



Research on the “Dual Studio System” Skilled Talent Training Model Based on the BS-CP Model

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Abstract. The “studio system” skilled talent cultivation model based on the integration of industry and education, as well as the integration of engineering and learning, is becoming increasingly mature. Through in-depth research and exploration of the cooperation mechanism between Zhejiang Tobacco's marketing and logistics studios, and guided by the idea of data empowering full chain talent cultivation, we have innovatively constructed a “dual studio” high skilled talent cultivation model based on the BS-CP model. This has promoted the cultivation of high skilled talents in Zhejiang Tobacco's cigarette marketing and logistics, achieved on-demand cultivation of skilled talents, tailored teaching, promoted talent team construction, and promoted the high-quality development of cigarette marketing and modern logistics.

Keywords: Integration of engineering and learning; Dual studio system; Talent cultivation; High quality development.

1 Introduction

The report to the 20th National Congress of the Communist Party of China called for coordinated innovation across vocational education, higher education, and continuing education, advocating for the integration of vocational and general education, industry and education, and science and education. In October 2022, the general offices of the Communist Party of China Central Committee and the State Council issued the Opinions on Strengthening the Construction of High-Skilled Talent Teams in the New Era, outlining comprehensive measures to broaden career pathways for skilled workers and innovate high-skilled talent training models. The tobacco industry attaches great importance to vocational education. Currently, the tobacco industry is thoroughly implementing the strategy of reinvigorating China through talent development and the innovation-driven development strategy, promoting the spirit of model workers and craftsmanship, and vigorously carrying out the construction of skilled talent teams. However, the cultivation models and incubation practices based on high-skilled talent studios as platforms are still in the development and exploration stage. Therefore, deepening in-

dustry-education integration is therefore essential for accelerating the cultivation of innovative talent, fostering skill innovation, and driving management upgrades. This study posits that studio-based platforms can effectively bridge industry demands with educational supply, creating robust training systems to support workforce transformation and high-quality talent development.

2 Concept and Meaning of the “Studio System” Model

2.1 Core Conception

Originating from the pedagogical principles of the Bauhaus school^[1], the “Studio System” model emphasizes practical, project-based learning under expert guidance, ensuring the synchronization of theoretical knowledge with applied skills. In the state-owned enterprises, these studios has been developed under the joint support of the human resources and education departments and business departments^[2]. Specifically, skill talent studios led by highly skilled talents are established within business departments, where activities such as project research, skill transfer, and internal and external exchanges are carried out^[3]. In terms of the cultivation of skilled talents, teaching is primarily undertaken by part-time internal trainers, professional and technical personnel, and middle-level managers of the enterprise^[4]. Based on professional positions, skill levels, and career progression, rational and targeted training content is developed, and tailored practical projects are designed to facilitate the continuous improvement of vocational skills among skilled personnel^[5]. This integrated approach enhances the comprehensiveness of educational resources and the systematic nature of training delivery^[6].

2.2 Strategic Meaning

With the continuous advancement of reform and high-quality development in the tobacco industry, there is an urgent need to cultivate and build a high-quality team of high-skilled talents. In 2020, the State Tobacco Monopoly Administration issued the Opinions of the State Tobacco Monopoly Administration and China National Tobacco Corporation on Strengthening the Construction of Skilled Talent Teams in the Industry (State Tobacco Personnel [2020] No. 15), which pointed out that the broad masses of skilled talents are valuable resources for the country and the industry, playing a fundamental role in various tasks of industry production, operation, and management, and are an important manifestation of the industry's core competitiveness^[7]. It is necessary to accelerate the cultivation of a large number of high-quality skilled talents, take favorable measures to create conditions for the growth and development of skilled talents, fully leverage the role of skilled talents, and provide important support for promoting industrial upgrading and driving high-quality development^[8]. Therefore, industries and all relevant entities have adopted a series of innovative measures, including deepening the reform of the institutional mechanisms for talent development, implementing the strategy of giving priority to talent development, and establishing a training model integrating industry-education collaboration and digital empowerment^[9]. Efforts have

been made to gradually eliminate barriers impeding talent development, unleash the vitality of talents, and foster an open and inclusive ecosystem for talent advancement^[10]. Through systematic selection, cultivation, and incentive mechanisms, sustained talent support has been guaranteed for key technical positions and scientific research as well as innovation initiatives within the industry^[11].

In recent years, a number of national and provincial-level Skill Master Studios have been established in the tobacco industry. Z Company has gradually constructed a multi-level Skill Master Studio system covering national, industry-level, and enterprise-level tiers, which has provided an organizational platform for talent cultivation, technological innovation, professional training, mentorship, and skill popularization. Therefore, by innovating the “Studio System” model, integrating the practical requirements of vocational competence development into the production and operation scenarios of skilled talents, and enhancing the professional quality, professional competence, and digital capabilities of cadres and employees, has become a new research focus for the development of highly skilled talents in the tobacco industry in the new era. To further build a new platform for talent cultivation through studios, we need to realize the in-depth integration of production, education, learning, and practice. By adopting approaches such as mentorship, project-based training, and supervisor systems, we can promote the continuous dissemination of vocational competence, knowledge, quality, and skills, and fully foster a sound talent development pattern where Skill Masters serve as the core, outstanding highly skilled talents as the main body, and the “leading geese” drive the whole “flock” forward. *If a paper is accepted for publication*, authors will be instructed on the next steps. Authors must then follow the submission instructions found on their respective publication’s web page. Once your submission is received, your paper will be processed to produce the formatted Word, PDF, and HTML5 output formats, which will be provided to you for review, revision/resubmission (if applicable), and approval.

3 Construction of the “Dual Studio System” Skilled Talent Training Model

3.1 Establishing the “Dual Studio System” Collaborative Talent Cultivation Model

In the context of cigarette market-oriented reform and digital transformation, the Marketing Department of Z Company, in accordance with the enterprise’s “113, 432” high-quality development plan, successively established the WJF expert studio in the cigarette marketing field and the YB expert studio in the logistics field. As shown in Figure 1, To better leverage the important role of these two major studios in technical, skill inheritance, and skill promotion for high-skilled talents, a “Dual Studio System” Skilled Talent Cultivation Model was explored and constructed. This framework integrates both studios to deliver data-enabled, integrated training for high-skilled talents focused on the distribution supply chain. The primary objective is to achieve cross-functional literacy: enabling marketing personnel to understand logistics fundamentals and logistics personnel to understand marketing principles.

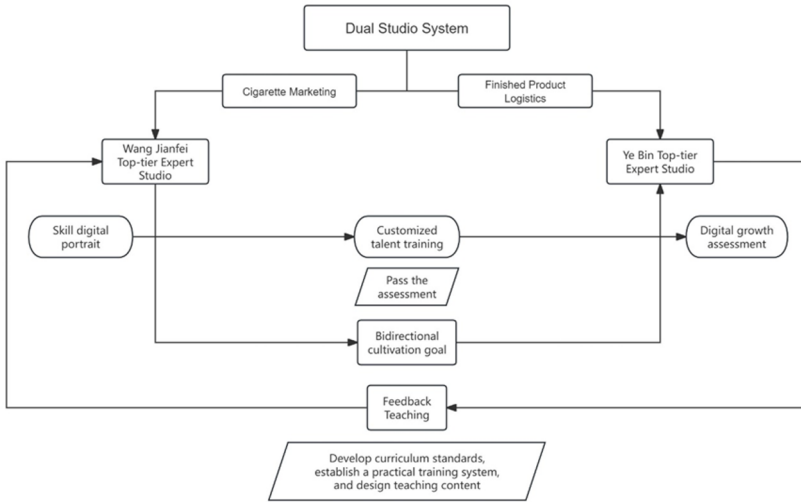


Fig. 1. “Dual Studio System” Skilled Talent Cultivation Model

3.2 “Dual Studio System” Collaborative Talent Cultivation Model

3.2.1 Model Construction.

Identifying talents is more crucial than cultivating them, serving as “the first mile” in the cultivation of highly skilled talents. In the digital era, digital portraits of skilled talents are the basic means for conducting talent evaluation, which usually include a series of attributes and dimensions to comprehensively describe and assess the characteristics, capabilities, and development potential of skilled talents. As shown in Figure 2, the Marketing Department of Z Company has constructed a digital skill evaluation model (BS-CP Model) from two dimensions: basic attributes and skill attributes.

Basic Attributes (BA): Refer to the inherent characteristics of an individual, such as personal information, work experience, education and training, qualification certificates, and computer literacy.

Skill Attributes (SA): Refer to the professional skills and abilities acquired by an individual through learning and practice, including market analysis, sales techniques, marketing strategies, customer relationship management, procurement and supply management, supply chain management, warehousing management, and logistics planning. From the perspective of job categories, Skill Attributes can be further divided into Skill Attributes of this Position (PS) and Cross-Position Skill Attributes (CS). Skill Attributes of the Position refer to the attributes corresponding to an employee’s current position, while Cross-Position Skill Attributes refer to the skill attributes of adjacent positions in the supply chain. For example, Skill Attributes of this Position of an employee in a marketing position are marketing-related skill attributes, and their Cross-Position Attributes are logistics-related skill attributes.

Current Value (CV): Refers to the performance level of an individual’s Basic Attributes or Skill Attributes at the current time point.

Potential Value (PV): Refers to the potential performance level of an individual’s Basic Attributes or Skill Attributes that can be achieved in the future.

The application of the BS-CP Model for digital portraits of skilled talents generally follows four steps. Firstly, data collection: collect data through questionnaires, interviews, job performance and other methods. Secondly, data analysis: analyze the current skill indicator values and potential skill indicator values. Thirdly, skill portrait construction: form individual skill portraits based on the skill indicator model. Fourthly, portrait updating: regularly update the skill portraits to reflect the latest situation.

In digital evaluation, vocational skills are divided into competence values and potential values, with a score range of 0 to 5, corresponding to junior to senior technicians respectively. Competence values refer to the current overview of vocational skills; potential values are evaluated based on the potential of basic attributes and skill attributes. A combination of self-evaluation and peer evaluation is adopted to derive the competence value and potential value for each individual. A vocational skill evaluation matrix is formed based on these two dimensions, where one can take the average or 2.5 as the threshold for distinguishing high and low scores. This helps determine the competence type of each individual’s vocational skills, for instance, those with high competence values but low potential values fall into the category of secondary vocational skills.

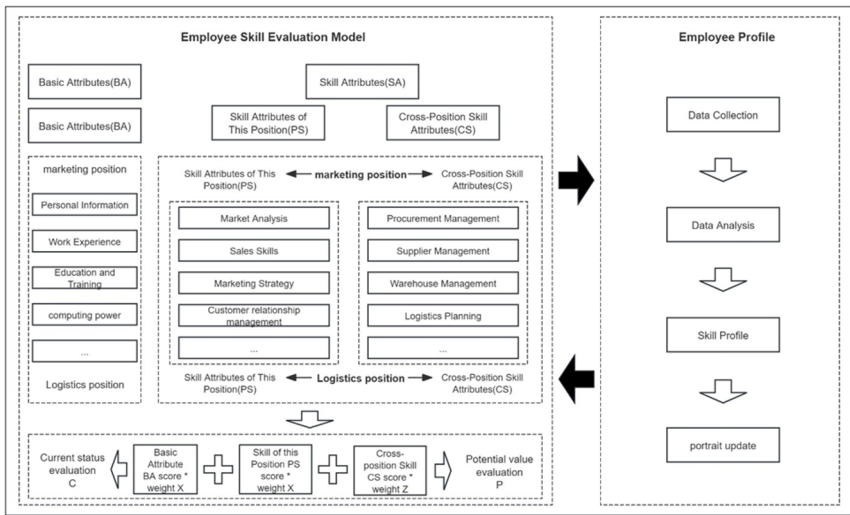


Fig. 2. BS-CP model logical architecture

- EBA: Evaluation score for Basic Attributes, 0-5 points;
- EPS: Evaluation score for this Position Skill Attributes, 0-5 points;
- ECS: Evaluation score for Cross- Position Skill Attributes, 0-5 points;
- X: Scoring weight for Basic Attributes (BA);
- Y: Scoring weight for this Position Skill Attributes (PS);
- Z: Scoring weight for Cross- Position Skill Attributes (CS);
- E: Comprehensive skill level evaluation score;

SC: Self-rating for current value;
 OC: Others' rating for current value;
 SP: Self-rating for potential value;
 OP: Others' rating for potential value.
 Scoring Calculation Formula: $E = EBA \times X + EPS \times Y + ECS \times Z$

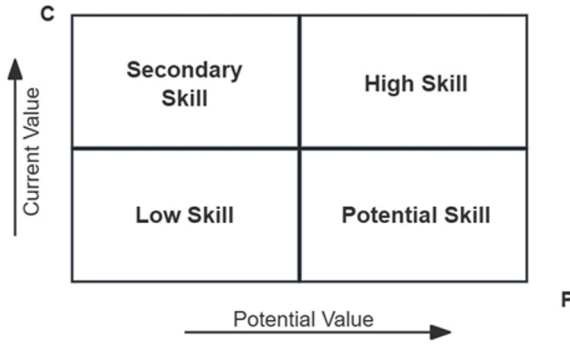


Fig. 3. Skilled Talent Evaluation Matrix

This study first adopted expert interviews and the Analytic Hierarchy Process (AHP) to determine the weights of BA, PS, and CS in the comprehensive evaluation. It selected three university professors and four industry experts in marketing and logistics, defined the importance levels (pairwise relationships) of BA, PS, and CS, and constructed a two-dimensional matrix for the importance levels of these three indicators. The two-dimensional matrix is shown in Figure 3.

Table 1. Evaluation matrix table

Importance relationship	BA	PS	CS
BA	1	1/2	2
PS	2	1	3
CS	1/2	1/3	1

As shown in Table 1 and Table 2, Based on the aforementioned two-dimensional matrix, the Analytic Hierarchy Process (AHP) was applied to derive the scoring weights of BA, PS, and CS, denoted as X, Y, and Z, which are 29.7%, 54.9%, and 15.4% respectively. Meanwhile, the Consistency Ratio (CR) of the matrix was calculated to be less than 0.1, indicating that the matrix passed the consistency test.

Table 2. Evaluation weight table

Importance relationship	BA	PS	CS	Scoring weight
BA	1	1/2	2	0.297
PS	2	1	3	0.549
CS	1/2	1/3	1	0.154

- (1) Evaluation formula: $E = EBA \times 0.297 + EPS \times 0.549 + ECS \times 0.154$;
- (2) Self-ratings and others' ratings for current value and potential value, i.e., SC, OC, SP, OP, all refer to the above formula;
- (3) Current value scoring formula: $CV = SC * 40\% + OC * 60\% = SC * 40\% + \frac{1}{n} \sum_{i=1}^n O_i C * 60\%$;
- (4) Potential value Scoring formula: $PV = SP * 40\% + OP * 60\% = SP * 40\% + \frac{1}{n} \sum_{i=1}^n O_i P * 60\%$.

Based on the above four steps of calculation, the current value CV and potential value PV of each employee's skill level can be obtained, thereby determining their position in the two-dimensional matrix (C, P).

3.2.2 Model Application.

As shown in Figure 4, At the end of 2022, the Marketing Department of Z Company adopted the vocational skill evaluation matrix. By assessing the Current Value (CV) and Potential Value (PV) of all 383 employees, the matrix distribution of skilled talents before the implementation of training was obtained. Among them, a total of 24 employees were distributed in the first quadrant (highly skilled talents), 84 in the second quadrant (secondary vocational skills talents), 189 in the third quadrant (low-skilled talents), and 86 in the fourth quadrant (potential skilled talents).

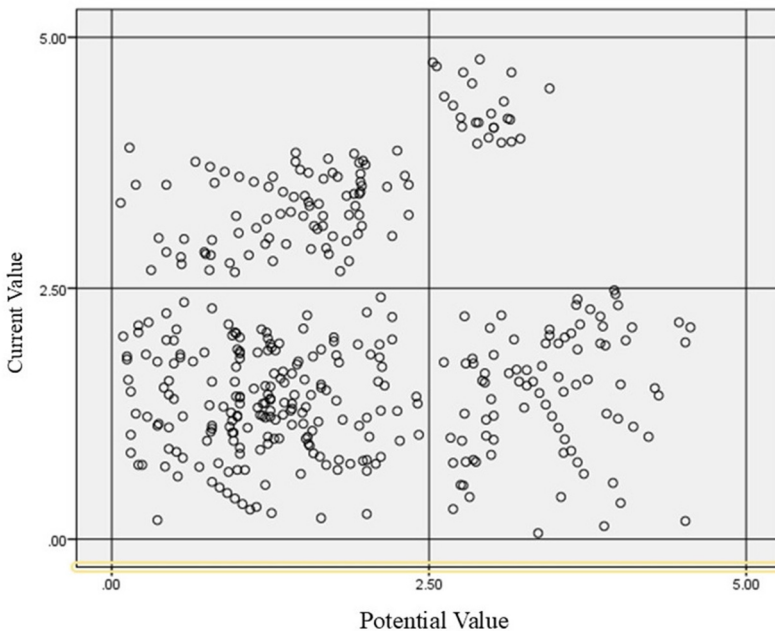


Fig. 4. Distribution of Customized Skilled Talents Matrix for Pre training in Zhejiang Tobacco Marketing Department

Customized training for skilled talents is based on individuals’ digital skill portraits and matrix evaluation results. In light of the four skill types identified by the skill portraits, it analyzes the matching degree between individuals and job portraits by referencing relevant information such as organizational goals and job qualification requirements, and then formulates and implements customized skill improvement plans for each employee. The specific customized skill improvement strategies are shown in Table 3.

Table 3. Table of Strategies for Enhancing the Role and Skills of Skilled Talents

Skill type	Role play	Enhancement strategy
High skill	Advanced Tasks: Participate in highly challenging practical projects, lead complex projects and tasks, and be responsible for innovative research in the field. Conduct practical exploration in technical fields and independently develop new applications, etc.	Specialized Training: Engage in in-depth learning of domain knowledge, conduct in-depth research on the theoretical knowledge of cutting-edge technologies, including reading academic papers, attending lectures by industry experts, etc.
Secondary skill	Basic Operations: Undertake core business projects and tasks, conduct cross-departmental business coordination and promotion, and practice the application of new technologies. Participate in the development of new plans and the implementation of technical schemes, etc.	Knowledge Updating: Learn data-related knowledge to continuously update professional, and master basic knowledge of new technologies or tools.
Potential skill	Integration of Learning and Application: Be responsible for business support work, assist the team in data collection, application processing and analysis, etc. Obtain guidance and feedback in practical projects through mentor guidance.	Advanced Learning: Systematically learn basic knowledge and professional knowledge, including reading industry reports, systems, documents, cases and other materials to grasp industry terminology and basic concepts.
Low skill	Business Operations: Complete basic job responsibilities and participate in simple business sorting work. Gradually improve practical skills through carrying out business work.	Operational Training: Attend basic training courses to familiarize themselves with business processes and master basic skills such as system operations.

Personnel with four levels of skill portraits receive training and cultivation in four aspects: training objectives, training content, time schedule, and dual-mentor configuration.

(1) Determination of Training Objectives. Phased training objectives are set based on job goals and individual career development goals. Skilled personnel in the marketing field include some logistics courses highly relevant to their positions as electives;

similarly, those in the logistics field incorporate some marketing courses highly relevant to their positions as electives. This aims to cultivate interdisciplinary talents in the circulation supply chain who are “specialized in their own positions and proficient in adjacent positions”.

(2) Design of Training Content. Taking the “Dual Studio System” as the training platform, the skills to be strengthened or newly learned are identified based on digital skill portraits. An integrated industry-education practical teaching linkage mechanism is constructed, and feasible professional practical teaching programs are formulated. It creates a practical and training atmosphere that integrates supply chains with professional chains, curriculum content with industry standards, and technology with skill training, integrating rich curriculum design and case-based scenario teaching throughout the entire process of excellent talent cultivation.

(3) Formulation of Time Schedule. Specific timetables and milestones are established for the skilled personnel training plan, with clear start and end times set for each stage. Factors such as training cycles, learning curves, and employees’ available time are taken into account.

(4) Configuration of the “Dual-Mentor System”. A new model of organic combination of intra-field mentors and cross-field mentors is initiated. It forms a dual-mentor teaching team featuring “internal-external integration, complementarity and win-win results”, realizing mutual benefit, advantage complementarity, and integrated development between the two majors.

To evaluate talent development, this study introduced and revised the Value-Added Model (VAM). It assesses the impact of training activities by measuring the progress of trainees over a period of time, rather than merely focusing on their final performance. This model is particularly suitable for evaluating the growth effectiveness of skilled talents, as it focuses on the growth and improvement of individuals or groups under specific training interventions. The application of the Value-Added Model involves the following steps:

(1) Determination of Baseline Data. The skill portrait data before the start of training is used as the baseline data of participants prior to the training activities, such as job performance, skill levels, and behavioral performance, serving as the starting point for evaluation.

(2) Definition of Value-Added Indicators. Some indicators from the skill portraits are selected as key indicators for evaluating value-added, which should be closely related to training objectives and organizational needs, such as skill mastery, work efficiency, and innovation capability.

(3) Collection and Calculation of Value-Added Data. After the completion of training activities, data for the same indicators as the baseline data are collected to measure the progress of participants. By comparing baseline data with subsequent data, the value-added score for each participant or group is calculated.

(4) Result Interpretation and Improvement. Interpret the value-added scores to assess the effectiveness of training activities. Based on the evaluation results, formulate and implement improvement measures to enhance the effectiveness of future training activities.

Table 4. Changes in Employees' Current and Potential Competence Before and After Training (Selected Data)

Employee ID	Before training			After training		
	current value	potential value	Respective quadrant	current value	potential value	Respective quadrant
2	4.65	2.75	the first quadrant	4.65	2.77	the first quadrant
15	4.32	2.69	the first quadrant	4.32	3.71	the first quadrant
26	1.57	3.18	the first quadrant	1.57	3.21	the first quadrant
27	1.74	2.79	the first quadrant	1.75	2.79	the first quadrant
51	1.97	3.15	the second quadrant	1.99	3.17	the second quadrant
79	1.53	3.64	the second quadrant	1.54	3.66	the second quadrant
88	1.01	2.66	the second quadrant	1.01	2.67	the second quadrant
97	2.48	3.96	the second quadrant	3.72	3.96	the first quadrant
98	1.02	4.19	the second quadrant	1.02	4.23	the second quadrant
136	3.02	2.21	the Fourth Quadrant	3.82	2.80	the first quadrant
147	3.20	1.33	the Fourth Quadrant	3.24	1.33	the Fourth Quadrant
148	3.26	1.40	the Fourth Quadrant	3.26	1.41	the Fourth Quadrant
160	3.51	2.17	the Fourth Quadrant	3.91	2.76	the first quadrant
171	3.23	2.34	the Fourth Quadrant	3.93	3.01	the first quadrant
173	3.62	2.31	the Fourth Quadrant	3.94	2.91	the first quadrant
180	3.72	0.76	the Fourth Quadrant	3.71	0.78	the Fourth Quadrant
184	3.72	1.98	the Fourth Quadrant	3.77	1.98	the Fourth Quadrant
188	3.87	2.25	the Fourth Quadrant	3.87	3.66	the first quadrant
206	0.28	1.09	the Third Quadrant	0.30	1.09	the Third Quadrant
353	3.53	2.34	the Fourth Quadrant	3.53	2.98	the first quadrant

In 2023, after conducting training for all 383 employees, the Marketing Department of Z Company observed changes in their CV and PV. As shown in Table 4, A total of 7 employees were promoted from other quadrants to the first quadrant, among which 1 was elevated from the fourth quadrant to the first due to a significant improvement in CV, and 6 were promoted from the second quadrant to the first as a result of simultaneous improvements in both CV and PV. This further expanded the team of highly skilled talents. Thus, the distribution of skilled talents after training is shown in Figure 5: 31 employees in the first quadrant (highly skilled talents), 78 in the second quadrant (secondary skilled talents), 189 in the third quadrant (low-skilled talents), and 85 in the fourth quadrant (potential skilled talents).

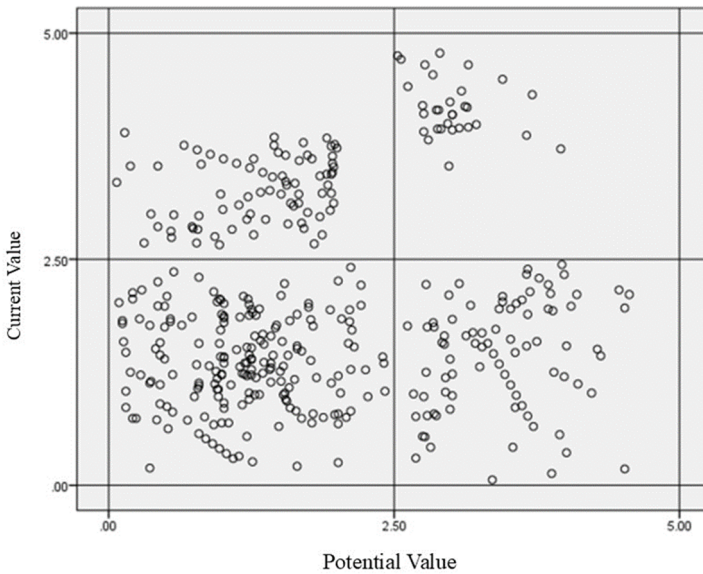


Fig. 5. Distribution of Skilled Talent Matrix after Customized Training by Zhejiang Tobacco Marketing Department

4 Achievements of the “Dual Studio System” Skilled Talent Training Model

4.1 Talent Development Outcomes

The construction and application of the “Dual Studio System” talent training model have enabled the Marketing Department of Z Company to achieve remarkable results in talent cultivation in the cigarette marketing and logistics fields, as well as in improving the efficiency of the cigarette supply chain. The department focuses on cultivating talents from the perspective of covering the entire chain and integrating marketing and logistics. Taking the two flagship expert studios in marketing and logistics as platforms, it implements the “Dual Studio System” for skilled talent training. In 2023, 2 employees obtained associate senior professional titles, 3 were awarded the title of Tobacco Industry Technical Expert, 3 were selected into the Industry High-Skilled Talent Pool, 1 was trained as an Industry Young Scientific and Technological Backbone Talent, 10 became the company’s flagship experts, and 9 were recognized as Zhejiang Young Craftsmen.

4.2 Operational Performance Improvement

The effective cultivation of high-skilled talents in marketing and logistics has supported the remarkable improvement of brand building and cigarette supply chain efficiency.

By the end of 2023, it had accumulated 12 provincial and ministerial-level awards, obtained 15 authorized invention patents, and published 17 papers. In 2023, the “volume increase and structure improvement” of Liqun Class A cigarettes achieved remarkable results, with an annual sales volume of 1.816 million cases (an increase of 139,000 cases) and a wholesale market value of 111.27 billion yuan, ranking second, first, and third respectively among Class A cigarettes in the industry. The logistics cost of the cigarette supply chain was reduced by 36.444 million yuan, the production and sales cycle of cooperative production was shortened by 4.7 days, and the per capita comprehensive logistics operation efficiency reached 5,021.4 cases per person.

4.3 Fostering a Digital Talent Ecosystem

As shown in Figure 6, Through the practice of digitally empowering the “Dual Studio System” skilled talent training model, the digitization of evaluation, cultivation, and promotion of skilled talents has been realized. A pyramid of skilled talents in cigarette marketing and logistics has been constructed, achieving the “ascending level by level” and “leading from the top”. It has effectively fostered a talent atmosphere in the Marketing Department where “everyone is a talent, everyone can become a talent, and everyone can exert their talents”.

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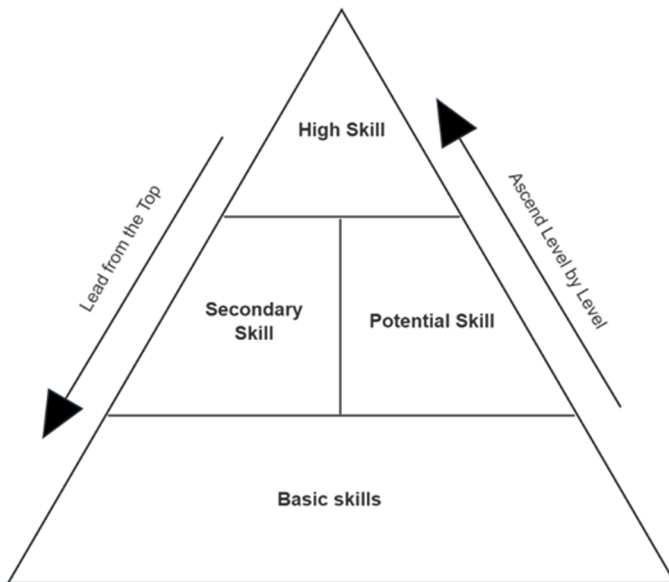


Fig. 6. Pyramid of Cigarette Marketing and Logistics Skilled Talents

5 Conclusion

Adhering to the talent cultivation philosophy of “building an excellent team”, the “Dual Studio System” training model and system have broken through the traditional passive teaching model and explored the innovation of a customized professional practical teaching model empowered by digital technology. It has created a new pattern of cross-position integrated training featuring “connecting positions and serving circulation” in the circulation supply chain, effectively built a studio-based talent training platform, and explored a talent cultivation mechanism integrating data and skills in depth, providing comprehensive and high-quality training services for skilled talents.

With the close integration of industry, university, and research, a trinity practical teaching linkage mechanism has been established, realizing the joint, open cultivation management and evaluation of marketing and logistics. Focusing on cultivating the learning ability, research ability, and problem-solving ability of skilled personnel, the model has made a beneficial exploration for building a new practical, applied, and technical skill-oriented talent training model, achieving good results. It has provided professional marketing and logistics talents for cigarette marketing and modern circulation, empowering the high-quality development of cigarette marketing and modern logistics.

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