

Research on the Path of Art Industry Combination for the Cultivation of College Clothing Talents under the Background of AI

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ABSTRACT

The rapid advancement of technology has brought significant changes to many sectors, including the clothing and fashion industry. As the industry evolves, there is a growing emphasis on blending artistic creativity with industrial practices, particularly in the context of clothing education. This research explores how the fusion of art and industry can be used to nurture new talent in Chinese universities, focusing on the development of future clothing professionals. The study examines the role of the "Art Industry Combination" in shaping the next generation of designers and technicians, with a particular emphasis on how technological innovations, such as design automation and virtual fitting, are influencing the learning process. By analyzing a case study of Shenzhen Textile and Garment Group, this research provides insight into how technological integration and industry partnerships are helping to bridge the gap between academia and the real-world demands of the fashion industry. The findings contribute to a deeper understanding of how universities and companies can collaborate to cultivate highly skilled professionals who are both creatively gifted and technically proficient.

KEYWORDS

Technology Integration; Clothing Education; Talent Development; Industry Partnerships; Design Automation

1 Introduction

The fashion industry is currently undergoing a significant transformation, fueled by the rapid advancement of technology. Among the most impactful forces reshaping this sector is Artificial Intelligence (AI), which has found its way into multiple aspects of fashion, from design to production to customer interaction. What once seemed like futuristic ideas—such as creating personalized clothing or predicting trends with data—are now becoming commonplace in fashion companies worldwide. In particular, AI technologies are improving design processes, enabling more accurate forecasting, and offering innovative ways to interact with customers ^[1]. However, these advancements also call for a shift in how educational institutions prepare the next generation of fashion professionals.

Traditionally, clothing education has focused heavily on artistic creativity, such as design principles, fabric selection, and garment construction. This artistic approach was ideal for producing skilled designers with a strong foundation in aesthetics. However, the increasing influence of technology—especially AI—has led to the need for a more integrated educational approach that combines creativity with technical expertise. This dual approach is known as the "Art Industry Combination," which ensures that students not only hone their artistic skills but also gain proficiency in the use of technologies that are revolutionizing the fashion industry ^[2].

One of the challenges faced by universities in integrating AI into clothing education is ensuring that students are not just familiar with the technology but can also apply it in practical, real-world contexts. While AI tools for design, pattern-making, and consumer behavior analysis are available, students often do not have enough opportunities to work with these tools outside of theoretical frameworks. This lack of practical exposure can leave students unprepared for the rapidly changing job market, where employers are increasingly seeking professionals who can apply these technologies seamlessly ^[3]. Therefore, partnerships between universities and industry leaders become essential. Companies like Shenzhen Textile and Garment Group, which are at the forefront of AI implementation, provide an excellent model for industry-academia collaboration. Through internships, research collaborations, and hands-on experiences, students can gain the necessary exposure to AI technologies in a real-world setting.

Despite the many advantages, integrating AI into fashion education requires a careful balancing act. On one hand, it's essential to continue fostering creativity and artistry, which are central to the identity of the fashion industry. On the other hand, students must learn how to work with the technologies that are transforming the industry. This is where the "Art Industry Combination" model proves essential. It's not simply about adding AI tools to existing curricula, but about rethinking the curriculum itself to ensure that students develop both their creative abilities and technical know-how. By doing so, universities can create well-rounded graduates who can effectively contribute to the future of fashion design and production.

This research aims to explore these themes in depth, with a focus on how AI is being integrated into Chinese clothing education and how universities can adopt best practices to prepare students for the future. By examining the case of Shenzhen Textile and Garment Group, this study will provide insights into how industry-academia collaboration can

contribute to the cultivation of talented professionals who possess both artistic vision and technological expertise.

2 Literature Review

2.1 Transformations in Fashion Design and Production

AI's impact on fashion design and production is substantial, particularly in areas such as design automation, trend forecasting, and supply chain optimization. One of the most notable changes is in the design process itself. Historically, designers relied on their creativity and intuition to create fashion collections, often influenced by market trends and cultural shifts. With AI, however, designers can now leverage data-driven tools that analyze consumer behavior, predict trends, and suggest design possibilities. For example, AI algorithms can predict which colors, patterns, and styles will resonate with consumers, making the design process more efficient and targeted ^[2].

AI is also transforming the production side of the fashion industry. Traditionally, garment manufacturing has been a labor-intensive process that involves multiple steps, from cutting fabric to stitching and finishing. Today, AI-powered robots and automation systems are streamlining these tasks, reducing production times, and improving accuracy. These systems can cut fabric more precisely, sew with fewer errors, and even assemble garments with minimal human intervention [4]. Moreover, AI is helping fashion companies better forecast demand, which can reduce overproduction—a key issue in the fashion industry that contributes to waste and unsold inventory [3]. By analyzing data from past sales and current trends, AI models help brands determine how much of each product to produce, minimizing waste and making the supply chain more sustainable.

2.2 The Need for Integrating Art and Technology in Fashion Education

As the fashion industry becomes increasingly tech-driven, the need for a new kind of designer—one who is equally skilled in art and technology—has emerged. Traditionally, fashion design education has focused primarily on nurturing creativity, with students learning techniques like sketching, fabric manipulation, and pattern making. These courses emphasize the artistic side of fashion and aim to produce designers with a strong foundation in aesthetics and craftsmanship. However, the growing role of technology in fashion has led to a shift in the way clothing education is approached ^[5].

Today, there is a clear need to combine artistic ability with technical expertise. Students must be prepared not only to create visually compelling designs but also to understand and use advanced technologies that are transforming the fashion industry. This is where the concept of the "Art Industry Combination" comes into play, blending creative education with the technical knowledge required for working with modern tools. This approach ensures that future designers can integrate both aspects into their work, making them adaptable and well-equipped for the challenges of the industry [5].

2.3 The Importance of Industry Partnerships for Education

The effective integration of technology into fashion education relies heavily on collaboration between academic institutions and industry leaders. Fashion companies that are already using AI and other technologies can play a crucial role in shaping the education of future professionals by providing students with real-world applications of these tools. Industry partnerships can take many forms, such as internships, research collaborations, and industry-sponsored projects, which allow students to work on practical problems and gain hands-on experience with the latest technologies .

Industry partnerships also provide universities with insights into the current and future needs of the fashion industry, helping them design curricula that are aligned with market demands. As AI continues to evolve, it will be essential for universities to stay up to date with the latest technological trends and incorporate these changes into their educational offerings. By working closely with industry leaders, universities can ensure that students are receiving an education that prepares them for the realities of the job market and equips them with the tools necessary to succeed in the fashion industry of the future.

3 Research Methodology

3.1 Data Collection

For this research, data was collected through secondary sources related to Shenzhen Textile and Garment Group, which serves as the main case study for exploring the integration of technology into clothing education. The primary sources of data include the company's annual reports, press releases, and publicly available operational and financial statements. These documents provide valuable insights into how Shenzhen Textile and Garment Group has embraced

innovative technologies in its design, production, and business operations. The company’s reports highlight its use of design automation, virtual fitting technologies, and advanced data analytics, which contribute to the efficiency of its production processes and product development.

3.2 Data Analysis

The data analysis for this study involved synthesizing the information gathered from various secondary sources, including company documents, industry reports, and academic literature. The goal was to identify recurring themes and patterns regarding how Shenzhen Textile and Garment Group is using technology to shape both its operational processes and its approach to talent development. This analysis focused on key areas such as the use of automation in design and production, the role of data in decision-making, and the integration of innovative technologies like virtual fitting systems. The research examined how Shenzhen’s technology-driven approach influences the clothing design process, offering insights into how technological tools complement creative practices. Additionally, the study explored the importance of industry partnerships in bridging the gap between academic education and real-world industry requirements. By analyzing these findings, the research aimed to understand how the combination of creativity and technical knowledge can effectively prepare students for the demands of the evolving fashion industry.

4 Analysis and Discussion

4.1 Technological Integration at Shenzhen Textile and Garment Group

Shenzhen Textile and Garment Group has emerged as a pioneer in integrating technology into its design and manufacturing processes. According to the company's annual reports, several technological innovations have been key to enhancing its operations, including the automation of design tasks, data-driven decision-making, and the use of virtual fitting systems. These advancements have significantly increased the company’s production efficiency, reduced the time required for design, and allowed for more personalized products that better meet consumer demands.

A key innovation is the automation of design tasks, particularly in fabric cutting and sewing. By automating these processes, Shenzhen has been able to reduce production time and minimize human error, resulting in higher quality products and more efficient production. With these improvements, the company can also handle more intricate and detailed designs, which has helped them meet the evolving needs of consumers. Another important advancement is the introduction of virtual fitting technology, which allows customers to try on garments virtually through digital simulations. This technology has responded to the growing demand for a more convenient shopping experience and has helped reduce the number of product returns by allowing consumers to make better purchasing decisions. The figure 1 presents the bar chart comparing production efficiency before and after automation shows the significant reduction in production time, from 50 hours per batch to just 30 hours after the implementation of automation. This improvement in efficiency has enabled the company to meet market demands much faster and with greater consistency.

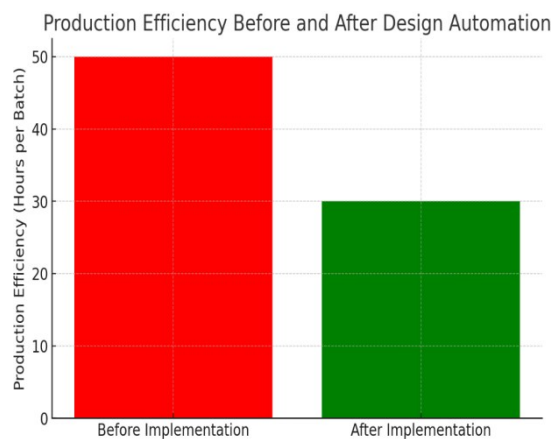


Fig.1 Production Efficiency Before and After Design Automation

4.2 The Role of Data-Driven Decision Making

Shenzhen Textile and Garment Group’s shift towards data-driven decision-making has been another cornerstone of its success. The company now uses data analytics to predict trends and understand consumer behavior, moving away from traditional intuition-based methods. This transition has allowed the company to forecast demand more accurately and

adjust production schedules to match real consumer preferences, thereby reducing waste and improving inventory management.

By harnessing large amounts of consumer data, such as purchase history and online behavior, Shenzhen has enhanced its ability to tailor its marketing strategies and product offerings. This approach has helped the company stay ahead of trends and ensure that it produces the right products at the right time, minimizing unsold stock and optimizing production cycles. The effectiveness of this data-driven approach is clearly demonstrated in the figure 2 of line **graph** comparing forecasted and actual product sales. As shown, the forecasted sales closely match the actual sales, which highlights the accuracy of the company's predictive models in reducing overproduction.

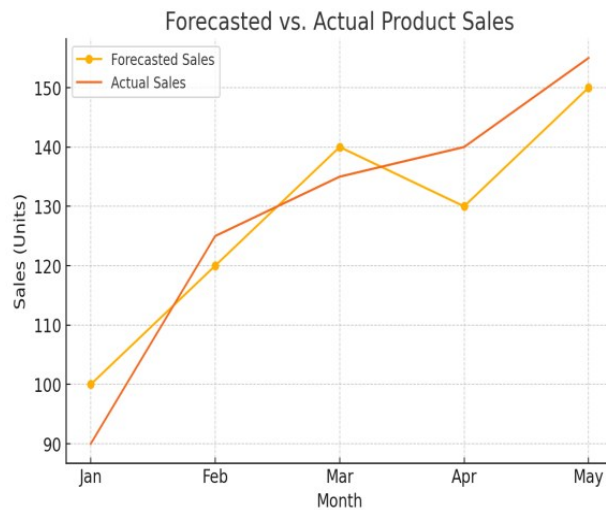


Fig.2 Forecasted vs. Actual Product Sales

4.3 The Impact of Technological Integration on Talent Development

The integration of technology at Shenzhen Textile and Garment Group has had a direct impact on its talent development strategy. The company now requires employees to possess not only traditional design skills but also the technical knowledge needed to operate automated systems and use data analytics tools. This shift in the required skill set has highlighted the need for universities to embrace the Art Industry Combination model, which emphasizes both artistic creativity and technical expertise.

The scatter plot in figure 6 comparing technological proficiency with job satisfaction at Shenzhen Textile and Garment Group reveals a positive correlation between higher technological proficiency and job satisfaction. This highlights the impact that technological tools can have on both productivity and employee morale. Workers who are more proficient with the technologies in use report greater job satisfaction, suggesting that providing employees with the necessary tools and training not only improves efficiency but also contributes to a more satisfied workforce.

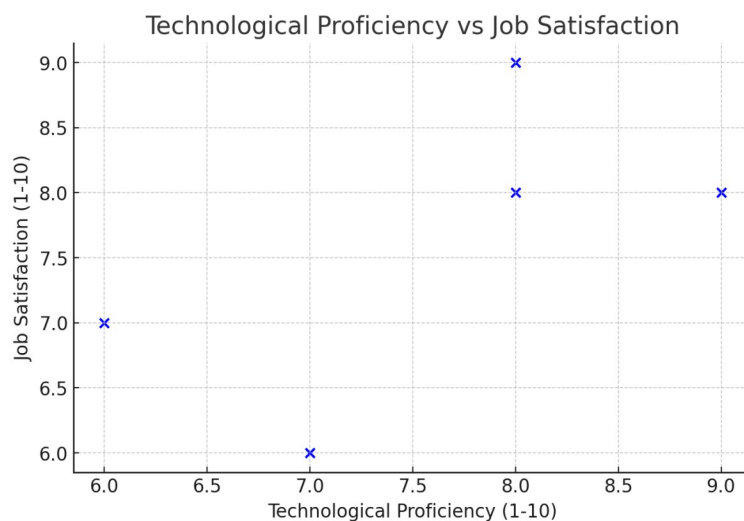


Fig 3 Technological Proficiency Vs Job satisfaction

5 Conclusion

In conclusion, the integration of technology into the fashion industry is reshaping both production processes and the skills required of professionals. By adopting the "Art Industry Combination" approach, universities can better prepare students for the future, ensuring they are equipped with the creativity and technical knowledge necessary to succeed in an increasingly digital industry.

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