Clothing Brand Value Enhancement Strategies Based on Carbon Peak and Neutrality Goals[*]

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Abstract

Under the guidance of the "dual carbon" goal, the country has entered a new development period of low carbon and green, and brand building and value enhancement have become an important direction of the current market development. As a highly polluting apparel industry, the various apparel brands under its industry must also seize the opportunity for development and low-carbon transformation and become an important force in promoting carbon peak and carbon neutrality. This can be done by enhancing the low-carbon image of the brand, actively exploring the mode and experience of sustainable production and consumption, and vigorously promoting the green transformation of the global fashion industry. In this paper, we first sorted out. We summarised the related research on low-carbon brand value. We explored the problems of apparel brands failing to practice low-carbon development from three basic dimensions: product, brand marketing and internal brand management. We then proposed corresponding solutions and strategies to enhance brand value. The study finds that apparel brands can try to increase innovation investment to create product and service differentiation, improve the internal management mode to enhance the competitiveness of the low-carbon market, and actively fulfil the brand's social responsibility to contribute to the realisation of the national goal of "dual carbon".

Keywords: "Carbon Peaking and Carbon Neutrality"; Clothing Brands; Brand Value; Low Carbon

1 Introduction

With economic and social development, human life and production are caused by a large amount of carbon dioxide and other greenhouse gas emissions, leading to global warming and frequent

climate disasters [1]. Therefore, more and more countries in the greenhouse gas and other energy emission reduction and low-carbon development issues to reach a consensus and seek an effective path to the harmonious coexistence of human beings and nature.2020 September 2020, the Chinese government in the 75th United Nations General Assembly put forward: "China will strive to peak carbon dioxide emissions by 2030, and strive to achieve carbon neutrality by 2060"(referred to as the "dual-carbon" goal) [2]. Apparel enterprises actively implementing a "dual-carbon" strategy is not only to show the active implementation of the "dual carbon" strategy by apparel companies is not only a way to demonstrate the brand's foresight but also a necessary responsibility to comply with the development of the times [3]. Through the enterprise technology innovation and system change to strengthen the construction of the enterprise brand, the use of the brand to lead the concept of low-carbon fashion and lifestyle [4], to accelerate the low-carbon sustainable transformation of apparel brand, and then enhance the brand value. This paper is based on the background of China's "dual carbon" goal, based on existing related research, the "dual carbon" policy into the brand value system, summarises the key factors and dimensions of the research through the method of literature collation and analyses the current brand low-carbon development process. The problems in the process of low-carbon development of brands are also analysed. Unlike previous research, this thesis elaborates on the specific strategies for enhancing clothing brand value in detail. It builds the specific strategies for realising the brand value of clothing brands in the carbon peak, carbon neutral and target stage, which provides an effective reference for the future low-carbon practice of clothing brands.

2 Methodology

This chapter adopts the literature research method, taking the "dual carbon" goal as the research background, starting from the basic point of brand value research and dividing the literature research into two aspects, namely, the low-carbon development of brands and the influencing factors of brand value. Through sorting and classifying the previous research results, the key factors and dimensions affecting the value of fashion brands under low-carbon behaviour are identified, which lays the theoretical foundation for the following research.

2.1 Research on Low Carbon Development of Brands

The brand side can not only play a pivotal role in the "dual carbon", promoting the upgrading of upstream manufacturing processes and the application of raw materials; It can also guide downstream consumers to establish low-carbon values. Low carbon is the core of the "dual carbon" goal, with sustainable socio-economic and environmental development as the ultimate goal. From a product perspective, scholar Li Zhe (2012) proposed that fashion brands fully utilise design methods to practice environmental protection concepts, enrich their products' added value and technological content, improve production efficiency, optimise industrial structure, and attract more consumers to purchase [5]. Scholar Micklethwaite (2022) mentioned that the birth of low-carbon products means that design departments and designers under brands need to integrate green, low energy consumption, low pollution, and recyclable performance into their design behaviour to reduce the impact on nature and the environment throughout the entire product lifespan [6]. From a marketing perspective, foreign scholar Guerreiro (2015) mentioned that compared to ordinary products, brands endow products with low-carbon marketing methods, which

can more easily attract consumers' attention and love and guide them to make low-carbon choices [7]. Domestic scholar Chen Junqian (2014) believes that branded and fashionable low-carbon products align with the essence of sustainable development. In addition, commercialisation and marketisation can more directly integrate into the consumer market, create links with the public, and produce greater social value [8]. Ye Kangwei and Zhang Cheng (2010) proposed that enhancing brand core values requires the joint promotion of enterprise products, technology, services, and other aspects. Under the influence of a low-carbon economy, corporate brands should actively act to convey the common vision and consumption concept of low-carbon energy conservation to internal employees and consumers [9]. From a vision perspective, Hunjet Anica et al. (2022) proposed that the sustainability of fashion brands or products can help the fashion industry formulate relevant strategies and change the way the fashion industry operates and perceives the future [10].

Table 1: Brand low-carbon development research keywords

	Scholar	Research keywords
Product	Li Zhe	Product-added value and scientific-technological means
	Micklethwaite	Green manufacturing, product life cycle
Marketing	Guerreiro	Low-carbon marketing methods
	Chen Jungian	Low carbon marketing concept
Comprehensive	Ye Kangwei et al.	The brand's core value factor
Perspective	Hunjet Anica et al.	Sustainability of brands and products

2.2 Research on the Factors Influencing Brand Value

The research on brand value mainly revolves around a systematic concept formed by the interaction between enterprises, consumers, and stakeholders. Aaker (1996) believes that brand value comes from a brand's product and functional value [11]. In subsequent research, some scholars will focus on the correlation between enterprises and brand value. Xie Hongming and Liu Changyong (2003) believe that technological innovation plays a decisive role in the brand value of enterprises [12]. Wang Junze (2011) proposed to enhance the influence and market share of corporate brands in terms of concepts, reputation, products, and services, thereby enhancing the brand value of enterprises [13].

In addition, in the past two years, some scholars have proposed the construction of brand value based on the low-carbon background, taking the "dual carbon" goal as the essence, leveraging the

Table 2: Factors influencing brand value

Scholar	Research keywords
Aaker	The product value and functional value of the brand
Xie Hongming et al.	Technological innovation
Wang Junze	Ideas, reputation, products and services

joint effect of low-carbon green and brand, and creating new competitive advantages for the brand. In summary, most studies agree that brands need to rely on innovative technologies, low-carbon improvements in product, marketing, and management, and actively fulfil social responsibilities to enhance brand value. However, there is no specific strategy analysis for brand value enhancement or research on the impact of fashion brand value in the context of current carbon reduction goals. This provides some space for this study.

3   Findings and Discussion

Under the current development background of carbon peak and carbon neutral, effectively and smoothly enhancing the value of apparel brands is the key to enterprises' long-term survival and development. According to the above research methods, current clothing brands' brand value promotion strategy under the "dual carbon" background is studied. The research is divided into two parts. The first is to explore the problems in developing clothing brands with a low-carbon background from product, marketing, and management perspectives. Secondly, based on previous studies and previous cases, this paper proposes corresponding solutions to brand development problems. It puts forward strategies for reference in the promotion of the brand value of clothing brands in the "dual carbon" background in the future.

3.1   Optimization of Brand Value Promotion Strategy of Clothing Brand in Product Aspect under the "Dual Carbon" Goal

3.1.1   Product Aspect of Clothing Brand Development Issues

3.1.1.1   Textile Life Cycle Issues

It has been shown that the consumer use of textiles has led to increasing demand for fibres, and at the same time, a large amount of textile waste has been generated. Most of the used textiles are disposed of as solid waste in landfills or incinerated, creating many environmental pollution problems [14]. In terms of current market share, the proportion of sustainable goods produced by apparel brands is still not high, and there is still a lot of room for improvement in the research and development and application of sustainable materials (e.g., Fig. 1); the current textile waste is difficult to form a closed loop of resources, and there is still a need for innovative development of recycling and waste treatment technologies.

Take the textile industry printing and dyeing process as an example. The dyeing and finishing industry has long been accompanied by a large amount of natural resource consumption and wastewater discharge pollution; enterprises are faced with the traditional printing and dyeing technology needs to be updated through technological innovation to effectively improve the level of cleaner production, zero-carbon production and a series of challenges. Enterprise technology innovation is inseparable from the research and development of low-carbon technology related to new talent. The enterprise's independent research and development power is insufficient, and it is difficult to break down the barriers of clothing enterprises in applying low-carbon technology; the formation of a low-carbon technological innovation pressure method of input efficiency is not a high situation.

The effects of textile recovery and recycling did not meet expectations, which is also one of
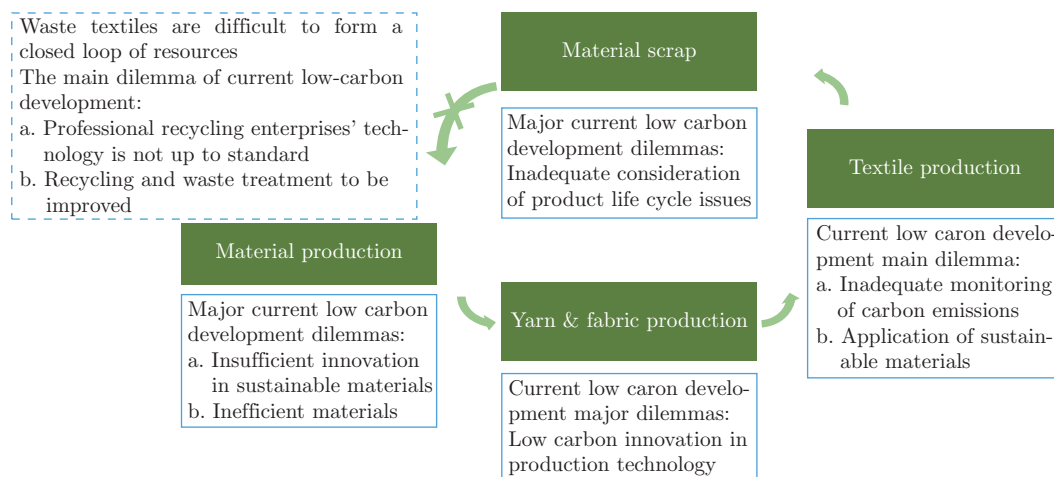
Fig. 1: Problems faced in the product cycle of clothing brands

the main reasons for high carbon emissions in the textile industry. China Circular Economy Association data show that in China, the production of waste textiles is growing at a rate of 10-15% per year. The phenomenon can also be reflected in the inadequate consideration of the life cycle of the product by fashion brands, the lack of frequency of use and value assessment of the product of the detailed exploration, including the later recycling and simplification of the traceability of the product, certification and other links.

3.1.1.2   Brand Carbon Footprint Calculation and Inventory Issues

A carbon footprint is the collection of greenhouse gas emissions caused by a brand, corporate organisation, event, product or individual through transportation, production, consumption, and various production processes. According to the United Nations Environment Program, the fashion industry's carbon emissions account for approximately 2-8% of global emissions. The supply chain's carbon footprint is one of the key reasons why the fashion industry is so environmentally unfriendly and one of the most difficult aspects for brands to overcome in making sustainable changes. Many brands' carbon footprint accounting in the supply chain is limited by technology and other constraints, and there are violations of sustainability standards in the development process, incomplete disclosure of information in the supply chain, and unfair and unmanageable distribution of carbon responsibility in the supply chain.

To summarise, fashion brands must rethink textile recycling, cleaner production and carbon footprint calculation in the context of "dual carbon" and actively meet new challenges through technological innovation. For example, in the incineration of used textiles mentioned in this chapter, Zhang Yu and other scholars have confirmed in their research that the incineration of textiles is not in line with the current concept of low-carbon development and further added the problem of recycling used textiles and its causes [15-16]. Textile reuse is a systematic project. Due to many technical barriers, the current waste recycling industry chain is still incomplete, and the resourceful recycling system needs to be developed and improved, resulting in many waste polyester materials that can not be resourceful. Luo Libin and other scholars in the study constantly try various recycling methods to replace incineration treatment [17]. Regarding the development of brand carbon footprint, Zhang Jiayi and other scholars have also proposed that the accounting and evaluation of the carbon footprint of textile and apparel products are difficult to trace, the accounting process is not transparent, and the results are not efficiently shared, which leads to high accounting costs, lack of supervision of the standardisation of the accounting

process, and inefficient application of the results, which is consistent with the problems found in this paper [18]. Choi, Guo Yan, and other scholars have also proposed setting up a carbon footprint tax and formulating industry standards to address the problem [19-20].

3.1.2 Product Aspect of Clothing Brand Value Enhancement Strategy

3.1.2.1 Enhance the Brand's Green Innovation Capacity

In the low-carbon background, enterprises should first increase their investment in innovation, implement the innovation-driven development strategy, and utilise knowledge, information, technology, management and other innovation elements to reintegrate all kinds of tangible resource elements to realise the low-carbon and green development of enterprises [21]. Under the influence of the "double carbon" policy, apparel enterprises in the wool textile industry are accelerating the exploration of innovative materials, clean production, low-carbon certification, and recycling development of the manufacturing system. Some brands focus on low-carbon, energy saving, and environmental protection as a breakthrough in product innovation and R&D focus; the new products are not only low-carbon fabrics, health, and the body feel lighter, softer and more comfortable, widely favoured by international customers [22]. Some wool textile enterprises in China are also committed to recycling fibre materials to create renewable yarn, reduce the carbon footprint of cashmere clothing, and, with the help of new technologies, create intelligent, clean production lines, greatly reducing industrial pollution emissions and resource usage.

Other brands have begun to seek breakthroughs on the track of new green materials and technology research and development to create virtual garments to meet the trend of consumers being more inclined to high-tech content and high-value-added goods. Unlike the traditional fashion industry, the concept of virtual clothing is more environmentally friendly, does not require production and transportation, the use of computer technology and 3D software, to a certain extent, to reduce the cost of design and carbon emissions, but also more responsive to consumer demand for individuality, to enhance the differentiated value of the brand.

3.1.2.2 Technology-Enabled Low-Carbon Supply Chains

The lack of environmental information and technological backwardness are two prominent problems plaguing the fashion industry's supply chain [23]. The IPCC (United Nations Intergovernmental Panel on Climate Change) pointed out in its report that brands must rely on science and technology to respond effectively to climate change. Science and technology can comprehensively monitor environmental data and compensate for the lack of productivity in the supply chain [24], which can help the sustainable transformation of the fashion industry (Fig. 2).

Apparel brands actively use digital technologies such as big data and cloud computing, which can empower brands to innovate applications and optimise resource allocation to improve production efficiency; they can also accurately predict consumer demand and demand trends to achieve
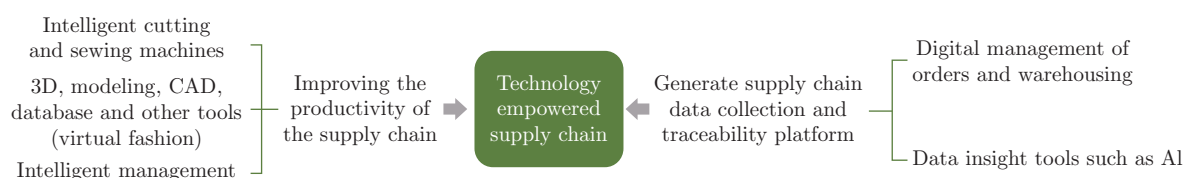

Fig. 2: Specific means of technology-enabled fashion industry supply chain

Table 3: Comprehensive analysis of product brand value enhancement

	Product aspect	References
Problem with product issues	• Inadequate post-processing of textile waste; • High level of chemical pollution from textile waste; • Excessive supply chain carbon footprint; • Incomplete information on carbon footprint accounting	SHIR V K [14] China Association of Circular Economy
Impact of product issues	• The lack of effective recycling mechanisms for apparel brands and the disposal of used textiles exacerbate the waste of energy and materials. • The chemicals used to dispose of used textiles cause damage to water ecosystems. • Excessive carbon footprints negatively impact a company's brand image and reputation. Consumers are increasingly concerned about the environmental responsibility and sustainability of apparel brands. They may be more willing to refuse purchases from companies with high carbon emissions, adversely affecting apparel sales and market share. • Incomplete carbon footprint inventories may negatively impact corporate sustainability trust. Consumers and stakeholders are increasingly concerned about brands' environmental responsibility and sustainability performance. If a company does not conduct a comprehensive inventory, it may be perceived as not paying enough attention to carbon footprint issues, which could damage its reputation and credibility.	Zhang Yu et al. [15] Guo Chunhua et al. [16] Zhang Jiayi [18]
Proposed solutions to address product issues	• Design innovation: using innovation to empower the optimisation of product aspects of apparel brands, optimising the recycling mechanism of textile waste with the help of design innovation, and improving resource utilisation efficiency and environmental friendliness. • Technological innovation: enhance the technological recycling methods of textile waste, utilise technology to break through the barriers of carbon footprint accounting for apparel brands, and improve the accounting and management of carbon footprint for brands. • Promote environmentally friendly textile production technologies: Adopt low-risk and low-pollution dyes, auxiliaries and chemical additives to reduce environmental pollution. • Promote sustainable textile production standards and certification and facilitate the application of environmentally friendly technologies.	Luo Libin et al. [17] Choi T M [19] Guo Yan [20] Zhang Y Z [21] Liu Y L [22]
Research directions needed to address product issues	Textile Recycling; Research on Chemical Textile Recycling Methods; Design of Used Textiles; Closed Loop Textile and Clothing Supply Chain; Standard System for Recycling Used Textiles; Modularized Carbon Footprinting Methods; Carbon Footprinting Accounting and Evaluation; Carbon Footprinting Technology Assessment.	

on-demand production and personalised customisation. In the textile industry, blockchain's data transparency and decentralisation can realise the life cycle management of textile and apparel products, track each product's complete carbon footprint and source, and create branded and trusted carbon labels. In this way, it can enhance the transparency of the textile supply chain and improve the brand's credibility.

3.2 Optimization of Brand Value Promotion Strategy of Clothing Brand in Marketing Aspect under the "Dual Carbon" Goal

3.2.1 Marketing Aspect of Clothing Brand Development Issues

3.2.1.1 Misleading Publicity Issues

On the media platform, many apparel brands have been investigated by market regulators for suspected "environmentally misleading publicity" in response to the Carbon Emission Reduction Program. The brand through the "green, environmental protection, low carbon" and other labels to win the trust of consumers to enhance their brand value, the authenticity and credibility of the publicity content of the lack of key evidence, their products and services do not meet the industry's low carbon standards. Such a marketing approach is not only not conducive to their brand value construction but also affects the development of consumers and the market. Clothing brands should focus on presenting information on the brand's low-carbon environmental protection capabilities, shaping a green brand image, and highlighting the brand's green attributes to improve consumer trust [25].

3.2.1.2 Marketing Strategy Issues

Brand marketing strategies and business concepts in the context of "dual carbon" need to be updated promptly, and many apparel brands still have a blindly optimistic attitude towards traditional marketing methods. In terms of sales channels, there is no reasonable solution to the high-carbon distribution process, and there is insufficient support for the proposed new consumption model of recycling and resale, resulting in insufficient guidance for low-carbon consumption [26]. The research of some scholars on low-carbon marketing has confirmed that low-carbon marketing must be the trend of textile and garment marketing in the future. It is necessary to establish low-carbon marketing concepts in marketing management and carry out low-carbon strategies in products, sales, distribution and promotion, which is of great significance to improve the competitiveness of enterprises and expand the popularity of fashion brands in the industry and even in the international market [27].

3.2.2 Marketing Aspect of Clothing Brand Value Enhancement Strategy

3.2.2.1 Communicating Low Carbon Brand Core Values

Brand connotation and core values determine the operation of the brand and support the continuous development of the brand. Fashion brands with low-carbon connotation concepts are even more important signs that distinguish them from other brands. In the low-carbon development track, clothing brands should combine their characteristics, the low-carbon concept into the core value of the brand, the formation of a unique brand DNA, the full realisation of the brand's low-carbon development strategy, the formation of the brand carbon label in the minds of consumers, which can improve the added value of the brand.

Table 4: Comprehensive analysis of Marketing brand value enhancement

	Marketing aspect	References
Problem with marketing issues	• Misleading publicity in the marketing of apparel brands. • Marketing concepts need to be innovated in the context of "dual carbon."	He J Y [25] Bai Y L [27]
Definition of modalities	Defining a clothing brand as having misleading publicity is a complex issue that requires a combination of factors, such as the content of the publicity, the publicity tactics, and the evidentiary support. This usually requires the involvement of laws, regulatory agencies and consumer protection organisations to determine whether the promotion is misleading according to relevant laws and regulations. This dissertation study does not specifically mention how it is defined, and more in-depth research can be conducted in the future.	
Stakeholders involved	Apparel brands, consumers, government, apparel clusters, etc.	
Impact of marketing issues	• Misleading publicity for apparel brands may lead consumers to form false perceptions about a product's performance, quality or environmental impact and make inaccurate purchasing decisions, undermining the trust relationship between the brand and the consumer. If a brand uses exaggerated or false language and promises in its publicity, consumers may question the integrity of the brand and thus lose trust and loyalty to it. At the same time, misleading publicity may lead to unfair market competition, which is not conducive to healthy competition in the market and consumers' right to choose. • Marketing concepts need to be updated promptly; otherwise, they may not be able to meet consumer demand for environmentally friendly products and services, leading to a loss of market share and limiting the brand's long-term development and sustainability.	Wang Y J [26]
Proposed solutions to address marketing issues	• Clothing brands should follow the principles of truthful and responsible marketing. Marketing should accurately reflect the product's features and performance and avoid using exaggerated or false language and promises. Brands should provide clear information and evidence to support consumers in making informed purchasing decisions. • Marketing concepts regarding carbon footprint disclosure, material selection, supply chain management, green packaging, and environmental education can be approached, but these are not specifically mentioned in this thesis. Specific measures of low-carbon innovation for apparel brands can be the direction of future in-depth research.	Jiang Q Y [28]
Research directions needed to address marketing issues	Innovation of low carbon marketing strategy for brands, behavioural response study of low carbon marketing for brands, innovation of marketing strategy in "dual carbon" context.	

The brand's core value should coincide with serviceability, try our best to maintain the brand image, and further deepen the low-carbon concept under the initiatives of innovative products, organisational activities, marketing experience, and participation in public welfare. Finally, to convey low-carbon ideas to consumers, advocate personal low-carbon consumption so that the brand's concept is deeply rooted in people's hearts.

Fashion brands must grasp the low-carbon concept and marketing strategies to coordinate their development. The transmission of the brand's low-carbon core value is mainly based on low-carbon product production to meet the green consumption needs of the target customer groups and, at the same time, to produce certain guidance for consumers. Based on the customer perception model of brand equity, brands can put carbon labels on their products, and consumers can track the carbon footprint of specific aspects of the product and other information so that consumers can perceive the efforts made by the brand for low carbon. Through the transmission of the core value of low-carbon fashion, the loyalty of consumers to green consumption behaviour will also increase, thus strengthening the brand's perception and enhancing the brand image and value.

3.2.2.2   Green Marketing Improves the Energy Efficiency of Brand Communication

Clothing brands can develop relevant product marketing strategies based on the development points of the "dual carbon" target in different periods to minimise resource consumption during the marketing period as much as possible [28], Predict consumer attention trends, capture and proactively create personality points, and create new markets through innovative product concepts. Clothing brands also need to carefully consider the internal business model, organisational structure, and operational processes of the brand based on consumer purchasing preferences. To address these issues, brands can innovate consumer green experiences through the development of technology, Collaborate with other brands or artist teams, such as building surreal digital virtual spaces, utilising CG and other technologies to create fully digital "zero carbon" activities and enhance brand reputation and market competitiveness through brand synergy.

3.3   Optimization of Brand Value Promotion Strategy of Clothing Brand in Management Aspect under the "Dual Carbon" Goal

3.3.1   Management Aspect of Clothing Brand Development Issues

3.3.1.1   Carbon Footprint Management Issues

With the emphasis on carbon emissions, more countries have begun implementing carbon disclosure and inventory programs for enterprises. Still, in the program's implementation, it is found that some enterprises do not have a sufficient understanding of carbon footprint and are not proactive in disclosing carbon footprint information. There is a lack of systematic management of carbon footprint accounting. Some enterprises try to hide or disclose unrealistic information about their carbon footprints to pass the test. BCG Boston Consulting Group's "Global Corporate Carbon Inventory Calculation Report 2021" report mentions that only 9% of companies can conduct a complete inventory and calculate all emissions ranges. Only 11% of companies have successfully realised their emission reduction visions over the past five years. Companies participating in the study estimate that the error rate of their carbon emission calculation results is between 30% and 40%. Some brands are still struggling with traceability in carbon footprint research; for example, it is difficult for companies to specify the carbon emission and fuel con-

sumption data of a certain production process. At the same time, because the fashion industry has not yet reached a consensus on the standard carbonisation information, the level of awareness of enterprises in the specific carbon quantification is not in place, and there is no clear carbon emission rights work and system design in the future carbon trading market.

3.3.1.2 Internal Brand Management Issues

Low-carbon management of brands also needs to strengthen low-carbon awareness within the enterprise. The lack of low-carbon work standards and corresponding evaluation systems and incentive systems for the internal management of the brand has led to the lack of low-carbon awareness among the staff [29], which is detrimental to the shaping of the brand's low-carbon core values. In the process of brand building, the enterprise's talent shortage is also becoming increasingly obvious. The phenomenon is not only the quality of supporting human resources to be improved but also the lack of digitalisation and other highly skilled personnel, finance, management, aesthetic design, and other professionals. Xue Yuan and other scholars have confirmed in the study of internal optimisation of footwear and apparel enterprises under the influence of "dual-carbon" that brands need to further improve their internal control system, set up the concept of low-carbon development, strengthen internal management, and research and development of low-carbon technology in the face of technological, policy and other trade dilemmas. Specific measures include setting up an internal management system while focusing on cultivating employees' low-carbon awareness, systematically helping employees to build up a networked low-carbon system, stimulating employees' low-carbon management innovation ability, and focusing on the cultivation of energy-saving talents and implementing environmental responsibility [30].

3.3.2 Management Aspect of Clothing Brand Value Enhancement Strategy

3.3.2.1 Focus on Building a Low-carbon Brand Culture

Brands should establish low-carbon awareness, norms, and values at the current stage. The fashion enterprise culture construction process starts with the relationship between individuals, enterprises, and low-carbon issues and analyses the opportunities and challenges of low-carbon issues. Enterprises can reconfigure their value system through low-carbon culture, internally establish low-carbon concepts and consensus, form corresponding incentive and constraint mechanisms, and then set up a good low-carbon image to realise low-carbon development. At the same time, we should also pay attention to independent governance and the expansion of order in economic activities and competition and strengthen the concept of resource recycling and comprehensive management.

Managing and maintaining talents is very important for the long-term development of clothing brands. In the future, the competition among talents will directly affect the competition among brands, whether it is brand building, product production, marketing and promotion, or after-sales service, which link can not be separated from the promotion of talents with specialised knowledge and technology. In the process of brand building, we should do a good job of talent management, establish a sound welfare system, form a unique talent pool, and pay attention to the training and development of talents. The brand should build the corresponding recruitment procedures to accurately recruit employees who align with the brand's low-carbon culture and organisational philosophy to promote the brand's low-carbon development. People are the basic element to complete the "dual carbon" development of a brand, the first resource and driving force to realise the "dual carbon" goal, and sufficient talent is a necessary condition for the realisation of the "dual carbon" goal.

3.3.2.2   Self-implementation of Low-carbon Social Responsibility

In recent years, more and more fashion brands in China are actively responding to and implementing the "dual carbon" initiative. Low-carbon development has become important to apparel companies' social responsibility [31]. The visualised returns from corporate social responsibility (CSR) investment motivate brands to actively fulfil their social responsibility [32]. Implementing the "dual carbon" policy brings more social responsibility to fashion brands [33]. Brands should try their best to improve carbon footprint management, make the supply chain transparent and open, promote the low carbon concept in activities, and help improve the development of the carbon trading market. They can also cooperate with the Textile Industry Federation and other organisations to innovate carbon-neutral acceleration plans and promote energy-saving and carbon-reduction programs in the textile industry. Under the influence of the "dual carbon" strategy, ESG has become an indispensable path of support, and the ESG report comprehensively reflects the company's concepts and practical actions on the environment, society and corporate management. By standardising the technical and certification requirements for sustainable materials, sustainable production processes, sustainable packaging and sustainable products, incorporating the environmental and health performance of products into the product design process, continuing to promote the release of environmentally friendly products, realising the efficient use of resources, and reducing environmental impacts, apparel brands disclose to the outside world the results of their sustainable development in terms of the environment, society and quality of the company through the ESG report. The ESG report discloses to the outside world the results of sustainable development in terms of environment, society and corporate quality. It visually conveys to consumers the brand's commitment to environmental and social responsibility. At the same time, apparel brands should also actively build a sustainable fashion capability and open innovation ecosystem by taking the "dual carbon" goal as traction, creating value for users and society, and building a sustainable fashion capability and open innovation ecosystem by taking the lead in their ESG capability.

In the context of the development of "dual carbon", apparel brands can pay more attention to the government, associations, cluster enterprises and other stakeholders at all levels of regional brand value cooperation [34] to promote their correct understanding of the brand's important function and value for regional economic development. The state and the government should increase the enterprise's low-carbon production, dissemination, and other support, forming a good ecological effect. At the same time, brand building should be combined with low-carbon policies to adjust the industry and brand structure rationally. China's Ordos (Cashmere) Group, while taking the initiative to carry out low-carbon transformation work, also promotes the active participation of industry chain partners and consumers in the green, carbon and sustainable development of the industry and the market and builds a low-carbon, environmentally friendly and fashionable industrial environment with its industrial partners.

While balancing the relationship with the environment and society, clothing brands should also advocate for the public to implement low-carbon lifestyles and consumption patterns, construct an enterprise low-carbon culture, explore low-carbon development modes, and enrich the construction of brand low-carbon culture. From a social point of view, clothing brands can lead the development of a sharing economy and green economy through products, services, and publicity, as well as build a green fashion ecosystem.

3.3.2.3   Active Participation in the Carbon Trading Market

Reducing carbon emissions and power trading impact enterprises' production, technological

Table 5: Comprehensive analysis of management brand value enhancement

	Management aspect	References
Problem with management issues	• Carbon footprint information is not actively published and is not transparent • Inaccurate carbon emission data of apparel brands • Weak internal low-carbon awareness of brands • Lack of professional talents	"Global Corporate Carbon Inventory Calculation Report 2021" Chen Z W [29]
Impact of management issues	The lack of transparency of apparel brands can hinder the public's ability to fully understand and evaluate the company. This can make it difficult for consumers to make sustainable purchasing decisions and affect the public's ability to objectively assess a company's or organisation's environmental performance. • Public disclosure of carbon footprint information is one of the most important ways brands build their environmental reputation and sustainability image. If a brand is unwilling to voluntarily publish carbon footprint data, the public may be sceptical of its environmental commitment and responsibility, which can negatively impact its image and reputation. • Brands with weak low-carbon awareness may neglect resource use and management during production and operations. They may have issues that increase the cost and efficiency of the brand's low-carbon operations and exposure to regulatory and supervisory risks, reputational risks, and supply chain risks. • Lack of specialised talent in apparel brands may lead to reduced brand competitiveness in the marketplace, leaving the brand underperforming in innovation and missing opportunities to keep up with changes in the marketplace and among consumers.	
Proposed solutions to address management issues	• Actively publish carbon emissions data and utilise innovative technologies to improve data accuracy. • Apparel brands and enterprises actively join the carbon trading market, improve the design and governance of the carbon trading system, and fully and continuously disclose carbon information. • Brands take the initiative to publicly disclose their carbon emissions data and accept verification of the data by independent third-party organisations to increase public trust in the brand. • Apparel brands autonomously fulfil their low-carbon social responsibility, strengthen their low-carbon philosophy, and focus on developing low-carbon operational concepts within the brand. • Brands can increase the professionalism of the organisation as a whole through internal training to enhance the professional competence and brand awareness of existing employees. A sound welfare system should be implemented, and talent development should be focused on.	Xue Y [30] Wang H [31] Diallo et al. [32] H et al. [33] Zhang M W et al. [34] Wnag S J et al. [35]
Research directions needed to address management issues	Carbon emission accounting method; Carbon trading market; Interaction between brand social responsibility and market; Spatial characterisation of carbon footprint; Low-carbon transformation of brands; Low-carbon development talent system.	

innovation and capital operation. Studies have shown that in the context of "dual carbon", the relationship between brand value enhancement and carbon trading is inseparable [35]. Establishing a carbon emissions trading market can not only clarify the responsibility of fashion enterprises to control emissions but also reduce the cost of emission reduction in society, provide economic incentives to support them, and promote green technology innovation and industrial investment.

In the carbon-neutral stage, clothing enterprises actively trade carbon emissions, prompting traditional enterprises to transform into carbon-friendly enterprises. Give full play to the resource allocation function of capital in the market economy, cooperate with the supervision of the government and society, improve the design and governance of the carbon trading system, full and continuous disclosure of carbon information, and at the same time, assist the clothing industry to do a good job of carbon rights, in addition to the quantitative rights also include the right to carbon emissions, the right to use energy, and the right to trade in certificates of renewable energy.

3.4   Summary

Through an investigation into the current development status of clothing brands, this research has identified issues in brand value construction at the present stage. These problems have been categorised into three main areas: product, marketing, and management. By delving into the root causes behind these issues, this phase of the study has revealed certain aspects that have been overlooked by clothing brands, such as their impact on the lifecycle of textiles and carbon footprint assessment. Additionally, discrepancies have been found between their promotional and marketing strategies and the principles of low carbon emissions. The study also highlights deficiencies in brand management practices and expertise. This research confirms the significance of brand value construction in the era of "dual carbon." The theoretical foundation provided in this phase can help clothing enterprises raise awareness of these issues. With theoretical guidance, brands can more effectively explore the internal development challenges across production, marketing, and management aspects. In the context of the "dual carbon" era, clothing brands are encouraged to scrutinise the brand value construction process with a heightened awareness of these issues. By accurately identifying hidden problems in these three key areas, brands can better understand the fashion and low-carbon process development trends and enhance the precision of issue resolution.

Based on the identified issues, this research has put forward strategies to enhance the value of clothing brands, corresponding to the three aspects of product, marketing, and management. Regarding products, the key to low-carbon development for clothing brands lies in enhancing green innovation capabilities. It confirms the viewpoint of scholars like Xie Hongming [12] that technology drives brand value construction. However, considering the current development status of clothing brands and the "dual carbon" policies, the study finds that brands must also improve complementary aspects such as carbon footprint management, calculation, and the supply chain to collectively promote brand value construction. Firstly, in terms of innovation capabilities, clothing brands must integrate various elements such as information, technology, etc. They should focus on materials, R&D, and introducing environmentally friendly technologies to promote the brand's green transformation. Actively utilising digital tools to optimise the green technology innovation environment and creating an open innovation atmosphere can help enterprises integrate the necessary resources for green technology innovation and enhance their innovation capabilities. Secondly, clothing brands should actively perform carbon management and disclosure in the context of "dual carbon" progress. This will enhance their carbon image to empower brand

value. Lastly, by utilising scientific and technological advancements to empower supply chain management, clothing brands can enhance their production efficiency and optimise resource allocation. As proposed by scholar Li Zhe [5], the concept involves using technology to improve production efficiency and optimise industrial structure. By proposing the use of digital technology and technological means to address the shortcomings at the supply chain end of clothing brands, production efficiency can be improved, and it can also help clothing brands optimise resource allocation and enhance the differentiated value of their products.

Regarding marketing, Guerreiro's [7] theory suggests that brands adopting low-carbon marketing methods are more likely to capture consumer attention and guide their low-carbon choices. This research supplements Guerreiro's theory in the marketing approach. In the vast fashion market, clothing brands must adapt to low-carbon development and integrate low-carbon concepts into the brand's core. Leveraging a low-carbon image can create a unique brand identity. Especially in the era of the digital economy, advocating high-quality consumption centered on green and low-carbon principles is conducive for clothing brands to cultivate new formats, scenarios, and consumption patterns. This guides green consumption demand and green supply, promoting a dynamic balance between supply and demand at a higher level. In terms of management, different from the factors for value enhancement proposed by scholars like Ye Kangwei, this research suggests that clothing brands should focus on internal development and actively fulfill social responsibilities externally. Internally, establishing green awareness and a low-carbon ethical culture within the company and educating employees on low-carbon ethical responsibilities internalises the concept of low-carbon development into the brand's practical processes. Externally, clothing brands should actively fulfil social low-carbon responsibilities, balance the relationship between society and the environment, and help the fashion industry build a new green, clean, low-carbon development pattern. These strategies can assist clothing brands in promoting their core competitiveness in terms of products, services, brand functions, and image from a low-carbon development perspective. They hold significant theoretical significance for brand value construction.

4 Conclusion

Brand value low carbon construction is the international trend, the national "dual-carbon" policy direction, and the pursuit of consumer development. Clothing brands should actively carry out low-carbon transformation in the context of environmentally sustainable development and seriously develop brand value enhancement strategies to seize market opportunities. This paper focuses on the problems existing in the low-carbon construction of current brands, based on the "dual carbon" policy, to build a clothing brand value enhancement path, which can provide a basis for the brand to develop an effective carbon management strategy and guidance. The study proposes a value enhancement strategy for clothing brands, which is of certain significance to the future dynamic practice, facilitates the establishment of a good low-carbon image for brands, enhances core competitiveness, and helps the country achieve the goal of "dual carbon".

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