasing platforms.

- Leasing that looks at decreasing waste concerning the design phase (A5)

This alternative focuses on reducing waste in the fashion industry through the leasing model. This option evaluates the opportunity to reduce the textile waste problem through a design approach that takes into account the longevity, repairability and recyclability of

products. The goal is to push companies to create garments with a longer lifespan and encourage reuse or recycling at the end of the life cycle.

- Leasing that looks at the decrease in production of the same item (A6)

This alternative focuses on reducing overproduction in the fashion industry through the leasing model. This option recognises the problem of excessive garment production that often leads to waste. Here, the focus is on promoting leasing models that reduce excess production, encouraging companies to focus on quality rather than quantity and contributing to a more environmentally and economically sustainable industry.

3.3 | Description of the criteria

With regard to the choice of criteria, three categories were identified (Brydges, 2021; The Ellen MacArthur Foundation, 2023): take (the collection of raw materials), make (the production of garments) and waste (the use and subsequent disposal of garments).

Also in this step of the work, in the absence of a reference model, criteria were chosen to describe each category. In order to validate the choices made, the same two experts were used as proposed in section 3.2.

However, at this stage, not only was a description of the criteria chosen but the same number of criteria was identified for each category. Furthermore, considering that the number of criteria identified was 12 (Table 2), the local-global priority method was chosen (D'Adamo et al., 2022). This method allows a large number of criteria to be compared and consists of several AHPs, namely one to compare categories (category priority) and three to compare criteria within each alternative (local priority). The product of category priority and local priority determines the global priority, which compares the 12 criteria in a single ranking.

In the take phase, fashion industries extract raw materials to make new products, but this has impacts on public health and the environment. Some brands are adopting recycled fabrics or natural fibres to reduce environmental impact, but measuring environmental footprint and implementing sustainability initiatives remain challenges, especially for smaller brands. Growing consumer demand for sustainable products is pushing the industry toward greener solutions.

In the making phase, fashion brands face challenges in shifting to more circular practices. Trend- and cost-driven fast fashion makes design for circularity difficult. Some independent brands are taking a design-driven approach, creating high-quality garments that last a long time and are seen as investments. Some brands are also adopting permanent collections to focus on quality and supply chain management. On the production side, brands seek to improve practices by collaborating with intermediaries to ensure better working conditions and sustainability.

At the waste stage, fashion brands are exploring sustainable consumption patterns to reduce textile waste. Some offer repair services or garment take-back programs, while others encourage consumers to take care of their clothes. However, many brands, especially small brands, are struggling to develop rental or resale initiatives in-house. Future investments could regulate second-hand sales and promote greater durability of garments.

3.4 | Analytic hierarchy process

The AHP uses the Eigenvalue method, in which each criterion is associated with a priority level, assigning higher weights to the most relevant criteria. AHP is an established method in the literature for sustainability-related issues (D'Adamo et al., 2023; Hendiani et al., 2022). To collect pairwise comparisons, an Excel file was administered to each of the 10 experts (Table S1) and they were given the opportunity to participate in an online meeting to discuss any concerns and to propose comments. The survey was conducted between June and July 2023. The experts had to fill out a 3×3 matrix to evaluate the categories and three separate 4×4 matrices to evaluate the local priorities. The global priority of each criterion will be obtained from the product between the category priority and the local priorities related to each category. To identify the weights, each expert was asked to assign a score between 1 and 9 in accordance with the literature (Saaty, 2008; Table S2). Pairwise comparisons were performed for all criteria until the matrices were completed. The analysis was considered valid when the consistency ratio (CR) did not exceed 0.10 (Saaty, 2008). This parameter was calculated directly in the Excel file provided to the experts.

3.5 | Selection of non-academic experts

Since no objective data were available to assign values to the criteria for each alternative, a panel of experts was again used, but this time a different group of stakeholders was chosen. In fact, fashion and retail experts with direct roots in the industry, such as consultants, fashion brand managers and designers, were identified. These experts had at least five years of experience and were identified through appropriate social channels (e.g., LinkedIn). Consultants have the ability to influence decisions about new types of clothing and future trends; managers have full awareness and knowledge of costs and business opportunities within the fashion industry; and designers support the development of new clothing lines and the evaluation of new environmentally sustainable materials, which significantly affect the production process (Table S3). Regarding the gender of this sample, it was 60% female.

3.6 | Ten-point value method

The procedure applied at this stage was identical to that previously described for assigning weights to the criteria. The main difference is

TABLE 3 Category priority.

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	AVG
Take	0.13	0.21	0.25	0.20	0.31	0.49	0.31	0.13	0.21	0.16	0.240
Make	0.21	0.13	0.16	0.31	0.20	0.31	0.49	0.21	0.13	0.10	0.225
Waste	0.66	0.66	0.59	0.49	0.49	0.20	0.20	0.66	0.66	0.74	0.535

 Min weight

 Max weight

that at this stage, the experts had to assign values to the alternatives for each of the 12 criteria analysed. The range of values varied from 1 (worst performance) to 10 (best performance), thus following a 10-point scale approach (D'Adamo et al., 2023; Jin et al., 2022). The survey was conducted in September 2023. Experts were sent an Excel describing the alternatives and criteria and could conduct an online meeting to discuss any comments and recommendations. Unlike AHP, there is no parameter to assess the congruence of the values provided. However, even this analysis provides a quantitative judgment and its soundness is based on the experience of experts although it does not present a consistency index.

4 | RESULTS

Section 4 is divided into the identification of the row vector (section 4.1) and the column vector (section 4.2) in order to calculate the sustainability value (section 4.3).

4.1 | Global–local priority

Choosing an alternative in the MCDA methodology requires aggregation of different information. It should be pointed out that in order to maintain the anonymity of the experts, the following tables do not correspond to what is proposed in Tables S1–S3. Once the CR has been verified, the analysis of the AHP results is carried out. Category priority is initially assessed and the three stages are then considered (Table 3).

The results conspicuously see the experts converge on the waste category, which turns out to be not only the most relevant for eight of the 10 experts but also with very significant weights. In fact, its average value is 0.535. The life cycle of a product consists of several phases, and the other two phases have similar weights: take 0.240 and make 0.225. Experts give special attention to the end-of-life because they evidently believe that in the fashion industry, efforts have been made as much in product design as in the choice of materials to be used, energy consumed during the production process and the different stages of production (Papamichael et al., 2022; Saha et al., 2021). Instead, what pertains to circular practices may be subject to improvement, and therefore this stage is assigned the highest importance. However, there are also differing opinions, given that two

experts assigned the least weight precisely to waste, choosing to take in one case and make in the other.

The next step was to examine the results of the individual categories (Tables 4–6). The analysis of the take category shows that nine experts divided the priority between criteria T3 and T1, which have a weight of 0.342 and 0.339, respectively. Emission reduction is the goal that different process steps strive for and is at the same time the parameter that is observed in the overall product life cycle. However, a hindrance to this aspect may be the costs generated at this stage, which could make companies uncompetitive in the market. The development of recycled natural fibres could not only be an environmentally protective solution but also attract consumers to a type of raw material that could distinguish the product.

In the make-category analysis, a clear and total convergence of experts emerges on both the criterion deemed most relevant (M3 with 0.473) and the least relevant (M4 with 0.102). The basic idea is to achieve a resilient supply chain that knows how to be able to follow a pull logic through lasting relationships with upstream and downstream activities in order to trigger a sustainable supply chain. The range between the highest and lowest value (M3 vs M4) turns out to be very significant and is 0.371. In contrast, in the previous category, it was (T3 vs T2) equal to 0.206.

The analysis of the waste category presents different types of values from those found in previous analyses. The range turns out to be much narrower (W1 vs W4) and equal to 0.091 and this result occurs because there is a wide variability in the experts' judgment. For four of them, the W1 criterion is the most relevant with a mean value of 0.296. The other three criteria all get two maximum preferences from the experts, but it is criterion W2 that is considered most important with 0.281. Thus, we can observe that the indication coming from the experts is that the choice of a specific practice does not exclude the sustainable use of the remaining three. In fact, W3 and W4 present 0.230 and 0.205, respectively.

The idea that emerges is to prolong the life cycle of products, as there is a tendency to favour those programs of renting and/or reselling garments in order not to have to create new ones, enable the needs of consumers to be met and support the economic sustainability of businesses. Similarly, emphasis is placed on the best care of products, since the use of a garment also requires attention in the stages of washing and keeping it in suitable places. These criteria are more important than garment take-back, which is nevertheless essential if waste is to be prevented from going to waste and in the worst

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	AVG
T1	0.34	0.33	0.39	0.50	0.39	0.39	0.27	0.31	0.33	0.14	0.339
T2	0.07	0.12	0.14	0.11	0.14	0.14	0.14	0.15	0.08	0.27	0.136
T3	0.48	0.46	0.20	0.32	0.20	0.27	0.39	0.44	0.46	0.20	0.342
T4	0.10	0.08	0.27	0.08	0.27	0.20	0.20	0.11	0.12	0.39	0.182

TABLE 4 Local priority – take.



	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	AVG
M1	0.13	0.27	0.26	0.25	0.19	0.20	0.27	0.28	0.26	0.20	0.231
M2	0.18	0.20	0.15	0.18	0.28	0.27	0.20	0.18	0.15	0.15	0.194
M3	0.61	0.39	0.49	0.50	0.45	0.39	0.39	0.47	0.49	0.55	0.473
M4	0.09	0.14	0.09	0.07	0.08	0.14	0.14	0.08	0.09	0.10	0.102

TABLE 5 Local priority – make.



	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	AVG
W1	0.14	0.10	0.57	0.18	0.55	0.14	0.23	0.27	0.39	0.39	0.296
W2	0.20	0.55	0.18	0.26	0.20	0.27	0.48	0.20	0.20	0.27	0.281
W3	0.27	0.20	0.22	0.42	0.15	0.39	0.17	0.14	0.14	0.20	0.230
W4	0.39	0.15	0.15	0.14	0.10	0.20	0.12	0.39	0.27	0.14	0.205

TABLE 6 Local priority – waste.

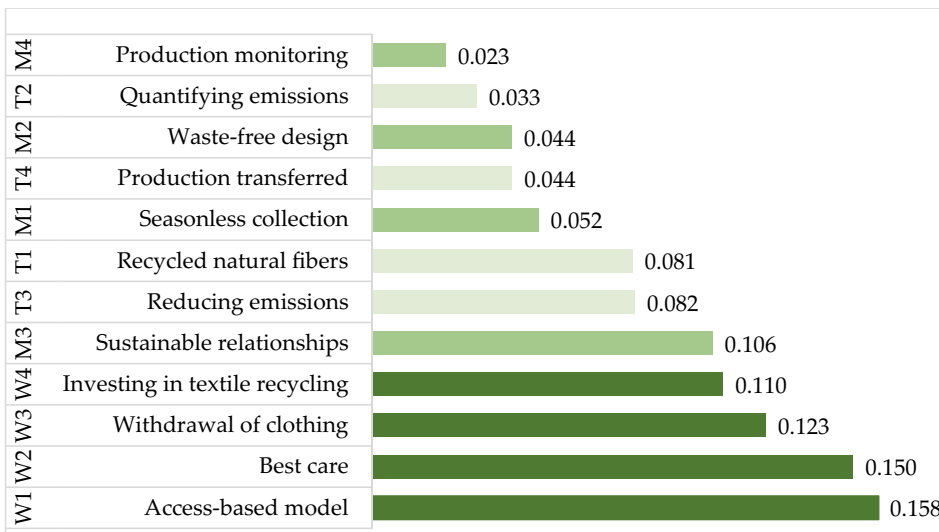


FIGURE 2 Global priority. The following colours are used: dark green (waste), intermediate green (make) and light green (take).

case ending up in landfills. Similarly, it is useful to invest in the recycling of textiles to enable them to be re-introduced into the production cycle.

Once the category priority for each category and the local priority for the criteria in a category have been obtained, the global priority can be obtained as the product between the category priority and

TABLE 7 Value assignment (column vector).

	A1	A2	A3	A4	A5	A6
T1	4.3	8.6	5.0	8.5	7.6	6.4
T2	4.6	8.4	6.8	8.1	7.6	6.4
T3	4.5	7.7	5.7	8.4	6.8	7.4
T4	4	7.4	5.1	8.2	6.1	6.3
M1	4.7	6.9	5.5	8.4	7.0	7.6
M2	4.8	7.7	6.6	7.6	6.9	7.0
M3	5.1	6.9	6.7	8.6	6.2	6.2
M4	4.7	6.0	6.7	8.4	5.5	6.9
W1	5.1	8.3	6.9	8.9	7.1	7.8
W2	4.4	7.1	5.6	8.5	6.3	7.1
W3	4.4	6.3	6.4	7.6	6.3	7.9
W4	5.1	7.9	5.6	8.8	7.1	7.8



the local priority. The results show how significant the weight assigned to waste was, as its value of more than half was distributed among its four criteria placing them in the top four places in the ranking. A result, which can be numerically explained by the variability of the values proposed by the experts, actually reduced the differences in weight among the criteria. Criteria W1 (0.158) and W2 (0.150) have a weight of research one-third of the total, and the difference with the last criterion (M4) is substantial as it stands at 0.135 (Figure 2).

4.2 | Criteria values

Once the weight of the criteria is defined, the values of the different criteria are assigned by evaluating the specific alternatives. It shows how the alternatives are all considered important since the value between 6 and 10 covers 86% of the responses. In particular, the main choice fell on value 7 with 25% of the responses. Experts are also given equal weight at this stage of the work, and the number of experts does not match what is proposed in Table S3. Table 7 proposes the column vector.

The results make it possible to show unequivocally that for all criteria, the lowest value is recorded for alternative A1, where furthermore not all values take a sufficient justification. Three alternatives (A2, A4 and A6) have values always above 6 while alternative A5 only in criterion M4 has a rating below 6, a phenomenon that is repeated in half of the criteria examined for alternative A3. It is therefore not surprising that the highest value is never recorded in the latter two alternatives, which instead occurs for criterion W3 with alternative A6 and criteria T1, T2 and M2 with alternative A2. For all other criteria, alternative A4 excels.

Analysis of the results suggests that experts agree that fast fashion, regardless of the proposed solutions, is not aligned with the concept of sustainability. In addition, they do not consider it significant to continue promoting the purchase of garments in the current form of the fast fashion industry. Similarly, the assignment of values often sees the aspect of human conditions excel, which therefore requires to be emphasised. Focusing on the first four criteria of the global priority (Figure 2) also reveals from a purely mathematical perspective that alternative A4 not only excels but also has a significant gap from the alternatives that follow it. In fact, it has a difference of 0.6 and 0.9 from alternative A2 considering criteria W1 and W4 respectively and 1.4 analysing criterion W2 from alternatives A2 and A6. Where it is not first, it ranks second with a difference of only 0.3 from alternative A6.

4.3 | Sustainability value

The final step of the MCDA was to multiply the row vector (Figure 2) by the column vector (Table 7) by combining the judgments provided by different categories of stakeholders. The objective, then, is to identify the most sustainable attitude by producers, considering the scenario that acquired the highest value concerning the weights of the individual criteria. In addition, in order to provide solidity to the results obtained, an alternative scenario is also considered in which the weights have the same relevance and are not differentiated according to the pairwise comparison proposed by the experts (Table 8).

The results show that there is no difference in the ranking of the alternatives regardless of the weight that is assigned. Thus, the result is strongly influenced by the judgment provided by the non-academic stakeholders, from which the assigned values saw Alternative A4 excel with a value of 8.47 in the scenario with different weights, followed by Alternative A2 with a value of 7.52. It thus emerges that five of the six alternatives receive a sufficiently positive rating, although alternative A3 stops at a value of 6.10. In contrast, alternative A1 stops at a value of 4.72. It is important to note that this value is not extremely low, so this could indicate mental resistance or the prevalence of economic interests influencing the overall perception of sustainability.

Finally, in order to have a more complete view of the results it is possible to conduct a disaggregation analysis (Table S24). The finding that emerges is that the four criteria that excelled in the AHP impact between 46% (alternative A5) and 67% (alternative A6) of the MCDA value of all alternatives. In particular, they affect 53% in the top two of the ranking (alternatives A2 and A4). These results will be investigated in the following section in order to provide a critical analysis and comparison with the existing literature.

5 | DISCUSSION

The fashion industry presents many initiatives to tackle climate change. This work highlights the role that leasing can play and

Acronym	Alternatives	Different weights	Ranking	Equal weights	Ranking
A4	Human conditions	8.47	1	8.38	1
A2	Raw materials	7.52	2	7.48	2
A6	Decrease in production	7.26	3	7.11	3
A5	Decrease in waste	6.78	4	6.75	4
A3	Transport	6.10	5	6.09	5
A1	Fast fashion	4.72	6	4.67	6

TABLE 8 Sustainability value.

proposes it as an access-based (Bocken et al., 2016) or service-based model (Huynh, 2022). Thus, it is not proposed as a new architecture, but from this work, it emerges how leasing is a mix of innovation and sustainability that can represent a further alternative to counteracting fast fashion. The mix of innovation and circular models is about future challenges (Papamichael, Chatziparaskeva, et al., 2023), and business models are called to embrace this change (Papamichael, Voukkali, et al., 2023), as sustainability is that blue strategy that can reduce environmental impact in the T&C sector (Colasante et al., 2023). The literature has emphasised the benefits of a circular economy during a global disruption (Dwivedi et al., 2023).

The results of this work reveal that circular business models focused on the social aspects of sustainability in the fashion industry, implemented through leasing, are emerging as predominant business strategies. These models aim to improve worker welfare and promote ethical working conditions. The exploitation of human resources employed in outsourced production units in low-labour-cost countries is the other primary concern besides water and carbon emissions (Shrivastava et al., 2021).

It is pointed out that the human aspect that cannot always be accompanied by numbers such as the environmental (emissions reduction) and economic (turnover increase) dimensions cannot always be quantified numerically and this could lead to less attention to this aspect. However, fostering a more responsible consumption pattern could lead consumers to reward through the circular premium those companies that pay special attention to workers' conditions (Colasante & D'Adamo, 2021).

The MCDA results also highlight the other characteristics of leasing compared to fast fashion. In fact, the use of raw materials might not seem to have a direct correlation with leasing, but it is clear that the choice of a garment could be influenced by the presence of recycled or bio-based raw materials (Rognoli et al., 2022; Wagner & Heinzl, 2020). Hence, leasing could act as a forerunner towards the purchase of such garments, because the challenge of sustainability is mandatory for the fashion industry, avoiding greenwashing phenomena (Adamkiewicz et al., 2022).

Similarly, attention must also be paid to the decrease in production, not as a model of economic degrowth but as an element that does not favour the circular economy rebound (D'Adamo et al., 2022). Products sold through leasing do not add to normal sales channels but in part must replace the models sold, and this obviously has a reflection on production models. Such a different business model implies a change in the strategy of several companies.

Furthermore, this direction moves also the result regarding the decrease in waste at the design stage, since the product is already thought about at the stage when its end-of-life is to materialise. The idea is to reduce resource input and waste by fostering the three characteristics of an ecosystem: craftsmanship, durability and sustainability (Arribas-Ibar et al., 2022). At the same time, starting from the principle 'take, make and waste' (Brydges, 2021), our results show a magnifying lens on the waste phase. In this way, the end of life management is strategic also in the T&I industry.

The only phase that receives less attention in this work is energy. Probably the idea is that transport is not the direct responsibility of fashion companies. An important suggestion is the use of renewable sources and in general the optimisation of the energy aspects of the entire system towards the goal of carbon neutrality (Appolloni et al., 2023).

However, this work shows that leasing is a driver for sustainability in the fashion industry, but it is clear that a not entirely negative assessment is given to fast fashion. This business still has relevance and serious changes to the current system are needed. Some brands find in this business the economic opportunities on which to compete and at the same time not all consumers seem to be attentive to sustainable aspects during the purchase phase. This study does not show the relationship between leasing and slow fashion but points to the need to explore this issue further. Slow fashion is the concept that aims to foster sustainable performance and a change in the core values of the fashion industry (Fletcher, 2010). In this way, it is an alternative to fast fashion in order to propose sustainable solutions (Centobelli et al., 2022; Legere & Kang, 2020). The focus is therefore on quality rather than time, with slower production, an ethical outlook and durable products (Domingos et al., 2022).

As indicated by the study, leasing should not entirely replace the practice of fast fashion; rather, it should act as an effective tool to reduce the environmental impact associated with this fast production model. In everyday practice, the adoption of existing clothing leasing and rental applications in the market can foster a more sustainable approach in the fashion industry. Moreover, it is considered crucial for companies to invest in targeted communication campaigns to showcase sustainable results compared to previous years and marketing strategies that support all consumers. Customer loyalty is considered an important parameter (Fares et al., 2023), but the analysis of the fashion industry must include the impact of e-commerce (SanMiguel et al., 2021; Shen, 2023). Accordingly, the impact of online sales and the optimisation of this sales channel also from a sustainable

perspective should be evaluated in future research directions. Similarly, analyses should be distinguished between regular clothes and branded clothes.

This change can be facilitated through strategic partnerships between manufacturing companies and leasing and rental platforms (Dissanayake, 2022). This can contribute to improving the environmental impact of these companies, encouraging them to adopt more sustainable practices in response to the growing demand for eco-friendly brands within such applications. The presence and promotion of sustainable brands within such applications can positively influence clothing manufacturers to undertake sustainable actions, such as the use of recycled or natural materials, the reduction of CO₂ emissions during production, and the selection of ethical labour, avoiding production in low-cost countries that may involve exploitation.

6 | CONCLUSIONS

Consumers are used to buying clothes at very low prices and doing so frequently, thus generating a significant amount of waste in the textile sector. These low prices are often the result of production that does not consider sustainable practices and thus fast fashion becomes a major problem. Companies are called upon to develop practices that favour circular fashion with the idea that consumers are willing to recognise a circular premium, as sustainable products tend to have a higher value than those made from fossil fuels in the early stages of their market entry. This work shows that leasing can be an innovative and sustainable business strategy within the T&C industry compared to fast fashion.

This work provides important methodological support as it provides useful criteria and alternatives to describe sustainable fashion. The AHP results based on a local-global priority approach assign significant importance to waste overtake and make phases. The access-based model criterion occupies the first position followed by the best-care criterion. The strategic analysis, based on MCDA, shows that all leasing alternatives have a higher sustainability value than fast fashion. The alternative with the highest score is the one that focuses on social sustainability and emphasises the importance of ensuring ethical and fair conditions within the production chain. However, leasing to be sustainable also pays attention to the nature of the raw materials used and aims to reduce the production of the same garment.

Furthermore, some useful managerial implications for companies emerge. Rental programmes or resale of clothing are examples of access-based models and a crucial point of leasing, in the resale of clothing through special applications, is to establish strategic partnerships with different companies in order to prolong the life of the clothing. This study opens up the reflection that strategic partnerships may also concern the shared use of resources through sustainable community models that may also concern waste and energy management, optimising transport stages. This work has some limitations. The results of the MCDA may change if other categories of stakeholders are included or by applying different strategic methods. However, it

would also be useful for companies to know a consumer analysis on the choice of leasing for specific types of clothes. The impact of e-commerce should also be evaluated in a sustainability direction.

Policymakers are called upon to support the conversion of companies towards the goals of SDG 12. It is crucial that the fashion industry moves towards sustainability and leasing, like other circular fashion strategies, can be a driver of sustainability. Furthermore, this work emphasises how important it is to respect working conditions in a sustainable society. People can wear a sustainable garment and/or conceive of a product not as disposable, but as durable. It is crucial that the label of a sustainable product is real and that it does not vanish with the first rain causing a fossil-based production model to emerge.

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All authors equally participated in the definition and writing of this paper.

DECLARATION OF INTERESTS

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.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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