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Research on the Collaborative Development of Higher Vocational Colleges and Local Ethnic Industries Driven by the Digital Economy

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Abstract: Against the backdrop of the booming digital economy, higher vocational colleges, as key regional talent cultivation platforms, face significant opportunities for transformation and upgrading. Based on the practical needs of economic and social development in China's ethnic minority regions, this paper explores how the digital economy can promote the in-depth, coordinated development of higher vocational colleges and local ethnic industries. By reviewing policy backgrounds and existing research, this paper summarizes the development characteristics of local ethnic industries and the difficulties and opportunities they face in digital transformation.The application of digital technology has effectively overcome geographical and resource constraints, injecting new momentum into the sustainable development of ethnic industries. Finally, this paper proposes strategies such as improving the integration of industry and education, strengthening cross-sector collaboration, and promoting the integration of education and industry platforms, aiming to provide practical references and theoretical support for the digital development of ethnic minority regions and the reform of higher vocational education.

Keywords: *Digital Economy; Higher Vocational Colleges; Ethnic Industries; Integration of Industry and Education; Intangible Cultural Heritage Inheritance; Digital Transformation.*

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I. INTRODUCTION

Driven by the digital economy, China's higher vocational education (HVE) faces significant opportunities and challenges in digital transformation. In terms of policy support, the government prioritizes the integrated development of vocational education and the digital economy. In 2021, the General Offices of the CPC Central Committee and the State Council issued the "Opinions on Promoting the High-Quality Development of Modern Vocational Education," emphasizing that vocational education should closely align with industrial upgrading and technological change trends, prioritizing the development of emerging disciplines such as advanced manufacturing, new energy, modern agriculture, information technology, and artificial intelligence. Furthermore, innovative teaching models and the deep integration of information technology should be emphasized to improve classroom quality. This series of policies provides clear direction and guarantees for the digital transformation of HVE institutions.

In terms of technological integration and teaching reform, the education sector is actively promoting the "Education Digitalization Strategic Action" and the development of smart education. The Ministry of Education has proposed building a "1+5" digital vocational education system, comprising a vocational education decision-making brain and decision support center, a professional teaching resource center, a high-quality online course center, a virtual simulation training center, and a governance capacity improvement center. This digital transformation will drive a holistic transformation in teaching models and governance approaches. Vocational colleges are accelerating the development of smart campuses, extensively applying technologies such as the Internet of Things, big data, and artificial intelligence to create smart classrooms and virtual simulation experimental training platforms, promoting innovation in teaching environments and models. By 2022, over 90% of vocational colleges nationwide will have established fully functional campus networks, and over 85% will have met the standards for digital campus construction. 203 national-level vocational education professional resource libraries have been established, and thousands of high-quality online open courses have been developed. In the same year, the National Vocational Education Smart Education Platform was launched, bringing together 1,200 professional resource

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libraries, over 6,600 high-quality online courses, and over 2,000 open video courses, serving provinces across China and benefiting over 180 countries and regions. The construction of these digital teaching resources and platforms has effectively promoted the sharing of high-quality educational resources and teaching innovation, and achieved the goal of "suspending classes but not learning" during the epidemic.

In terms of program offerings and talent development, higher vocational education is closely aligned with the talent needs of the digital industry, continuously upgrading and transforming traditional programs and adding emerging ones to meet the demands of the digital economy. In recent years, higher vocational colleges have accelerated their development of programs related to 5G, artificial intelligence, big data, cloud computing, and the Internet of Things, focusing on developing high-level specialized programs in areas such as Internet application technology and big data technology and applications to enhance their ability to cultivate digitally skilled professionals. At the same time, they are integrating digital technologies into traditional professional teaching, implementing comprehensive digital transformations from program titles to course content, to better align talent development with the demands of digital industry. Many colleges and universities are also collaborating with leading digital economy companies such as Huawei and Tencent on talent development, offering vocational skill level certificate programs in areas such as "Big Data Analysis" and "Cloud Computing Operations and Maintenance." These collaborative efforts cultivate a large number of digital technology professionals to support the development of "digital industrialization" and "industrial digitization."

Driven by both policy and industry demand, the digital transformation of higher vocational education has become a major trend. On one hand, the government has introduced policies such as the "Implementation Measures for the Digital Technology Engineer Training Project," and the Ministry of Human Resources and Social Security has promulgated 10 new occupational standards, including those for intelligent manufacturing, providing a foundation for the cultivation of digital technology talent. On the other hand, the rapid development of the digital economy has led to a surge in demand for talent. According to a report by the China Academy of Information and Communications Technology, by 2020, my country's digital talent shortage reached nearly 11 million, and this gap is expected to continue to widen as digitalization advances across all industries. Consequently, higher vocational colleges are continuously evolving their talent development models, strengthening training in digital and interdisciplinary skills to meet the demands of emerging industries. For example, specialized courses and training programs are being offered in areas such as e-commerce and big data applications to cultivate a new type of talent with both professional and digital technology expertise. By deepening the integration of industry and education, as well as school-enterprise collaboration, higher vocational education is collaborating with employers to develop talent standards to ensure that graduates' skills are precisely aligned with the demands of digital economy positions. Overall, under the guidance of policies and the promotion of technology, China's higher vocational education is developing rapidly in the direction of digitalization, intelligence and integration, showing a good trend of continuous optimization of professional structure, emergence of innovative teaching models, gradual improvement of resource platforms, and significant improvement in service industry capabilities.

II. REVIEW OF RELATED DOMESTIC RESEARCH

Domestic scholars have conducted extensive research on the collaborative development of higher vocational colleges and local ethnic industries, encompassing policy analysis, case studies, and theoretical discussions. By reviewing the findings of recent authoritative journals and academic papers, we can identify several key areas of research, including approaches and shortcomings.

- *Research Hotspots*

Academics are currently focusing on how vocational education can contribute to the economic and social development of ethnic minority regions. Key topics include: 1. Industry-education integration and vocational education reform. Many studies consider industry-education integration a key path to accelerating the development of vocational education in ethnic minority regions, exploring the role of school-enterprise collaboration in improving vocational education and cultivating local skilled personnel. Studies have shown that since the implementation of the Vocational Education Law, vocational education in ethnic minority regions has significantly accelerated, driven by the coordinated efforts of the government and industry. However, it still faces some institutional and mechanism barriers and requires further reform. 2. Vocational education empowers rural revitalization and poverty alleviation. Ethnic minority regions are mostly located in underdeveloped rural areas in western China, and how vocational education can contribute to rural revitalization is a hot topic. Some scholars have focused on "vocational education plus poverty alleviation," summarizing the experience of "vocational education for one person, employment for one person, and poverty alleviation for one family." They further explore how, after complete poverty alleviation, the cultivation of new professional farmers and rural artisans can support rural industrial revitalization. Vocational education, particularly in ethnic minority regions, is expected to help prevent the intergenerational transmission of poverty and promote common prosperity, becoming a research hotspot. 3. Vocational education transformation in the context of digitalization. With the advancement of the Digital China strategy, "digitalization of vocational education" has become a new academic focus. Bibliometric analysis shows that over the past decade, research on digital resource development, smart vocational education platforms, and information-based teaching models has grown significantly. Some scholars have explored the application of technologies such as cloud computing and big data in vocational education, as well as how digital technologies can improve the teaching of

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traditional ethnic minority crafts. For example, one paper introduced the case study of developing a traditional Mongolian carpet weaving course using virtual simulation technology, reflecting the trend of "digital empowerment of intangible cultural heritage education." ④ Integration of ethnic cultural heritage and vocational education. Many studies have focused on how to integrate ethnic minority intangible cultural heritage into the vocational education system, achieving the goal of "intangible cultural heritage entering campuses and classrooms." Case studies have examined models for integrating intangible cultural heritage projects such as Miao embroidery, Zhuang brocade, and Tibetan medicine with vocational education program development, summarizing effective practices such as co-establishing master studios between schools and enterprises, developing school-based teaching materials, and cultivating "dual-qualified" teachers. This type of research emphasizes the role of vocational education in cultural inheritance and innovation, and has become a key topic in vocational education's service to ethnic minority regions. ⑤ Internationalization of vocational education and the development of ethnic minority regions. Some scholars have expanded their perspective to the context of the Belt and Road Initiative, exploring how vocational education in ethnic minority regions (such as Guangxi and Xinjiang) can engage in international industry-education collaboration to attract investment and talent. For example, an article analyzed the practice of Guangxi vocational colleges in exporting technical skills training to ASEAN countries and jointly building Luban Workshops, and believed that internationalization of education has provided new impetus for the development of vocational education in ethnic minority areas.

➢ *Research Methods*

Domestic research has adopted a variety of methodologies, primarily qualitative research supplemented by quantitative analysis. A common approach is the case study, which extracts insights through in-depth analysis of typical regions or projects. For example, one scholar, using the case study of Ewen Group's support for the Miao embroidery industry in Guizhou, analyzed how digital technology empowers traditional cultural innovation and constructed a theoretical model for the digital development of traditional culture within the context of digital rural revitalization. This study detailed the Ewen Group's digital craft platform, which connects embroiderers, designers, and brand owners, lifting 18,000 embroiderers out of poverty and helping over 4,000 micro-entrepreneurs in impoverished ethnic minority areas enter the international market. Through case studies, the authors proposed a cultural digital innovation path that combines "data operations" and "operational data" and summarized the implications of this model for rural revitalization. Similar case studies exist, such as analyses of the "school-enterprise co-construction of intangible cultural heritage workshops" model and the model of vocational colleges serving the local tea industry. Field research and in-depth interviews are also important tools in these studies, with researchers visiting businesses, schools, and farmers to obtain first-hand information to support their arguments. Another type of research uses questionnaires and statistical analysis to gain a macro-level understanding of the current state of vocational education in ethnic minority regions. For example, some scholars have used an educational ecology perspective to construct an indicator system to measure and evaluate the development of vocational education in western ethnic minority regions. They have identified issues such as talent loss, a misalignment between professional settings and industry needs, and an inadequate mechanism for multi-faceted collaborative education, and have accordingly proposed policy recommendations. Other studies have reviewed national policy documents and historical research literature through text analysis, charting the evolution of research in areas such as digital vocational education and industry-education integration. Overall, qualitative research predominates, focusing on theoretical refinement based on case studies and policies. Quantitative research is relatively rare, but it also provides useful evidence for evaluating the effectiveness of the coordinated development of vocational education and industry.

➢ *Research Conclusions and Deficiencies*

While existing research acknowledges achievements, it also points to areas that require further development. Many scholars agree that vocational education holds great potential in ethnic minority regions, but to truly leverage its potential, institutional and resource bottlenecks must be overcome. For example, some research, drawing on organizational sociology theory, has analyzed the current difficulties faced by industry-education integration in ethnic minority regions: difficulties in stimulating internal motivation (local governments and schools and enterprises are unwilling to collaborate, or collaborations are superficial), a lack of value recognition (society lacks recognition of vocational education and traditional skills), insufficient legal basis (imperfect regulations and policies supporting industry-education integration), and a lag between capacity and goals (a misalignment between institutions' own operational capabilities and industry needs). These issues frequently hinder the advancement of industry-education integration at the grassroots level, necessitating improvements at both the policy and operational levels. Furthermore, some researchers have pointed out that talent and funding constraints remain prominent: border ethnic minority regions struggle to attract and retain highly qualified "dual-qualified" teachers, and local enterprises are generally small and technologically inadequate, making it difficult to provide strong support to institutions. Involving social participation in education remains a challenge. In terms of digitalization, while many studies have highlighted the importance of building smart vocational education and online platforms, they lack long-term tracking data to support specific implementation strategies and evaluate their effectiveness. This reflects the current research's shortcomings in practical verification and quantitative evaluation.

It's worth noting that recent research trends have increasingly focused on aligning with national strategies and providing intellectual support for policymaking. For example, the aforementioned case study on the Yuwen Group clearly suggests that the innovative digital development of

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traditional culture can be a sustainable path to rural revitalization, aligning with the requirements of the 20th National Congress of the Communist Party of China and the 14th Five-Year Plan for the "integrated development of primary, secondary, and tertiary industries" and "cultural empowerment of rural revitalization." The study recommends that the government encourage leading enterprises to transform their business logic in accordance with its proposed model, deeply explore the value of traditional rural culture, and promote consumption upgrades based on market demand. For example, scholars have specifically examined policy documents such as the "Opinions on Promoting the Implementation of the National Cultural Digitalization Strategy," arguing that digital technology has significant potential for protecting and promoting ethnic minority cultures and calling for stronger incentives to support enterprises and institutions in developing digital cultural industries. Overall, domestic research has initially formed a framework that integrates policy research, practical cases, and theoretical advancement, reaching a consensus on the importance of coordinated development between higher vocational colleges and ethnic industries. The scholars proposed countermeasures, including: improving legal safeguards for industry-education integration and establishing a government-led collaborative education mechanism; optimizing professional offerings to closely align with the industrial needs of ethnic minority regions and developing distinctive teaching materials and courses; strengthening diversified collaboration between schools, enterprises, and industries, particularly guiding leading industry companies and social capital to invest in vocational education; and leveraging digital technology to ensure that high-quality educational resources flow to ethnic minority regions and promote educational equity. These suggestions provide valuable insights for future practice.

However, there are three shortcomings. First, empirical research is relatively weak, with few quantitative analyses of the effectiveness of collaborative development models, and a lack of long-term follow-up surveys to assess the specific impact of industry-education integration on the local economy and student development. Second, the scope of research needs to be expanded. Currently, most research focuses on a few typical regions and industries, and research on more ethnic regions and diverse industrial forms is still insufficient. Third, interdisciplinary research is lacking. There is still much room for research on how to integrate multidisciplinary perspectives such as education, ethnology, and economics to study this topic. In the future, we should further strengthen case comparisons and data support, pay attention to the changes brought about by the application of new technologies, such as the impact of artificial intelligence on vocational skills training, and continuously enrich and deepen the research field of the collaborative development of higher vocational colleges and local ethnic industries.

III. CHARACTERISTICS AND DEVELOPMENT STATUS OF LOCAL ETHNIC INDUSTRIES

The main characteristics of local ethnic industries are specialized industries formed based on geographical location and ethnic culture. They often feature distinctive traditional crafts or cultural elements and are closely linked to the lifestyles and skills of local ethnic minorities. These industries include ethnic handicrafts (such as embroidery, brocade, batik, and silver jewelry), traditional ethnic medicine, specialty agricultural products (such as tea, spices, and medicinal herbs), and ethnic cultural tourism. During his visit to Guizhou, General Secretary Xi Jinping noted that Miao embroidery, with its unique ethnic characteristics, is "both traditional and fashionable, both cultural and industrial," promoting traditional culture while increasing local incomes and promoting rural revitalization. This statement vividly illustrates the dual nature of ethnic industries: on the one hand, they carry rich cultural value and intangible cultural heritage skills, possessing uniqueness and artistry; on the other hand, through industrialization, they can also produce products and services, possessing market value and development potential.

Current development reveals that many ethnic industries are experiencing both rapid growth and challenges. On the one hand, governments at all levels prioritize the development of distinctive industries in ethnic regions, viewing them as a key driver of rural revitalization and regional economic development. For example, Guangxi, Guizhou, and Yunnan have introduced policies to support ethnic handicrafts and cultural tourism, fostering their large-scale development through intangible cultural heritage poverty alleviation workshops and specialized industrial bases. Many ethnic minority regions have fostered a number of influential ethnic brands and leading enterprises, and products such as ethnic embroidery, textiles, and food are beginning to expand beyond the mountains and into broader markets. Some ethnic cultural tourism destinations (such as Xishuangbanna and Dali in Yunnan) have leveraged digital marketing to attract large numbers of tourists, driving the development of local industries such as accommodation, catering, and performing arts. On the other hand, it's crucial to note that many ethnic industries remain in their early stages of development, characterized by small, scattered, and weak production: production is primarily conducted by family workshops or micro-enterprises, resulting in low added value products, limited sales channels, and limited resilience to risks. Driven by the wave of digitalization, these traditional industries face urgent pressure to transform and upgrade, facing numerous challenges and significant opportunities.

IV. DIFFICULTIES AND OPPORTUNITIES IN DIGITAL TRANSFORMATION

- *Difficulties*

Bottlenecks in talent and understanding exist. Digital literacy among practitioners in ethnic minority areas is generally low, and talent with both traditional craftsmanship and digital technology and marketing expertise is scarce. For example, a village official in Guizhou noted that while the local tea is of excellent quality, sales have been tepid due to the lack of e-commerce expertise in the village. Many artisans in remote villages are older and have limited education, leading to initial lack of understanding and

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confidence in new technologies like livestreaming and digital marketing. Traditional "small workshop" producers, often accustomed to inheriting ancestral skills, face gaps in understanding and capabilities regarding standardized production and online sales. These factors contribute to a lack of internal driving force for digital transformation.

Non-standardization and scalability challenges. Many ethnic handicrafts are characterized by non-standardization, with individual craftspeople possessing unique skills. Skill levels and styles vary widely among inheritors, making it difficult to establish unified quality standards, hindering mass production and market expansion. For example, many embroiderers have never received systematic training and rely solely on experience, resulting in inconsistent product quality. The lack of standards makes it difficult to integrate modern design and manufacturing processes with these traditional skills, and digital transformation and process upgrades face technical obstacles. Furthermore, limited production capacity and low levels of organization make it difficult to rapidly scale up production even when market demand exists.

Infrastructure and funding constraints. Some remote ethnic minority areas have relatively weak digital infrastructure, and conditions like internet broadband and logistics have long lagged behind those in developed eastern regions. However, in recent years, through projects like "Broadband to Every Village" and "Eastern Digital West Computing," this shortcoming is gradually being addressed. Regarding funding, small and micro businesses and artisans face limited financing channels, making the software and equipment investment and training and promotion costs required for digital transformation a heavy burden for them. Without support from the government and social capital, digital upgrades alone are difficult to achieve.

Market development and intellectual property. Products with ethnic characteristics often have limited market recognition and weak brand influence. When expanding into external markets, it's crucial to address how to make these products, steeped in regional culture, more consumers understand and embrace them. Furthermore, traditional patterns, designs, recipes, and craftsmanship face intellectual property protection challenges in digital dissemination, requiring protection against improper copying and exploitation, which could potentially impact the rights of original inheritors.

- *Development Opportunities*

First, digital technology can significantly bridge the information gap and connect remote mountainous areas with the broader market. By building digital platforms and databases, it's possible to aggregate dispersed artisan resources. For example, the "Embroidery Lady Database" established by the Yuwen Group digitally records each embroiderer's skills and expertise. These skills are then enhanced through standardized training, thereby transforming each embroiderer's individual abilities into the collective's production capacity. A similarly established pattern database contains over 8,000 traditional ethnic motifs for designers worldwide to access and select from. Leveraging these two database platforms, even embroiderers in remote mountain areas can receive orders from around the world. Designers select patterns online, and the company then connects them with the embroiderers to complete the product. This digital empowerment model connects embroiderers in remote mountain areas with the outside world, allowing traditional skills to connect with the broader market and realize commercial value.

Secondly, emerging formats such as e-commerce, short videos, and livestreaming have opened up new channels for marketing ethnic products. A surge in livestreaming and the "influencer economy" has emerged across the country, with specialty agricultural products and handicrafts from ethnic minority areas reaching the nation through platforms like Taobao Live, Douyin, and Kuaishou. Many young people rooted in their rural areas are actively participating, becoming "new farmers" and "village broadcasters" who endorse local products. This not only expands product sales but also brings elements of ethnic culture to the public eye. For example, in Songtao Miao Autonomous County, Guizhou Province, a secondary vocational school has established an industry-education integration platform integrating design, production, and livestreaming sales. Students are designing products combining Miao embroidery with modern accessories and selling them nationwide through livestreaming, seamlessly integrating traditional cultural heritage with emerging e-commerce models. Digital marketing has significantly transcended geographical constraints, reversing the old saying, "even good wine needs a bush."

Furthermore, digital technology is boosting the upgrading of the cultural tourism industry and creating new opportunities for industrial integration. Yunnan Province's "Travel Yunnan with a Mobile Phone" smart tourism platform is a prime example. Leveraging big data and cloud services, the platform integrates tourism essentials such as food, accommodation, transportation, shopping, and entertainment onto mobile devices. Visitors can access comprehensive information and services across Yunnan through a single app. "Travel Yunnan with a Mobile Phone" has established a digital foundation for Yunnan's tourism industry, enabling full online processing of scenic spot tickets, hotels, and complaint handling, significantly improving the visitor experience and industry management efficiency. More importantly, it has brought previously unknown ethnic minority villages and beautiful rural areas to life for tourists nationwide. Many previously unknown places like Lincang and Pu'er have become emerging tourist hotspots thanks to digital platforms, ushering in growth opportunities for the local cultural tourism industry. "Digital cultural tourism" is transforming the rich ecological and cultural resources of ethnic regions into tangible economic benefits, deeply integrating tourism with cultural creativity and new media communication, creating a virtuous cycle.

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V. TYPICAL CASES OF COLLABORATIVE DEVELOPMENT BETWEEN HIGHER VOCATIONAL COLLEGES AND LOCAL ETHNIC INDUSTRIES

Vocational colleges, leveraging their talent and technological strengths, are collaborating deeply with local ethnic industries, a crucial path to promoting industry-education integration and serving regional development. The following two case studies illustrate how vocational colleges are empowering local ethnic industries and achieving collaborative development within the digital economy.

- *Case 1:*

Digital Innovation in the Heritage of Guangxi Zhuang Brocade Culture. Guangxi Zhuang brocade (Zhuang brocade), a traditional weaving craft recognized as a national intangible cultural heritage, has long suffered from a limited product offering and low market recognition. Guangxi Vocational and Technical College of Industry and Commerce established a student team, "Smart Painting of Zhuang Brocade," to help this traditional industry transform and upgrade, leveraging "culture as its foundation and technology as its wings." The team deeply explored the cultural connotations of Zhuang brocade patterns, designing and developing a series of IP images, including "Zhuang Brocade Small Brocade" and "Embroidered Phoenix." These IPs have been applied to cultural and creative derivatives such as scarves, pillows, and accessories, imbuing Zhuang brocade products with practicality and a fashionable aesthetic, significantly enhancing brand awareness. To promote the upgrading of the Zhuang brocade industry, the university-enterprise team jointly established the Zhuang Brocade Cultural and Creative Industrial Park, establishing an integrated platform for "production, learning, research, and application." College faculty and enterprise technical personnel collaborated to integrate modern techniques such as 3D modeling and digital printing into Zhuang brocade weaving, creating a fusion of traditional patterns and contemporary design. Through this series of innovative initiatives, Zhuang brocade products are no longer limited to decorative wall coverings, but have expanded into multiple fields such as clothing, home furnishings, and artwork, forming a new industrial matrix of "intangible cultural heritage + fashion." With a global perspective, the team also collaborated with Southeast Asian designers to develop cross-border products combining "Zhuang brocade + Southeast Asian elements," leveraging cross-border e-commerce to expand into overseas markets. At the same time, they introduced advanced equipment and standardized management to transform Zhuang brocade production from a workshop-based to large-scale operation. Following the project's implementation, the local annual output of Zhuang brocade products increased by 40%, creating jobs for over 300 rural embroiderers and increasing their average monthly income by over 2,000 yuan. Traditional Zhuang brocade has been given new life. In this case, vocational colleges leveraged their design creativity and technological innovation expertise to promote the digital transformation of intangible cultural heritage crafts and the extension of the industrial chain, achieving a win-win situation for both cultural heritage preservation and industrial revitalization.

- *Case 2:*

Miao embroidery in Songtao, Guizhou, is revitalized through industry-education integration. Songtao Miao Autonomous County in Tongren, Guizhou, known as the "Hometown of Miao Embroidery," once faced a difficult situation: a lack of successors and a shortage of talent to continue the tradition. To address this, Songtao County Secondary Vocational School, with assistance from eastern China, actively explored a new model combining vocational education with intangible cultural heritage, bringing Miao embroidery out of its formal purview and into the classroom. The aid-aided Guizhou teacher team served as a bridge, integrating Dongguan's advanced vocational education concepts with Songtao's local intangible cultural heritage. Through a combination of a "master studio + curriculum development + practical training base," they established a platform integrating industry and education encompassing "four centers, two offices, and one base." The school has established a Miao embroidery design and development center, a production and craftsmanship center, a livestreaming sales center, and an intangible cultural heritage exhibition center, as well as a master studio and e-commerce operations office. The school also leverages the local Miao embroidery heritage base as a practical training base. The school offers a series of courses titled "Intangible Cultural Heritage + Fashion," guiding students to explore the cultural significance of Miao embroidery totem patterns and integrate them into modern clothing and accessory design. In recent years, students have created over 10 series of nearly 100 Miao embroidery fashion and cultural creations, which have won numerous provincial awards. More importantly, the school has established a seamless production and marketing chain. Each year, it cultivates over 100 students with comprehensive skills, design, and marketing expertise. Furthermore, through its on-campus e-commerce livestreaming center, student-designed Miao embroidery accessories are sold nationwide via livestreams, generating significant economic benefits for the local community. According to statistics, the school's platform incubates over 100 intangible cultural heritage professionals annually, significantly supporting the development of future talent in Miao embroidery. Students' Miao embroidery products, transformed from "artwork" into "commodities," are sold online for a high price. This not only promotes and preserves the rich culture of the Miao people but also generates income for both embroiderers and students, effectively integrating educational poverty alleviation with cultural revitalization. This case study has been hailed as a model for vocational education collaboration between East and West China: through school-enterprise collaboration and inter-school support, a platform has been established to revitalize and promote intangible cultural heritage, successfully exploring a new path for the sustainable development of the Miao embroidery industry. Today, Miao embroidery skills are no longer limited to oral transmission by the older generation; they have entered vocational education classrooms and, through the internet, are being disseminated nationwide, truly

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achieving the integrated development of "fingertip skills" and the "fingertip economy."

VI. SUMMARY

Driven by the digital economy, higher vocational education has initially completed its digital upgrade and developed new talent cultivation capabilities tailored to ethnic industries. However, despite possessing both cultural and economic value, local ethnic industries are plagued by small, scattered, and weak industries, non-standardization, and a shortage of digital skills. The case studies of Guangxi Zhuang Brocade and Guizhou Miao Embroidery demonstrate that higher vocational colleges, leveraging the three elements of "technology + talent + platform," can effectively overcome bottlenecks in traditional industrial upgrading, ensuring the vibrant preservation and market expansion of intangible cultural heritage. Going forward, policy support and long-term mechanisms will be crucial to deepen the integration of industry and education and promote the sustainable development of ethnic industries in the digital age.

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