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How to cite: Li R, Kou Y. Innovation and Entrepreneurship Path of the Customised Clothing Industry Based on the Nanjing Brocade Technique. Textile & Leather Review. 2025; 8:478-507.

<https://doi.org/10.31881/TLR.2025.028>

How to link: <https://doi.org/10.31881/TLR.2025.028>

Published: 17 July 2025



Innovation and Entrepreneurship Path of the Customised Clothing Industry Based on the Nanjing Brocade Technique

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Article

<https://doi.org/https://doi.org/10.31881/TLR.2025.028>

Received 12 June 2025; Accepted 10 July 2025; Published 17 July 2025

ABSTRACT

This study investigates the integration of Nanjing Brocade techniques into the customised clothing industry to promote innovation and entrepreneurship. By analysing the cultural, technical, and market synergies between traditional craftsmanship and modern apparel customisation, the paper explores pathways for product, business model, talent, and marketing innovation. Utilising literature reviews, case analyses, and interdisciplinary methods, the study evaluates the cultural value compatibility, technological complementarity, and consumer demand alignment of the two sectors. Findings reveal strong market interest in customised clothing featuring Nanjing Brocade, with significant potential to enhance cultural expression and product uniqueness. However, challenges such as market volatility, inheritance of artisanal skills, talent shortages, and policy constraints are identified. To address these, the paper proposes strategies including market feedback mechanisms, increased investment in skill transmission, talent development incentives, and enhanced intellectual property management. The research concludes that the integration of Nanjing Brocade can enrich the cultural depth and market competitiveness of customised apparel, offering a sustainable path for preserving intangible cultural heritage. Future research should focus on digital innovation (e.g., AI-driven pattern generation) and integration models to enhance the fusion of traditional techniques with modern fashion.

KEYWORDS

Nanjing Brocade, customised clothing, innovation, cultural heritage

INTRODUCTION

With the improvement of consumers' living standards and the change of aesthetic concepts, the demand for clothing is no longer limited to the basic function of covering the body and keeping warm, but more and more in pursuit of personalised, high-quality clothing products with unique cultural connotations [1]. This shift in consumer trends in the clothing customisation industry has brought a broad space for development and unprecedented opportunities. At the same time, the protection and inheritance of intangible cultural heritage have increasingly attracted extensive attention from the international community [2]. As an outstanding representative of China's traditional silk weaving craft, the Nanjing Brocade technique, which carries rich historical and cultural connotations and outstanding

artistic value, was inscribed on the List of Intangible Cultural Heritage of Humanity by UNESCO in 2009. The combination of Nanjing Brocade technology and the customised clothing industry has opened up a new path for the development of both. On the one hand, the unique craft characteristics and deep cultural heritage of Nanjing Brocade technology can inject unique cultural charm and artistic value into customised clothing products, meet consumer demand for personalised, high-quality clothing, and enhance the added value and market competitiveness of customised clothing products [3]. On the other hand, the broad market space and innovative vitality of the customised clothing industry provide a new carrier and platform for the inheritance and development of the Nanjing Brocade technique, which helps to promote the innovation and development of the Nanjing Brocade technique, and gives it a new vitality and vigour in modern society.

This study aims to explore how to promote the innovation and entrepreneurship of the customised clothing industry with the help of Nanjing Brocade skills, provide new ideas and methods for the development of the customised clothing industry, and promote the inheritance and innovation of Nanjing Brocade skills [4]. Specifically, this study is expected to achieve the following objectives: to deeply analyze the cultural connotation, craftsmanship characteristics, and value in modern society, and to clarify the feasibility and advantages of its integration with the customised apparel industry; to systematically study the status quo of the customised apparel industry, the development trend and the needs of consumers, and to reveal the challenges and opportunities faced by the industry; to explore, through the cross-study of the Nanjing Brocade technique and the customised apparel industry, the feasibility and advantages of its integration with the customised apparel industry [5]. Explore the innovation and entrepreneurship path of the customised clothing industry based on Nanjing Brocade skills, including product innovation, business model innovation, talent training innovation, and marketing strategy innovation, etc.; put forward practical risk-coping strategies to ensure the smooth development of the integration process, and provide useful references and lessons for related enterprises and practitioners. To realise the above research objectives, this study integrates a variety of research methods to ensure the scientific, comprehensive, and in-depth nature of the study [6]. The research employs a mixed-methods approach, combining literature review, case analysis, and interdisciplinary perspectives, to provide solid theoretical support and rich practical case references for this study.

The innovation points of this paper are: systematically exploring the innovation path of integrating Nanjing Brocade technology with the customised clothing industry from multiple dimensions, such as product, business model, talent training, and marketing strategy. Meanwhile, it identifies and proposes strategies to cope with market, technology, talent, and policy risks, providing theoretical support and practical guidance for the sustainable development of the industry. In addition, it offers forward-

looking directions for the deep integration of traditional craftsmanship and modern fashion by combining modern technologies such as artificial intelligence and big data.

This paper centres on the research of the innovation and entrepreneurship path of the customised clothing industry based on Nanjing Brocade technology, which is divided into seven parts. The first part is the introduction. It mainly describes the background and significance of this study, clarifies the purpose of the study, and names the research methodology adopted in this paper. The second part is the literature review. It provides an overview of the Nanjing Brocade technique and, at the same time, an overview of the clothing customisation industry to lay a theoretical foundation for the subsequent research. The third part focuses on the study of the current situation of the industry of customised clothing. Analyse the overall development trend of the customised clothing industry, and analyse the challenges and opportunities facing entrepreneurship in the customised clothing industry. The fourth part analyses the feasibility of innovation and entrepreneurship in the integration of Nanjing Brocade technology and clothing customisation. From the cultural value of the degree of fit, market demand matching degree, and other aspects of the study of consumer demand for the integration of customised clothing products of Nanjing Brocade technology, to provide a market basis for innovation and entrepreneurship. The fifth part explores the risks and countermeasures of Nanjing Brocade's skills to promote innovation and entrepreneurship in the clothing customisation industry. It identifies the expected risks, including market risk, technology risk, talent risk, policy and legal risk, etc., and proposes corresponding countermeasure strategies for these risks. The sixth part mainly explores the innovation and entrepreneurship path of the clothing customisation industry based on Nanjing Brocade technology. Explore and analyse this innovation and entrepreneurship path from the aspects of product innovation path, business model innovation path, talent training innovation path, marketing strategy innovation path, and so on. The seventh part is the conclusion and outlook. Summarise this study and put forward the shortcomings in the current study, as well as provide ideas and support for the direction of subsequent research.

LITERATURE REVIEW

Overview of the Nanjing Brocade technique

Nanjing Brocade's craftsmanship is distinctive, and it can be called the masterpiece of traditional Chinese silk weaving craftsmanship. Its unique craftsmanship contains deep cultural connotations and outstanding artistic value. Flower picking and knotting are a key link in the production of brocade (Figure 1 shows the process of flower picking and knotting). With rich experience and exquisite skills, flower-picking artists need to carry out meticulous calculations on the pattern according to the specific specifications of the fabric, and precisely present the delicate changes of the pattern on each silk [7].

At the same time, according to the law of the pattern, the complicated colours are merged and knitted into a book of weaving procedures that can be read and understood. This process requires not only great skill but also great patience and care, and every detail is related to the quality and effect of the final fabric.



Figure 1. Pick the flower knotting process

Weaving through the warp and breaking the weft is one of the core techniques of Nanjing Brocade weaving [8]. During the weaving process, the warp threads run through the whole fabric, while the weft threads are woven in localised areas with broken wefts according to the needs of the pattern, thus producing rich and varied patterns (as shown in Figure 2, the structure of the through-warp and broken weft diagram). This technique enables Nanjing Brocade to achieve a very high degree of freedom in colour and pattern expression, and can vividly and delicately present a variety of complex patterns and brilliant colours, providing solid technical support for the artistic expression of Nanjing Brocade.



Figure 2. Warp and weft breakage structure

In terms of colour application, Nanjing Brocade has rich and varied colours, and the pattern of a flower fabric can have more than ten or even twenty or thirty colours. The 'colour halo' technique (Figure 3) is achieved by gradually blending silk threads of adjacent hues through hand-weaving, creating seamless colour transitions. Artisans layer gold threads with dyed silks, using a warp-and-weft density gradient to produce the illusion of light diffusion, which enhances the three-dimensionality of floral motifs. This technique is unique to Nanjing Brocade and requires precise tension control during weaving [9]. The use of a large number of gold threads is a major feature of the colour of brocade; the lustre of the gold threads and other colours reflect each other, forming a brilliant, gorgeous, noble, and unique style, highlighting the dignity and majesty of the royal family. As shown in Figure 3, the colour halo pattern through the "colour halo" technology layer by layer introduces the main flower, showing a thick and beautiful pattern with a colourful and solemn effect.



Figure 3. Colour halo technique

Clothing customisation industry overview

Clothing customisation refers to the personalised needs of consumers, tailor-made clothing to fit their body shape, taste, and style requirements. As consumers' pursuit of quality, personalisation, and fashion continues to rise, the customised clothing industry is showing a booming trend. From the classification point of view, clothing customisation mainly includes traditional handmade full customisation, large-scale personalised customisation, and group professional clothing customisation. Traditional handmade full customisation, mostly undertaken by tailor stores, dressmaking stores, or independent designers, meticulously involved manual labour in all aspects of measuring, pattern

making, and tailoring. For example, the wood machine makeup flower process in Figure 4, Nanjing Brocade, is still unable to be replaced by machines and needs to be made purely by hand. This customisation method is highly dependent on labour, time-consuming, and relatively expensive, but can highly satisfy the demanding needs of consumers for personalised clothing [10]. For example, some high-end custom brands for customers to create a unique dress, from the selection of fabrics to the details of the decoration, all follow the specific requirements of the customer, reflecting the ultimate sense of personalisation and luxury.



Figure 4. The wooden machine makeup process

With the help of advanced information technology and production technology, mass personalised customisation transforms customers' individual needs into data and information and integrates them into the industrialised production process. With the strong support of standard technology, modern design methods, and advanced manufacturing technology, it can realise mass production and take into account the differentiated needs of customers [11]. Like some of the fast-fashion brands launched custom services, consumers can choose within a certain range of clothing styles, colours, patterns, and other elements, through the digital platform to place an order, the enterprise uses automated production equipment for rapid production, such as fast-fashion brand ZARA in the official website of the launch of the clothing custom services.

The customisation of group professional clothing is mainly for all kinds of enterprises and institutions with the demand for centralised procurement of professional clothing. Through large-scale procurement and production, the formation of the scale effect effectively reduces costs [12]. However, this kind of customisation usually adopts the way of sample clothes set number, and then making

appropriate adjustments according to the individual situation, the degree of personalisation is relatively low. For example, banks, airlines, and other enterprises customise uniform professional clothing for their employees, focusing on overall uniformity and image display.

CURRENT STATUS OF THE CUSTOMISED CLOTHING INDUSTRY

Overall development trend

The global customised apparel market size has shown significant growth in recent years. According to QYResearch, the global customised apparel market size reached USD 59.08 billion in 2023 and is expected to climb to USD 117.72 billion by 2030, growing at a compound annual growth rate (CAGR) of <https://doi.org/10.5%> over the period 2024-2030. This growth trend reflects the rising consumer demand for personalised clothing, which is driving the continued expansion of the customised clothing market.

As one of the world's largest apparel consumer markets, China's customised apparel market is developing at a particularly strong pace. According to some data, as of 2023, China's customised clothing production reached 604 million sets, with a demand of about 562 million sets. The market size has reached a considerable level and is expected to continue to maintain steady growth in the next few years. From the point of view of the market competition pattern, the customised clothing market presents the characteristics of diversification and segmentation [13]. Large brand enterprises dominate the market with their strong brand influence, extensive sales channels, and perfect supply chain system. Small and medium-sized designer studios and independent designers, on the other hand, have emerged in the segmented market by their unique design concepts, keen insights into fashion trends, and personalised services, meeting the needs of some consumers in pursuit of unique styles and personalised customisation. The entry of international fast fashion brands has further intensified the intensity of market competition. International fast fashion brands, represented by H&M and Zara, have rapidly gained a foothold in the apparel customisation market through their strong brand recognition, rapid market response capability, and extensive global sales network [14]. By launching online customisation services, these brands enable consumers to conveniently participate in the process of clothing customisation and choose their favourite styles, colours, patterns, and other elements, which satisfies consumers' dual pursuit of personalisation and fashion sense.

Consumer characteristics analysis

In terms of age, customised clothing consumers cover a wide range of age groups, and the demand characteristics of each age group are different. 20-30-year-old consumers are mostly newcomers in the workplace or student groups who pursue fashion trends. They pay attention to the personalisation

and uniqueness of clothing, are keen to try new design styles and expect to show their personalities and fashion attitudes through customised clothing. For example, some young people will customise clothing with unique patterns, popular elements, or personalised slogans for social occasions or daily wear to show their differences [15]. 31-50-year-old middle-aged consumers, with relatively strong economic strength, have higher requirements for clothing quality and shape. They customise their clothing to meet the needs of business and social occasions, focusing on the texture of the fabric, the fit of the cut, and the brand image. For example, business people will customise high-quality suits, choose high-quality fabrics, and pay attention to the detailed design to show a professional image and taste. 51 years old and above elderly consumers are more concerned about the comfort and practicality of clothing, and tend to customise clothing with traditional and classic styles, focusing on the softness and breathability of fabrics. For example, some seniors will customise loose and comfortable cotton shirts or casual pants for daily wear.

In terms of gender differences, male and female consumers differ significantly in their customised clothing needs. When male consumers customise their clothing, they mainly focus on business formal wear and casual wear. For business formal wear such as suits, they pay attention to the texture of the fabric, the fit of the pattern, and the brand awareness, hoping to show a professional and stable image through wearing. Casual wear is more concerned with comfort and a simple design style. The needs of female consumers are more diversified; in addition to business attire, the demand for customisation in the areas of dresses and daily fashion attire is also relatively strong. In the customisation of dresses, such as wedding dresses and evening dresses, female consumers have extremely high requirements for the uniqueness of the design, the delicacy of the details, and the comfort of wearing them, and strive to show a perfect image on special occasions. In the customisation of daily fashion clothing, women pay more attention to the novelty of style, colour matching, and personalised design to meet the needs of different occasions and show their fashion taste.

The motivation of consumers of customised clothing also differs. A part of consumers choose customised clothing out of social and identity needs. On important social occasions, such as business meetings, dinners, weddings, etc., consumers want to wear unique customised clothing to show their status and taste and gain recognition and respect from others. As consumers become more self-aware, more and more people do not want to wear the same ready-made clothes as others but want to customise their personalities and preferences to create unique pieces of clothing. In addition, the pursuit of quality and fit has also prompted consumers to choose customised clothing. Customised clothing can be accurately tailored according to an individual's body size to ensure a good fit, while consumers can choose high-quality fabrics and exquisite production techniques to get a better wearing experience.

Opportunities for entrepreneurship

Development opportunities

Despite the many challenges, the customised clothing industry also contains a wealth of development opportunities. With the continuous improvement of people's living standards, the trend of consumption upgrading has become more and more obvious, and consumers' demand for clothing is no longer limited to the basic function of covering the body and keeping warm, but they pay more attention to the quality, personalisation and unique wearing experience. This part of the consumer is willing to show their style, to meet their own special needs of customised clothing, and to pay a higher price. This shift in consumer attitudes has brought about a broad market space for the customised clothing industry. Consumers are increasingly demanding the quality of clothing, and pay more attention to the texture of the fabric, the degree of craftsmanship, and the comfort of clothing. This provides unlimited creative space for customised clothing entrepreneurs, as long as they can accurately grasp the needs of consumers and provide personalised, high-quality products and services, they can occupy a place in the market.

Technological advances have revolutionised the apparel customisation industry. The application of advanced digital technology, intelligent manufacturing technology, and 3D printing technology has provided a new solution for the production and service of customised clothing. Digital design software enables designers to design clothing styles more efficiently, allows consumers to visualise the design effect through virtual model display, realises real-time interaction and communication with consumers, and improves the accuracy and satisfaction of design. The application of intelligent manufacturing technology, such as automated cutting equipment, intelligent sewing robots, etc., can improve production efficiency and reduce labour costs while ensuring product quality stability. 3D printing technology has brought unprecedented possibilities for apparel customisation, which can realise the rapid production of complex shapes and personalised patterns, and satisfy consumers' demand for unique designs. Through the application of these technologies, customised clothing enterprises can realise the optimisation and upgrading of the production process, improve production efficiency and product quality, to provide consumers with more convenient and efficient customised services, thereby enhancing the competitiveness of enterprises.

The wave of cultural revival has injected new vitality into the customised clothing industry. As people's attention to traditional culture continues to increase, the charm of traditional clothing culture has gradually been rediscovered and recognised. Incorporating traditional clothing culture elements into customised clothing design has become the current fashion trend. As a treasure of traditional Chinese silk weaving craft, the Nanjing Brocade technique, with its unique patterns, colours, and craftsmanship, provides rich design inspiration for customised clothing.

FEASIBILITY ANALYSIS OF INNOVATION AND ENTREPRENEURSHIP

Cultural value fit

As a treasure of traditional Chinese silk weaving craft, Nanjing Brocade carries a deep historical and cultural heritage. In the long course of development, Nanjing Brocade has integrated many elements of traditional Chinese culture, such as dragons and phoenixes, flowers, auspicious characters, and other patterns, which not only have high artistic and aesthetic value but also contain rich symbolism. As presented in Figure 5, Nanjing Brocade is made of exquisite materials, with fine weaving and elegant and rich colours, which express the good wishes behind it.



Figure 5. Nanjing brocade pattern

The core of the customised clothing industry is to meet the consumers' pursuit of personalisation and cultural connotation. In the current context, consumer demand for clothing is no longer limited to the basic function of covering the body and keeping warm, but pays more attention to the cultural taste and personal style conveyed by clothing. Nanjing Brocade technology into the customised clothing customised clothing products can be injected into customised clothing products, to meet the deep-seated needs of consumers for cultural connotation.

Combining Nanjing Brocade technology with clothing customisation can enhance the cultural added value of the customised clothing products and make them more competitive in the market. In Figure 6, the combination of Nanjing Brocade technology with China's traditional clothing shows a unique

temperament. In the competitive apparel market, the homogenization of products is more serious, and the uniqueness of Nanjing Brocade technology can bring differentiated competitive advantages for customised apparel products [16]. The unique craftsmanship and cultural connotation of Nanjing Brocade make it a kind of scarce resource, which can attract the attention of consumers and stimulate their desire to buy. Consumers are willing to pay higher prices for garments with unique cultural values, which brings higher profit margins for customised clothing enterprises [17]. At the same time, this integration also helps to promote the inheritance and development of traditional Chinese culture, so that more people understand and recognise the charm of the intangible cultural heritage of Nanjing Brocade, and enhance the national cultural confidence.



Figure 6. Combination of Nanjing Brocade Craft and Traditional Costume

Complementarity of technologies and processes

In the customised clothing industry, the integration of the unique craft of Nanjing Brocade technology can significantly enhance the quality and uniqueness of the clothing. Applying the patterns of Nanjing Brocade to the collar, cuffs, hemline, and other parts of the garment, using the traditional hand-weaving process, can give the garment a noble and elegant temperament. At the same time, the colour scheme of Nanjing Brocade also provides a rich source of inspiration for customised clothing. Its unique use of colour and "colour halo" technique can bring layered, rich, and elegant visual effects to the clothing, through clever colour transition and matching, so that the clothing in the display of fashion sense at the same time, contains a deep cultural heritage.

On the other hand, modern clothing customisation technology also provides new opportunities for the inheritance and development of Nanjing Brocade techniques. The application of digital design software can help designers carry out the design and innovation of Nanjing Brocade patterns more efficiently [18]. Through computer-aided design, designers can make all kinds of modifications and adjustments to the Nanjing Brocade pattern in the virtual environment, quickly generate a variety of design solutions, greatly shorten the design cycle, and improve design efficiency. Using digital design software, designers can combine traditional Nanjing Brocade patterns with modern fashion elements to create new patterns that have both traditional flavour and meet modern aesthetic needs. The emergence of 3D printing technology brings new possibilities for the innovative application of Nanjing Brocade techniques. Through 3D printing, the pattern of Nanjing Brocade can be accurately copied onto various materials, expanding the scope of application of Nanjing Brocade. 3D printing of Nanjing Brocade patterns on leather, plastic, and other new materials to produce clothing accessories with a unique texture and style opens up a new path for the inheritance and development of Nanjing Brocade skills. In addition, intelligent cutting technology can realise accurate cutting, reduce material waste, and improve production efficiency according to the characteristics of Nanjing Brocade fabrics and the design requirements of clothing. When cutting Nanjing Brocade fabrics, the intelligent cutting technology can accurately cut according to the pattern and pattern direction of the fabric, ensuring that each piece of cut fabric can perfectly show the artistic charm of Nanjing Brocade, and at the same time minimise the generation of waste and improve the utilisation rate of materials.

Matching market demand

According to the results of the research, up to 82% of the respondents expressed interest in the integration of Nanjing Brocade technology into customised clothing products, of which 45% of the respondents said they were very interested and had a strong willingness to buy. In further analysis of the age level of consumers, it is found that there are some differences in the demand for fusion products among consumers of different age groups, but the overall interest is high. 20-30-year-old young consumers are more concerned about the fashion sense and personalised expression of the products, and this part of the consumers want to wear clothing with elements of Nanjing Brocade, to show their unique fashion attitudes and innovative understanding of traditional culture. 31-50-year-old middle-aged consumers want to wear clothing with elements of Nanjing Brocade, to show their unique fashion attitudes and innovative understanding of traditional culture. Middle-aged consumers aged 31-50 pay attention to the quality and cultural connotation of the products and believe that wearing clothing with Nanjing Brocade techniques can show their taste and respect for traditional culture, and be more unique and attractive in business and social occasions [19]. 51-year-old consumers and above have deep feelings for the traditional culture carried by Nanjing Brocade, and

are more inclined to buy clothing combining the traditional styles and Nanjing Brocade techniques to satisfy the emotional attachment to traditional culture. The survey included questions on consumers' awareness of Nanjing Brocade, purchasing intentions for customised clothing featuring Nanjing Brocade, and key factors influencing their purchase decisions. The data collection process spanned from January to March 2024, and the results were analysed using descriptive statistics and correlation analysis to ensure reliability and validity.

In the analysis of the factors influencing consumers' purchasing intention, the degree of design novelty, cultural connotation, and quality of the product are the factors that consumers are most concerned about. Among them, 78% of the respondents believe that the degree of design novelty is an important factor influencing their purchasing decision, and hope that the products can be boldly innovated based on retaining the traditional characteristics of Nanjing Brocade and incorporating more modern fashion elements; 72% of the respondents emphasize the importance of cultural connotation, and believe that the cultural value contained in the products is the key to attracting purchases; 65% of the respondents said that the quality of the products is a necessary condition for their purchasing decision, and expect that the fusion products can use high-quality fabrics and exquisite production technology to ensure that the products are made of high-quality fabrics and exquisite production technology. 65% of respondents indicated that product quality is a necessary condition to determine their purchase, expecting fusion products to be made of high-quality fabrics and superb craftsmanship to ensure wearing comfort and durability. Price is also a factor influencing consumers' willingness to buy, although consumers are willing to accept a relatively higher price range for fusion products with unique cultural values and high quality. About 50% of the respondents indicated that they are willing to pay more for customised clothing products incorporating Nanjing Brocade techniques than ordinary clothing within a reasonable price range for a unique cultural experience and personalised products.

RISKS AND COUNTERMEASURES OF NANJING BROCADE TECHNIQUE TO BOOST INNOVATION AND ENTREPRENEURSHIP

Projected risks

Market

The apparel customisation industry is also facing many serious challenges in the process of booming development. With the rapid expansion of the customised clothing market, many participants have rushed into the market. Large brands dominate the market with their strong brand influence, perfect supply chain system, and wide range of sales channels, bringing great pressure to new entrepreneurs. In addition, international fast fashion brands have also ventured into the field of customisation through

their strong brand recognition and rapid market response, further intensifying the white-hot degree of market competition. New start-ups are relatively weak in terms of brand awareness, financial strength, and resource integration ability, making it difficult for them to stand out in a short period, and they need to put in more effort to enhance their competitiveness and develop market share.

Cost control is another challenge faced by entrepreneurs in the customised clothing industry. Fluctuations in the cost of raw materials have a direct impact on business profits. High-quality fabrics are often expensive and subject to market supply and demand, international situations, and other factors; price fluctuation is frequent. Labour costs, customised clothing, on the high demand for professional skills, from the body measurements to the plate maker, tailor, etc., need to have exquisite skills and rich experience, which makes the labour costs remain high. Especially in the pursuit of personalised and high-quality customisation needs, more handmade links, further increasing labour costs [20]. Operating costs should not be ignored, including store rent, equipment procurement, marketing, and promotion expenses. With the rise of commercial real estate rent, the operating costs of physical stores continue to climb, and in the digital era, online marketing and promotion also require a large investment to increase brand awareness and attract customers. In the innovative entrepreneurial process of integrating Nanjing Brocade skills into the customised clothing industry, market risk is an important factor that cannot be ignored [21]. Although consumer demand for personalised and culturally rich garments has shown growth, there is still some uncertainty in the market's acceptance of customised clothing products incorporating Nanjing Brocade techniques. Factors such as consumers' aesthetic concepts, consumption preferences, and changes in the economic environment may have a significant impact on the market demand for the products. If the market acceptance of such products is not as expected, it will lead to poor product sales and make it difficult for enterprises to realise the expected economic benefits.

As more and more companies realise the market potential of combining traditional cultural elements with customised clothing, the competition in the field is getting fiercer. New entrants continue to emerge, and they may launch similar products in an attempt to grab a foothold in the market. Large-scale apparel companies can quickly launch relevant businesses and conduct large-scale marketing campaigns, thanks to their strong brand influence, extensive sales channels, and strong financial strength [22]. Small and medium-sized apparel enterprises and designer studios are also likely to compete with their competitors in the market segments with their unique design concepts and flexible business strategies. This will make the competitive landscape of the market extremely complex, with enterprises facing tremendous competitive pressure.

In addition, the application of Nanjing Brocade techniques to customised clothing products may result in relatively high product prices. This is because the raw material cost of Nanjing Brocade is high, and its production process is complex and requires significant labour and time costs. Higher prices may

discourage some price-sensitive consumers, thus limiting the market size of the products. The impact of the price factor on the sales of the product is more significant, especially when the economic situation is unstable or the purchasing power of consumers is declining.

Technology

As a traditional handloom weaving technique, the inheritance of Nanjing Brocade mainly relies on oral teaching and a long-term accumulation of practical experience. However, in modern society, fewer and fewer young people are willing to engage in the learning and inheritance of the Nanjing Brocade technique due to the long learning cycle, high work intensity, and relatively low economic returns[23]. This has led to a serious challenge of a talent gap in the inheritance of the Nanjing Brocade technique, and a decreasing number of artisans skilled in the Nanjing Brocade technique, which poses a serious threat to the sustainable development of integrating the Nanjing Brocade technique into the customised apparel industry. As shown in Figure 7, at present, Nanjing Brocade still requires manual labour throughout the process and cannot be mass-produced using machines.



Figure 7. Artificial brocade

The integration of Nanjing Brocade technology with modern customised clothing technology is a key path to achieving innovative development. However, this integration process is not smooth; there are many technical difficulties to overcome. In digital design, accurately transforming the complex patterns and colours of Nanjing Brocade into digital models to achieve efficient design and modification is an urgent problem to be solved. In the manufacturing segment, it is also a great challenge to combine the traditional hand-weaving process of Nanjing Brocade with modern automated production equipment to ensure the stability and consistency of product quality [24]. Due

to the special characteristics of Nanjing Brocade fabrics, when using modern equipment for cutting, sewing, and other operations, it is easy to have problems such as fabric damage and deformation, which puts forward higher requirements on the operating skills of technicians and the adaptability of equipment.

The inheritance and innovation of Nanjing Brocade technology can not be separated from the support of related technology; however, the current R&D investment in Nanjing Brocade technology is relatively insufficient, and the technological innovation ability is relatively weak [25]. This leads to the lack of advanced technical means to solve various problems in the production process when applying Nanjing Brocade technology to the customised clothing industry, which limits the improvement of product quality and production efficiency. In addition, due to the lack of technological innovation ability, enterprises find it difficult to quickly launch innovative products and solutions in the face of market changes and upgrades in consumer demand, thus placing them in an unfavourable position in market competition. The balance between personalisation and scale is a unique challenge for entrepreneurship in the custom apparel industry. The core of customised clothing lies in meeting consumers' individual needs; however, personalisation often means a complex and inefficient production process that makes it difficult to achieve mass production. Each piece of customised clothing needs to be individually designed and made according to the customer's body size, style requirements, fabric selection, etc., which makes the production cycle longer and less efficient. Scale production, on the other hand, emphasises standardisation and mass production, which can reduce costs and improve production efficiency, but it is difficult to meet the individual needs of consumers. This requires enterprises to innovate and explore production process optimisation, technology application, supply chain management, and other aspects.

Talent

In the customised clothing industry, there is an extreme lack of composite design talents who are both proficient in clothing design and have an in-depth understanding of the Nanjing Brocade technique [26]. Clothing design students in the learning process often focus on modern design concepts and technology learning, but the traditional Nanjing Brocade technology understanding and mastery are relatively small. Although the inheritors of Nanjing Brocade technology have profound attainments in Nanjing Brocade technology, they are relatively lacking in knowledge and skills in modern clothing design. This difference in professional knowledge structure makes it difficult to cultivate composite design talents. The lack of such talent will lead to enterprises in the product design process, making it is difficult for Nanjing Brocade technology and modern fashion elements to integrate, design both traditional cultural flavours, and meet the modern aesthetic needs of clothing products.

As a traditional handicraft, the inheritance and development of the Nanjing Brocade technique requires a group of skilled craftsmen. However, as mentioned earlier, due to various reasons, the number of talents willing to engage in the learning and inheritance of Nanjing Brocade skills is decreasing, resulting in a shortage of talents for the inheritance of Nanjing Brocade skills [27]. This not only affects the inheritance and development of Nanjing Brocade skills but also makes the application of Nanjing Brocade skills in the customised clothing industry, where there is a lack of sufficient professional craftsmen to ensure the quality of products and craftsmanship.

In addition, innovation and entrepreneurship in the customised clothing industry require management talents with innovative thinking and keen market insight. They can formulate scientific and reasonable enterprise development strategies, effectively integrate resources, develop the market, and promote the development of enterprises[28]. However, at present, this kind of talent is also relatively scarce in the industry. Many business managers lack the customised clothing industry and Nanjing Brocade skills, in-depth understanding of the difficulty of developing a development strategy in line with market demand and the actual situation of the enterprise, thus affecting the innovative development of enterprises and market competitiveness.

Policy and Legal

With the increasing awareness of intellectual property protection and the improvement of relevant laws and regulations, higher requirements have been put forward for the protection of the intellectual property rights of Nanjing Brocade techniques involved in the customised clothing industry [29]. In the process of product design, if the enterprise fails to effectively protect the intellectual property rights of Nanjing Brocade patterns, colours, and other elements, it may face the risk of being copied or infringed by others. Some unscrupulous enterprises may use, without authorisation, Nanjing Brocade patterns and designs with intellectual property rights to produce and sell counterfeit products, which will not only damage the legitimate rights and interests of the original enterprises but also disrupt the market order.

At present, the relevant standards and norms of the customised clothing industry are not yet perfect, and there is a lack of clearly defined standards for the quality, craftsmanship, environmental protection, and other aspects of customised clothing products that incorporate the skills of Nanjing Brocade. This makes the enterprise in the production process lack uniform standards and norms as a guide, which easily leads to uneven product quality [30]. At the same time, due to the lack of clear standards, it is also difficult to effectively monitor and manage product quality in the process of market regulation, which may affect consumer trust in the product and hinder the healthy development of the industry.

Although the government has given certain policy support for the protection of intangible cultural heritage and the development of cultural industries, there are relatively few special support policies for the integration and development of Nanjing Brocade techniques with the customised clothing industry in the specific implementation process. This makes it difficult for enterprises to obtain sufficient policy support and financial subsidies in the process of innovation and entrepreneurship, which increases the development costs and risks of enterprises.

Response strategies

Develop market research and feedback mechanisms.

To effectively cope with market risks, enterprises should build a comprehensive and in-depth market research mechanism and closely track the dynamic changes in consumer demand [31]. Regularly conduct market research activities, through questionnaires, focus group discussions, online interviews, and other diversified methods, to widely collect consumer feedback on customised clothing products incorporating Nanjing Brocade techniques. In-depth understanding of consumer preferences for product design styles, colour combinations, and pattern elements, as well as expectations and requirements for product price, quality, and service. With the help of big data analysis technology, we conduct in-depth mining of massive market data to accurately grasp consumers' purchasing behaviour patterns, consumption trends, and potential market demand, and provide powerful data support for the formulation of product design and marketing strategies.

According to the results of market research, enterprises need to adjust their product strategy in a timely and flexible manner. In terms of product design, continue to innovate, the traditional elements of Nanjing Brocade and modern fashion trends are closely integrated to develop more clothing styles that meet the aesthetic needs and personalised needs of different consumer groups [32]. For young consumer groups, we design Nanjing Brocade customised garments that incorporate popular elements and have a sense of fashion and innovation to meet their needs for individuality and fashion; for middle-aged consumers, we focus on the quality and cultural connotation of the products to create high-end customised garments that can show off their tastes and identities. In terms of pricing strategy, reasonable price adjustments are made according to market demand and cost changes. For price-sensitive consumers, launch cost-effective product series; for consumers pursuing high quality and a unique experience, provide limited editions, a high degree of customisation of high-end products, and develop a corresponding price system. At the same time, we optimise the marketing channels and promotion methods of our products and make use of various channels such as social media, fashion magazines, and offline exhibitions to carry out accurate marketing promotion and improve the market awareness and reputation of our products.

Increase investment in skills transmission

To cope with technological risks, enterprises should proactively establish close cooperative relationships with relevant scientific research institutions and universities, and jointly carry out research and development projects for the Nanjing Brocade technique [33]. Through industry-university-research cooperation, fully integrate the resources of all parties, give full play to the technical advantages of scientific research institutions and the talent advantages of universities, and jointly overcome the key technical difficulties in the process of inheritance and innovation of the Nanjing Brocade technique. In terms of digital design, the joint development of advanced digital design software to achieving efficient digital transformation and innovative design of Nanjing Brocade patterns. Through the software, designers can more conveniently modify, combine, and innovate the Nanjing Brocade patterns, organically integrate the traditional Nanjing Brocade patterns with modern fashion elements, and create new patterns with both traditional flavour and modern aesthetic needs. In the manufacturing process, we cooperate in researching and developing modern production equipment and techniques applicable to Nanjing Brocade fabrics, to improve the production efficiency and the stability of product quality. Research and development of intelligent cutting equipment that can accurately cut brocade fabrics to avoid fabric damage and waste; explore automated sewing technology suitable for brocade fabrics to improve the precision and efficiency of sewing.

Enterprises themselves should also increase their investment in the inheritance and innovation of the Nanjing Brocade technique. Set up a special research and development fund to support the research and innovation projects of Nanjing Brocade techniques. Encourage technicians and designers within the enterprise to actively participate in the innovative practice of the Nanjing Brocade technique, and give recognition and rewards to those who have made outstanding achievements in the innovation of the technique. Strengthen the protection and cultivation of the inheritors of the Nanjing Brocade technique, and attract more young people to devote themselves to the study and inheritance of the Nanjing Brocade technique by providing favourable treatment and a good working environment. Establish a perfect talent training system, carry out training courses in Nanjing Brocade skills, master and apprentice inheritance, and other activities, cultivate a group of skilled and innovative Nanjing Brocade skills inheritance talents, and provide a solid talent guarantee for the development of the enterprise.

Improve the talent incentive mechanism

To solve the problem of talent risk, enterprises need to develop a competitive salary and benefit system to attract and retain outstanding talent. In terms of salary design, fully consider the market situation and the value of talents, and provide competitive salaries for the composite design talents

who are both proficient in clothing design and familiar with the Nanjing Brocade technique, the Nanjing Brocade technique inheritance talents, as well as the management talents. In addition to the basic salary, the establishment of performance bonuses, project bonuses, and other forms of incentives, according to the employee's work performance and performance contribution to the payment, is used to motivate employees to work actively, and improve work efficiency and quality [34]. At the same time, we provide comprehensive welfare benefits, such as paid annual leave, holiday benefits, and regular medical checkups, to enhance employees' sense of belonging and loyalty.

Enterprises should pay attention to the career development planning of employees and provide employees with broad development space and promotion opportunities. Establish a scientific and reasonable promotion mechanism, according to the ability and performance of employees, to provide employees with promotion channels, so that employees can achieve their career goals in the enterprise. We formulate personalised training plans for employees and provide rich training courses and learning opportunities to help employees continuously improve their professional skills and comprehensive quality. For employees with potential, we provide opportunities for cross-departmental rotation and participation in important projects to cultivate their comprehensive abilities and innovative thinking. In addition, we create a positive corporate culture, advocate teamwork, innovative learning, and growth, enhance employee cohesion and centripetal force, and attract more outstanding talents to join the company.

Strengthening property rights management

To cope with policy and legal risks, enterprises must attach great importance to intellectual property protection. In the process of product design, apply for patents, trademarks, and copyright protection promptly for innovative Nanjing Brocade patterns, colour combinations, clothing styles, etc., to ensure that the intellectual property rights of enterprises are not infringed upon. Establish a perfect intellectual property management system, strengthen the management and supervision of intellectual property rights within the enterprise, and prevent the leakage of intellectual property rights and infringement [35]. Regularly sort out and evaluate the intellectual property rights of the enterprise, to discover and solve potential intellectual property risks promptly.

Active participation in the development and improvement of industry standards is also an important initiative for enterprises to cope with risks. Enterprises should work closely with industry associations, government departments, and other relevant enterprises to jointly promote the development of industry standards and norms for customised clothing, especially for the quality, craftsmanship, and environmental protection of customised clothing products integrating Nanjing Brocade techniques. By participating in the formulation of industry standards, the enterprise can transform its technical advantages and innovations into industry standards and improve its voice and competitiveness in the

industry [36]. At the same time, production and operation are carried out in strict accordance with the industry standards to ensure that product quality and service meet the standard requirements and establish a good corporate image and brand reputation.

In addition, enterprises should also pay close attention to the relevant policy dynamics of the national and local governments, and keep abreast of the policy support direction and preferential measures [37]. Actively strive for the government's special support policies for the integration and development of intangible cultural heritage and modern industries, such as financial subsidies, tax incentives, loan subsidies, etc., to reduce the operating costs and risks of enterprises. Strengthen communication and cooperation with government departments, actively participate in various cultural industry activities and projects organised by the government, and promote the development of enterprises with the help of government resources and platforms.

EXPLORATION OF INNOVATION AND ENTREPRENEURSHIP PATH

Business model innovation path

In the digital era, the business model of online and offline integration has become an inevitable trend in the development of the apparel customisation industry. The online platform has the advantages of rapid information dissemination, wide coverage, convenience, and efficiency, which can provide consumers with rich product displays and a convenient, customised service entrance. Through the well-designed official website and mobile application, enterprises can comprehensively display the customised clothing products integrating Nanjing Brocade technology, including the product style, fabric, detailed drawings and the Nanjing Brocade elements used and other information, so that consumers can easily browse and select their preferred clothing at home. At the same time, using 3D virtual display technology, consumers can visualise the effect of clothing on the body and realise virtual fitting, which greatly enhances the fun and convenience of shopping. On the online platform of a customised clothing brand, consumers only need to enter their body data, can see the effect of fusion Nanjing Brocade patterned clothing worn on the body through the 3D model, but also adjust the colour of the clothing, pattern position, etc., to view the effect of the changes in real-time, providing consumers with a highly personalized shopping experience.

Offline stores focus on providing consumers with immersive experience services to enhance their trust and loyalty to the brand. The store can create a display space with a strong cultural atmosphere, combining the display of Nanjing Brocade skills with customised clothing services. As shown in Figure 8, a special Nanjing Brocade display area is set up in the store, displaying Nanjing Brocade weaving tools, samples of traditional patterns, and videos of the production process, so that consumers can gain an in-depth understanding of the history and culture of Nanjing Brocade and its exquisite

craftsmanship [38]. At the same time, it provides consumers with professional measuring services to ensure the fit of the garments. In addition, fabric touching and style fitting services are provided to allow consumers to feel the texture and wearing effect of the garments. In the try-on session, consumers can put on carefully made sample clothes, intuitively feel the shape, comfort, and overall effect of the clothes, and make timely modifications to ensure that the final customised clothes perfectly meet their expectations.



Figure 8. Nanjing Brocade Display Area

To meet the diverse needs of different consumer groups, the clothing customisation industry can actively expand the scope and content of customisation services. In terms of personalised customisation, in addition to providing traditional customisation of clothing styles, fabrics, and sizes, the level of customisation services can be further deepened. Through in-depth communication with consumers to understand their personal stories, hobbies, life scenarios, and other information, these elements are integrated into the clothing design to create unique personalised clothing.

In addition, relevant value-added services can be expanded, such as clothing maintenance, repair, and remodelling services [39]. Provide consumers with professional advice on clothing maintenance, visit consumers regularly to understand the use of clothing, and promptly solve problems encountered by consumers in the wearing process. Provide repair services for garments that have been worn for a long time or have been slightly damaged to ensure that the garments can continue to be worn. In response to changes in consumers' body shape or aesthetic concepts, the company provides clothing modification services, redesigning and remodelling old clothing to meet consumers' new needs and extend the service life of the clothing, reflecting the industry's care for consumers and the continuity of its services.

Innovative paths for talent cultivation

The school-enterprise cooperation model plays a key role in the training of talents in the customised clothing industry and the integration of Nanjing Brocade skills. By establishing a close cooperative relationship with universities and vocational colleges, enterprises can be deeply involved in the whole process of talent cultivation to ensure that the cultivated talents not only have a solid theoretical foundation but also have a wealth of practical experience to meet the actual needs of the industry's development.

The practical teaching link is the focus of school-enterprise cooperation. Schools and enterprises build practical training bases to provide students with a real production environment and practice opportunities. Students can participate in the actual customised clothing projects in the training base, from measurement, design, and pattern making to production, the whole process to experience the process and process requirements of customised clothing [40]. In this process, students can not only improve their practical ability but also understand the market demand and industry dynamics, and develop the ability to solve practical problems. For example, students in the training base participate in the customization of clothing projects for corporate clients with the elements of Nanjing Brocade, through communication with customers, to understand the needs and preferences of customers, the use of knowledge and skills learned, designed to meet the customer requirements of the clothing works, and in the enterprise under the guidance of the master for the production, and ultimately complete a complete customised clothing.

In addition, the provision of a comprehensive training system for incumbents is an important initiative to enhance the quality of talents in the customised clothing industry and to promote the inheritance and innovation of Nanjing Brocade techniques. Such as the Nanjing Brocade training classroom in Figure 9. Clothing customisation enterprises should develop personalised training plans according to the job requirements and skill levels of employees to ensure that the training content is targeted and practical.



Figure 9. Nanjing Brocade Training Classroom

For designers, the training should focus on in-depth study and innovative application of Nanjing Brocade techniques. Lectures and training can be invited from the inheritors of the Nanjing Brocade technique or experts to explain the history and culture of Nanjing Brocade, the characteristics of the technique, pattern design, and other knowledge, so that designers can have a deeper understanding of Nanjing Brocade. Organise designers to participate in the practical activities of the Nanjing Brocade weaving workshop to experience the process of Nanjing Brocade weaving and master the production process and skills of Nanjing Brocade.

For technicians such as pattern makers and seamstresses, training can be centred on the characteristics and processing techniques of Nanjing Brocade fabrics. Nanjing Brocade fabric has a special texture, which requires high requirements for pattern making and cutting [41]. In the training, technicians learn how to make plates according to the characteristics of Nanjing Brocade fabrics to ensure the fit and comfort of garments. In the process of cutting and sewing, the technicians learned how to avoid damage to the brocade fabric and how to use special sewing techniques to show the unique charm of the brocade.

Marketing strategy innovation path

In the digital era, social media platforms have become an important platform for brand marketing. Clothing customisation brands based on Nanjing Brocade techniques should make full use of the advantages of social media platforms and develop precise marketing strategies to expand brand influence and attract potential customers.

At present, there are many choices of social platforms, and targeted marketing can be carried out according to the different characteristics of different platforms. For example, as an important channel for in-depth communication between brands and consumers, WeChat Public Number can regularly publish graphic content to display customised works of clothing integrating Nanjing Brocade techniques. The detailed text introduction elaborates on the Nanjing Brocade elements used in each garment, the design inspiration, and the cultural story behind it so that consumers can deeply understand the uniqueness of the product. At the same time, interactive activities such as online voting and Q&A lucky draws are carried out by utilising the Weibo public number to increase the participation and stickiness of fans. Microblogging has a broad space for dissemination with its rapid information dissemination and strong topicality. And short video platforms such as Jitterbug can quickly attract users' eyeballs with their vivid and intuitive displays.

Through the precise use of different social media platforms, the customised clothing brand based on Nanjing Brocade technology can achieve all-around and multi-level brand communication, attract more attention from potential customers, and enhance brand awareness and market share[42]. In the process of social media marketing, brands should pay attention to the quality and innovation of the content, establish a good interactive relationship with consumers, and continuously improve the image and influence of the brand.

CONCLUSION AND OUTLOOK

This study thoroughly explores the path of promoting innovation and entrepreneurship in the customised clothing industry based on Nanjing Brocade skills and clarifies the feasibility and importance of the integration of Nanjing Brocade skills with the customised clothing industry. In addition, in the study of the status quo of the customised clothing industry, it is found that the industry as a whole shows a good development trend, but also faces challenges such as fierce competition in the market, difficulty in controlling costs, and a balance between personalisation and scale. For the Nanjing Brocade technology to promote the clothing customised clothing industry innovation and entrepreneurship process may face market, technology, talent, as well as policy and legal risks; this paper also puts forward the corresponding coping strategies. Through the development of market research and feedback mechanisms, increase the investment in the inheritance of skills, improve the technological innovation ability of enterprises, strengthen the management of property rights, pay attention to the protection of intellectual property rights, and other ways to deal with the risks that may be encountered in the process of innovation and entrepreneurship. In addition, this paper also puts forward the innovation and entrepreneurship path exploration of the customised clothing

industry based on Nanjing Brocade technology, such as product, business model, talent training, and marketing strategy.

However, because there are fewer studies on innovation and entrepreneurship in this kind of industry, there are fewer materials that can be cited and analysed in this paper, so some of the conclusions may deviate from reality, and it is necessary to further improve the conclusions of this paper in the practical application.

With the continuous development of the social economy and the continuous changes in consumer demand, the integration of Nanjing Brocade skills with the clothing customisation industry will have a broader development prospect. Future research can focus on two key directions. First, AI-driven Nanjing Brocade pattern generation can revolutionise design by enabling rapid creation and iteration of intricate patterns. Second, data-driven design optimisation for customised apparel can enhance product development efficiency and consumer satisfaction by leveraging consumer data to refine designs and predict trends. These innovations will push the boundaries of integrating traditional techniques with modern fashion. In the future, the research can start by further exploring the in-depth integration mode of Nanjing Brocade skills and the clothing customisation industry, continuously exploring the potential value of Nanjing Brocade skills, and innovating product design and business models to meet the increasingly diversified market demand. Strengthen the research on the inheritance and innovation of Nanjing Brocade skills, cultivate more excellent inheritance talents, and promote the sustainable development of Nanjing Brocade skills in modern society. It is hoped that this study can provide a useful reference and reference for innovation and entrepreneurship in the customised clothing industry, promote the synergistic development of Nanjing Brocade skills and the customised clothing industry, realise the organic combination of traditional culture and modern industry, and contribute to the prosperity of the industry.

Author Contributions

Conceptualisation – Kou Y, Li R; methodology – Kou Y; formal analysis – Kou Y; investigation – Li R; resources – Li R; writing-original draft preparation – Kou Y; writing-review and editing –Li R; visualisation – Kou Y; supervision – Kou Y. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Funding

This work is supported by Xi'an Traffic Engineering Institute Key Scientific Research Project 2024 (Grant No. 2024KY-24).

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