



RESEARCH ARTICLE

RESEARCH ON THE STRATEGY OF CONSTRUCTING AN EFFICIENT MODEL OF INTEGRATION OF INDUSTRY AND EDUCATION IN GUANGXI TEA INDUSTRY BASED ON THE "FIVE INTEGRATION" MECHANISM

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ARTICLE INFO	ABSTRACT
<p>Submission 27 Jan., 2025</p> <p>Acceptance 21 Feb., 2025</p> <p>Keywords Industry Education Integration Combined; "Five-integration" mechanism; vocational education; New quality productivity; Guangxi tea industry</p> <p>Corresponding Author ouliting@stu.gxnu.edu.cn;</p>	<p>The purpose of this paper is to explore the application strategy of the efficient model of the "five integration" mechanism in the construction of the integration of industry and education in the tea industry in Guangxi. With the country's emphasis on the deep integration of vocational education and industry, and Guangxi's tea industry as an important pillar of local characteristic economy, how to promote the close connection between education and industry through innovative mechanisms has become an urgent problem to be solved. The "five integration" mechanism proposed in this paper is to connect facilities and posts, promote the exchange of standards, strengthen cultural integration, realize the mutual integration of dual teachers, and promote platform integration. It provides a new idea and path for the integration of production and education in Guangxi's tea industry. Through the implementation of the "five integration" mechanism, this paper hopes to create a new paradigm of the integration of industry and education in Guangxi's tea industry, further enhance the training of high-quality technical and skilled talents in the tea industry, promote in-depth cooperation between vocational colleges and enterprises, jointly carry out technology research and development and achievement transformation, and contribute to the transformation and upgrading of Guangxi's tea industry and regional economic and social development.</p>

1. INTRODUCTION

Guangxi is one of the important bases for tea production in China. The tea industry not only reflects the profound cultural heritage of Guangxi, but also has become Guangxi's traditional advantageous characteristic tea. At present, Guangxi's tea industry has become an important pillar of Guangxi's modern agricultural economic development and the backbone of continuously promoting rural revitalization, and has consolidated and expanded the achievements of poverty alleviation. The "Proposal for the 45th Development Plan of Chinese Tea (2021-2025)" points out that it is necessary to release energy through science and technology, innovate mechanisms, strengthen the construction of scientific and technological talents and think tanks in the field of tea, and improve the level of tea teaching and training teachers; The General Office of Guangxi put forward the "Several Opinions on Promoting the High-quality Development of Guangxi's Tea Industry", which clearly pointed out that it is necessary to promote the development of the whole tea industry chain in our region and accelerate the construction of a standard system. However, with the rapid development of Guangxi's tea industry, it is also facing a series of difficulties and challenges. Among them, the shortage of talents, the relatively single talent training model, the inability to match the supply and demand of talents, and the lack of effective cross-border collaborative education capabilities are particularly prominent, which have become the "Achilles heel" restricting the further upgrading of the industry.

According to incomplete statistics, although the current employment of Guangxi's tea industry has exceeded one million, the proportion of professional and skilled personnel is too low. There are deficiencies in the creative transformation and innovative development of the tea industry. Under the increasingly fierce market environment, it is the top priority to break through the inherent development bottleneck and inject new vitality into Guangxi's tea industry. However, the existing talent structure of Guangxi's tea industry is difficult to support the development of innovative practices. Therefore, how to solve the problem of talent shortage and build a talent training system that meets the development needs of the tea industry in the new era has become a key problem to be solved in Guangxi's tea industry. This project explores the strategy of the "five integrations" mechanism to build an efficient model of integration of industry and education in Guangxi's tea industry. It is committed to building a comprehensive talent training and development platform for the tea industry through multi-dimensional and in-depth integration and innovation, deeply analyzing the current situation of the tea industry at home and abroad and Guangxi, as well as the achievements and shortcomings of current talent training, and putting forward practical strategies and suggestions on this basis, in order to provide new ideas and methods for solving the problem of talent shortage in Guangxi's tea industry, and inject new vitality into Guangxi's regional economic development and rural revitalization.

2. LITERATURE REVIEW

As the birthplace of tea, China has been cultivating tea for more than 5,000 years, and is the world's largest producer, consumer and second largest exporter of tea. Therefore, the competition in the tea industry is becoming more and more fierce, and the integration of industry and education, as an important part of the talent training in the tea industry, plays a non-negligible

role in the development of the tea industry. Scholars have also continued to put forward new views and new research on the integration of industry and education. Wu et al., (2022) pointed out that it is necessary to deepen the integration of industry and education, which is not only an effective form for higher vocational colleges to implement the combination of work-study, but also an effective way to solve the disconnect between the demand for talents in enterprises and the supply of talents in colleges and universities. It is necessary to pay attention to shaping the education system, especially the problems of full-time education courses, lack of comprehensive quality evaluation, emphasis on skills over quality, and emphasis on ingenuity. In accordance with the principle of "undiminished standards, diversified models, and flexible school-running systems", we will explore innovative education models for industrial colleges and universities to improve the pertinence, adaptability and effectiveness of talent training. Y. Zhang (2022) proposed that local colleges and universities should integrate their industrial layout and comprehensively consider serving regional economic development. By dynamically adjusting the training goals of e-commerce professionals, the effective connection between the output of high-quality e-commerce talents and the needs of the local tea industry is realized. R. Zhang & Zhang (2024a) pointed out that colleges and universities need to optimize the curriculum system, strengthen practical teaching, and increase the proportion of experiments and practical links to ensure that students can deepen their theoretical knowledge and improve their skills in practical operations. In addition, a modular curriculum system will be built, and course modules will be set up according to different fields and job requirements, so that students can choose according to their interests and career planning, so as to improve the pertinence and effectiveness of teaching. Ling Yang proposed that in order to solve the problem of misalignment of middle industry and education in China's higher vocational education, the "1234" talent training system was proposed. According to the current situation of teaching reform and integration of industry and education in colleges and universities, the "1234" application-oriented talent training system is divided in detail (Yang, 2021). Q. Zhang et al., (2024) proposed the concept of mentor studios in the narrow and broad senses. In the narrow sense, the tutor studio refers to the "tutor studio practice" and the innovation workshop set up in the laboratory according to the undergraduate talent training plan. The majority of tutor studios refer to the use of professional laboratories, scientific research laboratories, innovation workshops, and practice bases for undergraduate talent training, education, management, and organization. L. Liu (2024) pointed out that a quality evaluation and assurance system that meets the requirements of cultivating applied talents should be established in an all-round way, and the teaching quality evaluation methods of teachers should be reformed. Shao (2024) proposed the construction logic of blockchain to empower the symbiotic integration of industry and education in higher vocational education, which provides a new perspective and new tools for the research on the deep integration of industry and education in higher vocational colleges. R. Zhang & Zhang (2024b) put forward a set of plans to comprehensively optimize the practical teaching system through strategies such as modular curriculum design, virtual simulation training, enterprise internship opportunities, dual-qualification teacher training and diversified evaluation system. Chen (2024) put forward the practice of "three" integration of industry and education, improve students' practical skills and professional comprehensive quality, and cultivate a group of high-quality technical talents.

To sum up, various scholars have put forward different new ideas in the integration of industry and education. However, some of them are still researched on a certain link in the integration of industry and education, and there are problems such as insufficient depth of integration of industry and education, only superficial cooperation, insufficient cultural integration, and lack of all-round platform integration. Therefore, this study will explore and discuss the aspects of talent training in the integration of industry and education in the tea industry, such as curriculum design, teacher team construction, and professional docking. It tries to integrate the integration of industry and education into the development of the tea industry more deeply through the construction of the "five integration mechanism", provides theoretical support and guidance for the sustainable development of the tea industry, and continuously promotes the deep integration and coordinated development of the tea industry and university education.

3. RESEARCH METHODS BASED ON THEORETICAL SYSTEM CONSTRUCTION AND FIELD INTERVIEWS

3.1. Analysis of talent training strategies driven by human capital theory

Based on the theory of human capital, this study explores the core role of the "five integrations" mechanism model in the cultivation of talents in Guangxi's tea industry. Human capital theory emphasizes that education and training are key factors in upgrading workers' skills and driving economic growth. In the scene of the integration of industry and education in Guangxi's tea industry, the docking of facilities and posts is the key link in the precise cultivation of professional talents. The dual-teacher integration mechanism is to build a comprehensive teaching system with the help of the theoretical knowledge of university teachers and the practical experience of enterprise experts. With a profound academic background, university teachers impart systematic professional knowledge to students; With a wealth of industry experience, business experts share cutting-edge practical skills and market dynamics with students. This dual-teacher collaborative teaching model can enable students to comprehensively improve their professional quality and comprehensive ability in the deep integration of theory and practice, better meet the demand for compound talents in the tea industry, and continue to deliver high-quality human capital for industrial development.

Based on the in-depth analysis of human capital theory, this paper clarifies the importance of the docking of facilities and the integration of two teachers in the "five integration" mechanism to improve the quality of talents and promote the development of the tea industry, and provides a solid theoretical basis for the subsequent suggestions on the adjustment of talent training programs and the construction of practical teaching teams.

3.2. Collaborative strategy of industrial development led by collaborative innovation theory

In this study, the collaborative innovation theory is used to explain the role of the "five integration" mechanism in promoting the overall development of Guangxi's tea industry. This theory emphasizes that multiple agents break organizational boundaries and integrate resources

to achieve innovative development. In the practice of integration of industry and education in Guangxi's tea industry, promoting the interoperability of standards is an important basis for achieving collaborative innovation. Through the formulation of unified teaching standards and quality evaluation systems, universities, enterprises and scientific research institutions have a unified standard in talent training and industrial practice. This can not only ensure the efficient use of educational resources, but also closely connect talent training with industrial needs, promote the smooth flow of knowledge, technology and talents among different subjects, and improve the efficiency of industrial collaborative innovation.

Cultural integration plays a key role in building value consensus and stimulating innovation vitality in collaborative innovation. As the core cultural element of the tea industry, tea culture can create a unique innovative cultural atmosphere through the deep integration between universities and enterprises. Through the development of courses and activities with the theme of tea culture, teachers, students and employees can participate together, enhance the sense of identity and belonging to the tea industry, stimulate the enthusiasm and initiative of innovation, and promote cross-subject cooperation and innovation. Promoting platform integration and building a "one center, three platforms" smart tea industry R&D collaboration system is an important practice carrier for collaborative innovation. The tea industry R&D center gathers scientific research forces from all parties to jointly carry out technical research; The talent training platform integrates multiple educational resources to realize the diversified training of talents; The innovation and entrepreneurship platform provides an incubation environment for innovative projects; The public service platform guarantees the quality of tea and promotes information sharing. The organic integration of these platforms has realized resource sharing and complementary advantages, and provided strong support for the collaborative innovation and development of the tea industry.

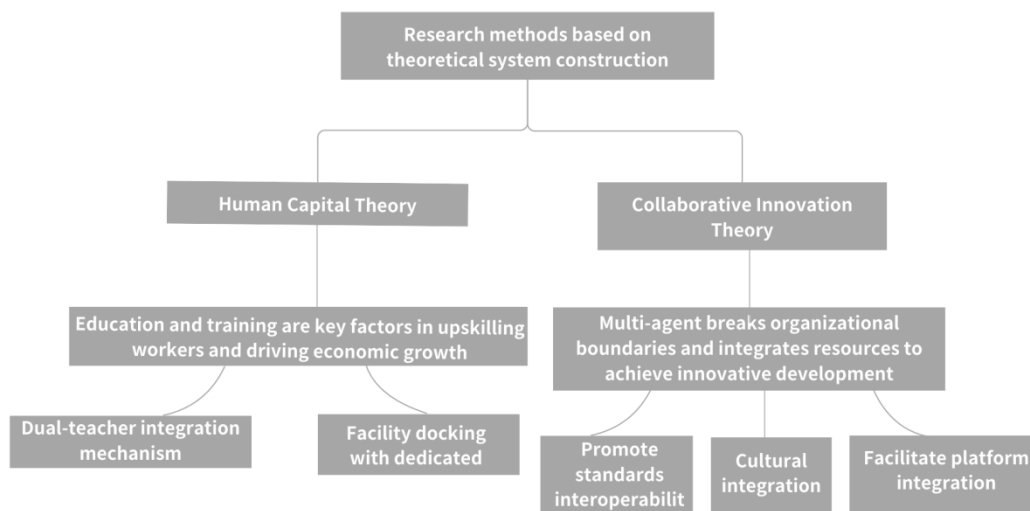


Figure 1: Research methodology based on theoretical framework construction

3.3. The pain points of the tea industry excavated by field research and interviews

In order to gain an in-depth understanding of Guangxi Dong Agricultural Technology Co., Ltd., the team went to Guangxi Dong Agricultural Technology Co., Ltd. for on-the-spot interviews and an in-depth understanding of the company's tea industry development. Through interviews with the company's management and employees, we obtained a lot of first-hand information about the development of Guangxi's tea industry and the company, and also understood the current pain points faced by the company, and analyzed and summarized them. At present, Guangxi Dong Agricultural Technology Co., Ltd. has a certain scale and foundation in the tea industry. Relying on Guangxi's rich tea resources and good ecological environment, the company is committed to the planting, processing and sales of tea. In recent years, the company has made certain progress in tea garden management, variety breeding, processing technology, etc., the quality of tea has been improved, the output has also increased, and actively explore the domestic and foreign markets, and strive to build its own tea brand. For example, it has created the "Gulou Chun" brand, and has accumulated a certain reputation and prestige in the industry. Through interviews with the company's management, we learned that the company currently has the following three obvious problems. First, the lack of talents with innovative spirit and professional skills has led to the company's difficulty in making breakthroughs in the breeding of new tea varieties, processing technology innovation, and product packaging design. Second, the company's sales channels are relatively single, mainly relying on traditional wholesale markets and retail channels. And due to the rectification of local roads, it has encountered certain difficulties in the export of tea. Third, there are obvious shortcomings in the integration of industry and education, and the cooperation with universities and scientific research institutions is not close enough, resulting in the lack of external support for the company in technological innovation and talent training.

4. CASE SELECTION AND ANALYSIS

This paper selects Guangxi Dongju Agricultural Science and Technology Development Co., Ltd. as a typical case, mainly based on three considerations. The first is representativeness. The company is located in the core production area of Guangxi's tea industry, and as a well-known tea production enterprise in the region, its development history reflects the overall development of Guangxi's tea industry. In recent years, with the country's emphasis on the deep integration of vocational education and industry, and Guangxi's tea industry as an important pillar of local characteristic economy, how to promote the close connection between education and industry through innovative mechanisms has become an urgent problem to be solved. Guangxi Dongju Agricultural Science and Technology Development Co., Ltd. has actively explored and achieved remarkable results in industrial transformation and development. The second is typicality. In the process of industrial transformation, the company attaches great importance to the overall integration of human resources, and has built an optimal allocation strategy of human resources through full-time job docking, skill training, incentive mechanism, etc., and on this basis, the overall layout and development of the company's resources have been carried out. The third is comprehensiveness. The company's development history can fully demonstrate the pattern and dynamic process of the integration of industry and education in the tea industry.

In order to fully understand and analyze the practice of Guangxi Dongju Agricultural Science and Technology Development Co., Ltd. in the integration of industry and education, the research team has visited the company for several times since 2024 to carry out field investigations. Through informal and formal interviews, semi-structured interviews were conducted with various subjects, including company managers, new agricultural operators, ordinary employees, customers, etc., supplemented by random sampling questionnaires, internal documents, public reports and other materials. It mainly understands the specific practices of typical case enterprises in the development process, including full-time job docking, skills training, incentive mechanism and resource value realization, etc., and analyzes its operation mechanism and the effectiveness and problems of the company's development.

Guangxi Dongju Agricultural Science and Technology Development Co., Ltd. has hundreds of employees in the tea industry. The company pays attention to employee skills training, and regularly organizes internal training and external expert lectures to improve the professional skills and comprehensive quality of employees. Most of the front-line production workers have an intermediate level or above, and can strictly control the quality of products in the production process. Some of the management and technical backbones have a bachelor's degree or above, graduated from agriculture, food science and other related majors; Grass-roots workers are mainly graduates of high school or vocational and technical schools.

In the next few years, the demand for all kinds of professionals in Guangxi's tea industry will continue to grow. Especially in technological innovation, brand marketing and international market development, more attention will be paid to the introduction of high-quality professionals. In terms of technological innovation, professionals with tea processing technology and product research and development capabilities are needed; In terms of brand marketing, professionals in marketing and brand planning are needed; In terms of international market development, it is necessary to have interdisciplinary talents who are familiar with international trade rules and have cross-cultural communication skills. Through the implementation of the "five integration" mechanism, that is, the docking of facilities and posts, the promotion of standard exchange, the strengthening of cultural integration, the realization of the integration of two teachers, and the promotion of platform integration, Guangxi's tea industry can not only improve the overall technical level, but also make breakthroughs in brand building and international market development, laying a solid foundation for the sustainable and healthy development of Guangxi's tea industry.

Table1:Basic information of the company

The name of the business	Guangxi Dongju Agricultural Science and Technology Development Co., Ltd
Business address	Guangxi Zhuang Autonomous Region, Guilin City, Longsheng County, Pingping Town, Guangnan City Group, Guangnan City
Company Profile	To create the "Gulou Chun" brand, in which tea products cover an area of 20 acres in the entire park, and adopt the mode of "company + cooperative + base + farmer + Internet" operation. The core area of the tea planting base is about 3,500 acres, the radiation area is 2,500 acres, including wild dragon's spine tea, and the chrysanthemum planting area is 50 acres.

The main business of the enterprise	Tea products such as black tea, green tea, and chrysanthemum tea
Enterprises extend their business	Catering, B&B, production and research base, tea planting and sales, etc
Enterprise pain points	Lack of internal innovative talents, narrow sales channels, low degree of integration of industry and education, and hindered development of extended business

5. USE MULTI-DIMENSIONAL ANALYSIS TO ACCURATELY UNDERSTAND PROBLEMS

5.1. Based on the deep dilemma of industry-education collaboration from the perspective of human capital and synergy theory

According to the theory of human capital, the efficient integration of industry and education should accurately improve the skills of practitioners to meet the needs of industrial development. The collaborative innovation theory emphasizes the deep cooperation of multiple agents to achieve resource sharing and innovation. In the case study of Guangxi Dongju Agricultural Science and Technology Development Co., Ltd., it was found that there were significant problems in the docking of facilities and standards.

From the perspective of the docking of facilities and posts, although the company's integration of industry and education is still in the early stage, with the in-depth development of the integration of industry and education, there may be problems such as poor matching between actual positions and teaching facilities, and the failure of relevant teaching facilities in colleges and universities to follow up synchronously after most of the company's production facilities are updated, resulting in a disconnect between students' practical operation and the actual production of the enterprise. For example, after the company introduced new tea automatic processing equipment, the university laboratory still uses the old equipment for teaching, and it is difficult for students to quickly adapt to the operation of the new equipment after they arrive at the post, which prolongs the job adaptation period, reduces the efficiency of talent training, and violates the requirements of human capital theory for the accurate improvement of education skills.

In terms of standard interoperability, the company lacks unified standards with universities and scientific research institutions. Especially reflected in the real-time update of tea product quality standards, as early as 2022, the company was punished for not keeping abreast of the latest black tea quality inspection standards, which had a certain impact on the company's reputation. At the same time, there are great differences in tea quality inspection standards and talent training specifications. The inconsistency between the company's internal product quality inspection standards and the testing standards in university teaching makes it difficult for students to apply the knowledge they have learned in enterprise practice, hinders the smooth flow of knowledge and technology between different subjects, and runs counter to the concept of

building unified standards to promote collaboration in collaborative innovation theory. This situation seriously restricts the depth and effect of the integration of industry and education, and affects the quality of talent training and industrial innovation and development.

5.2. There is a lack of excavation and inheritance of tea cultural value under the theory of cultural integration

Cultural integration is of great significance in the integration of industry and education, which can not only shape a unique corporate culture, but also improve the professional quality of practitioners. However, Guangxi Dongju Agricultural Science and Technology Development Co., Ltd. has obvious deficiencies in this regard. According to the on-the-spot interviews and observations of the company, combined with the research of relevant cultural integration theories, although there are certain corporate cultural activities within the company, the excavation and inheritance of tea culture are not deep enough. In the construction of corporate culture, Guangxi Dongju Agricultural Science and Technology Development Co., Ltd. mainly relies on the red resources, farming culture and ethnic culture of Longsheng County in its region, and does not combine tea culture for deep integration. In the staff training system, tea culture-related courses account for a very small proportion, resulting in employees' understanding of local tea culture only on the surface, and unable to integrate the essence of tea culture into product production, service and brand building. This makes the company's brand lack of cultural heritage and differentiated competitiveness, it is difficult to stand out in the fierce market competition, and it is not conducive to cultivating professionals with profound tea culture literacy, which is contrary to the original intention of cultural integration to promote industrial development and talent training.

5.3. The construction of industrial collaborative innovation platform based on platform integration theory

The platform integration theory emphasizes the construction of an all-round and multi-level collaborative platform to achieve resource sharing and complementary advantages. Guangxi Dongju Agricultural Science and Technology Development Co., Ltd. faced many challenges in terms of platform integration. Through the investigation and analysis of the company's cooperative relationship with external parties, the company has made slow progress in building a R&D collaboration system for the smart tea industry. In the construction of tea industry R&D centers, the cooperation with universities and scientific research institutions is loose, and there is a lack of long-term and stable cooperation projects and joint R&D mechanisms. At present, the company's industry-university-research activities are still stuck in the research activities of primary and secondary schools, but the development of research base activities is also unstable, and the conversion rate of most project results is low. In terms of talent training platform, the cooperation between the company and universities and training institutions lacks systematization and depth, and fails to form a comprehensive talent training system, which cannot meet the company's needs for talents at different levels and in different professional directions.

In the construction of innovation and entrepreneurship platforms, the company's support for internal innovation projects is insufficient, and there is a lack of perfect incubation mechanism and capital investment. Through the statistical analysis of the company's internal innovation projects, only a few projects can obtain certain resource support, and most of the innovative ideas die due to the lack of platform support. At the same time, the company's current main funds are mainly invested in the company's internal infrastructure construction and business expansion, and there is a lack of investment in innovative projects in the company's main business. In terms of public service platform, the company has shortcomings in tea quality inspection and market information sharing, and cannot grasp the market dynamics in a timely and accurate manner, which affects the company's market decision-making and product quality improvement. These problems seriously restrict the company's innovation ability and market competitiveness, which are far from the requirements of platform integration theory.

6. THE INNOVATION PATH AND PRACTICAL STRATEGY OF THE INTEGRATION OF INDUSTRY AND EDUCATION IN GUANGXI'S TEA INDUSTRY BASED ON THE "FIVE INTEGRATION" MECHANISM

6.1. Implement full-time post docking and formulate a flexible talent training program mechanism

In order to improve the teaching effect of innovative talent training, a modular teaching model for innovative talent training was constructed in the context of the integration of industry and education (Bai et al., 2025). In view of the diversity of job needs in the tea industry, it is particularly important to implement the strategy of full-time job docking and build a flexible adjustment mechanism for talent training programs. In view of the complexity and variability of job functions within the tea industry, higher education institutions must closely follow the development trends of the industry and technological innovation, and adjust their professional settings and curriculum arrangements in a timely manner to ensure that the talents cultivated can accurately match the actual needs of the industry. By establishing a long-term and solid cooperative relationship with the tea industry, universities can obtain market signals more accurately, update the syllabus and practical content in a timely manner, and make the educational output more close to the forefront of the industry. For example, when an emerging technology or management method is rapidly gaining traction in the tea industry, colleges and universities should immediately adjust their teaching plans and introduce relevant courses to ensure that students have the latest industry knowledge. In addition, by jointly formulating talent training programs with tea companies, it can not only promote the deep integration of academia and industry, but also ensure that graduates have the comprehensive ability and professional knowledge required to enter the workplace, and realize the positive interaction between education and industrial development. This kind of interaction is not limited to the teaching of theoretical knowledge, but also includes various forms of cooperation such as internship training and case studies, so as to improve students' practical ability and social adaptability in an all-round way.

6.2. Promote the exchange of standards and promote the co-construction and sharing of courses related to the tea industry

In order to improve the quality of talent training in the tea industry, it is an important means to promote the exchange of standards and promote the co-construction and sharing of tea industry-related courses. During the "Twelfth Five-Year Plan" period, in addition to further optimizing and improving the course content, the construction of high-quality courses focuses on greatly improving the process of opening and sharing high-quality courses (B. Liu, 2021). Explore ways to optimize the construction and optimization of physical education teaching resources in colleges and universities, so as to stimulate students' interest in physical education, build a digital teaching resource platform, improve teachers' information application capabilities, meet the diversified needs of students' physical education teaching resources, and effectively improve the quality (Xiangfei, 2024). This not only helps to achieve the optimal allocation of educational resources in the tea industry, but also ensures the efficiency and consistency of teaching activities. Specifically, by developing uniform standards, it is possible to avoid the problem of uneven teaching quality caused by differences in standards between different educational institutions. Encouraging multi-party cooperation between tea enterprises, colleges and universities and scientific research institutions to participate in the process of curriculum development can not only enrich teaching resources, but also improve students' practical ability and theoretical knowledge level, thereby significantly improving the teaching effect and learning results. Through such a cooperation model, all parties can share high-quality educational resources and jointly promote the all-round development of talents in the tea industry. Specifically, companies can provide lecturers with rich practical experience, while universities can provide deep academic backgrounds, and the courses developed jointly by the two parties have both theoretical depth and practical breadth.

6.3. Strengthen cultural integration and build a mechanism for cultivating the professional quality of the tea industry

As an important part of the tea industry, tea culture has a profound impact on talent training. Therefore, strengthening the cultural integration between enterprises and universities, building a mechanism for cultivating professional quality in the tea industry, and cultivating new quality productivity have become an important path to improve the comprehensive quality of practitioners. "We must adhere to the people-centered education development concept and accelerate the construction of a high-quality education system." The directive not only outlines clear expectations for the development of the education sector, but also reflects expectations for the role of new quality productivity in education. New quality productivity is gradually becoming a powerful engine to drive the construction of a high-quality education system, providing new perspectives and new possibilities for shaping the education ecology in the new era (Mengfei, 2024). Within the enterprise, strengthening the construction of corporate culture and systematic staff training can effectively cultivate the professional ethics and professional conduct of employees and create a good corporate image. Implement the tea industry service professionalism project, and carry out volunteer service activities such as "tea art inheritance", aiming to form a

"three teas and five hearts" professional quality cultivation system covering tea art, tea morality, tea rhyme, as well as integrity, responsibility, love, innovation, and excellence. This will not only help to enhance the sense of professional identity and honor of employees, but also provide professionals with high-level professionalism for the tea industry, thereby promoting the long-term development of the industry. Through these comprehensive measures, the overall competitiveness of the tea industry will be significantly improved, contributing to social and economic development.

6.4. Realize the integration of two teachers and optimize the construction of the practical teaching team of the tea industry

Practical teaching is an important part of talent training in the tea industry. In order to realize the integration of two teachers and optimize the construction of the practical teaching team in the tea industry, enterprises and universities should work together to build a practical teaching team with both professional quality and practical ability. Cultivate a group of high-quality teachers within the school, introduce a group of skilled craftsmen, industry experts and technical experts in the tea industry in the enterprise, and make the greatest use of the advantages of each team member to achieve the best teaching effect in the tea industry-related teaching. In terms of practical education, through the "introduction of factories into the school", enterprises create scenarios and vocational positions within the school that are consistent with the actual situation of the enterprise, so that students can devote themselves to the real working environment. "Off-campus training base" - the school builds a training base within the enterprise in order to share the production equipment of the enterprise and realize the sharing of resources inside and outside the school. Multi-dimensional construction of colleges and universities in the tea industry teaching practice highland (Guo, 2024). At the same time, teachers are encouraged to participate in the practical activities of tea enterprises, understand the latest development of the tea industry, and improve teachers' professional quality and practical ability. In addition, tea industry experts, entrepreneurs, etc. can also be invited to serve as visiting professors or practical mentors to provide students with richer practical experience and career guidance.

6.5. Promote the integration of platforms and build a R&D collaboration system for the smart tea industry

In order to meet the challenges of new business formats, promote platform integration, and build a smart tea industry R&D collaboration system of "one center and three platforms" (i.e., tea industry R&D center, tea industry talent training platform, tea industry innovation and entrepreneurship platform, and tea industry public service platform). The so-called tea industry R&D center is to set up a special tea industry research unit, including industry experts, professionals, scholars, etc. And through cooperation with universities, we will introduce the latest scientific and technological achievements in real time, jointly promote scientific research projects, and transform scientific research achievements into practice. Continuously optimize tea varieties, research new technologies, new processing technologies, etc., to inject innovative impetus into Guangxi's tea industry. The tea industry talent training platform is to improve the professionalism of traditional tea industry practitioners through a comprehensive training and

training covering planting, processing, and sales carried out by universities and training institutions (Guo, 2024). At the same time, adhere to the principle of "bringing in" and "going out", introduce corresponding policies to attract outstanding tea industry talents at home and abroad, and introduce advanced technology and management experience. Internally, we actively cultivate local young talents and encourage aspiring young people to return to their hometowns to devote themselves to the tea industry. Inject "fresh blood" into the development of the tea industry. The tea industry innovation and entrepreneurship platform refers to building a tea industry business incubation platform and giving entrepreneurs certain support in terms of funds, technology, venues, and policies. Colleges and universities can explore creative and excellent projects within the school by carrying out activities such as innovation and entrepreneurship competitions, promote the implementation of projects, and help the development of the tea industry. The public service platform for the tea industry is to build a tea quality inspection center to ensure the quality and safety of tea and increase the trust of consumers. In addition, build a tea industry information sharing platform, immediately release the price and supply and demand of the relevant tea market, and rely on universities, tea farmers, enterprises, etc., invite all subjects of the tea industry to participate in exhibitions, tastings, forums, project promotion meetings, and other activities, and build an information sharing platform for universities, enterprises, tea farmers and consumers. By building an information sharing platform, resource sharing and complementary advantages can be realized, and the effectiveness and adaptability of talent training in the tea industry can be improved (Hu et al., 2024). At the same time, strengthen cooperation and exchanges with domestic and foreign universities, scientific research institutions, tea enterprises, etc., introduce advanced technology and management experience, and provide strong talent support for the tea industry.

7. CONCLUSIONS

This study focuses on the integration of industry and education in Guangxi's tea industry, deeply analyzes its current situation and problems, and explores the mechanism model of "five integrations" with the help of theoretical research, case analysis and other methods, and achieves the following key results.

Although Guangxi's tea industry has made remarkable achievements in scale and output value, it is facing challenges such as unbalanced talent structure and lagging training mode, which seriously restricts industrial upgrading and innovative development. By combing through relevant studies at home and abroad, it is found that the existing practice of integration of industry and education generally has problems such as shallow level of integration, insufficient cultural excavation, and weak platform collaboration. Based on the theory of human capital and collaborative innovation, combined with the field research of Guangxi Dongju Agricultural Science and Technology Development Co., Ltd., the "five integration" mechanism model was proposed. Facility and post docking and dual-teacher integration, optimize the supply of education according to the needs of the industry, improve the professional skills and practical ability of talents, and reserve high-quality human capital for the industry; Standard interoperability, cultural integration and platform integration break the main barriers, integrate

resources, create an innovative cultural atmosphere, build a collaborative innovation ecology, and promote industrial technological innovation and sustainable development.

The "five integration" mechanism model provides an innovative path and practical strategy for the integration of industry and education in Guangxi's tea industry. It helps to improve the talent training system and improve the fit between talent training and industrial needs; Promote the efficient allocation of educational resources and industrial resources, and enhance industrial innovation capabilities; inherit and promote tea culture, and enhance the added value of industrial culture; Build a comprehensive industrial service platform to optimize the industrial development environment. This model can not only provide strong support for Guangxi's tea industry to solve the problem of talent shortage and achieve transformation and upgrading, but also provide a reference example for the integration of industry and education in the tea industry and related fields in other regions, and has important theoretical and practical significance for promoting regional economic development and rural revitalization.

DATA AVAILABILITY

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

COOPERATION STATEMENT

In the creation of this dissertation, Ou Liting is responsible for determining the topic, building the framework, and writing the introduction, research methods, problems and solutions. As the second author, Chen Yan is responsible for literature review, case analysis and chart production. Ou Liting is responsible for the formatting and typesetting of the paper, and Chen Yan is responsible for checking. The authors would like to thank each other for their cooperation and support, which led to the successful completion of the study.

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