



The influence of industry-aligned curriculum on TVET–industry collaboration activities in Jiangxi province: The mediating role of inter-organisational trust

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ABSTRACT

Article History

Received: 4 June 2026

Revised: 25 August 2026

Accepted: 18 September 2026

Published: 22 October 2026

Keywords

Inter-organisational trust
Jiangxi province
Skill mismatch
TVET institutions.

The purpose of this research is to analyse the impact of an industry-aligned curriculum on the extent and nature of collaboration between TVET institutions and industries in Jiangxi Province. As industry booms in Jiangxi Province, a series of skill-mismatch issues has emerged, highlighting the important role that TVET institutions can play in creating industry-ready talent. However, all TVET institutions still experience a skills mismatch, suggesting the need for better linkages and curriculum alignment between TVET institutions and industry partners. Through quantitative cross-sectional research involving 360 informants from TVET and related institutions and enterprises in Jiangxi Province, it was found that there is a significant mediating effect of curriculum alignment on the implementation of collaboration activities between TVET institutions and industry. A quantitative cross-sectional survey of informants from TVET institutions and industry partners was conducted in Jiangxi Province, and empirical evidence showed a significant mediating effect of industry-aligned curriculum on collaboration activities between TVET institutions and enterprises. Therefore, the results of this research indicate that curriculum alignment alone is not sufficient to enhance collaboration between TVET institutions and industry; inter-organisational trust is required to facilitate continuous collaboration activities. The findings also show the intervening role of trust in the TVET–industry relationship and extend the theoretical frameworks of Resource Dependence Theory and Social Capital Theory.

Contribution/Originality: This study presents empirical evidence on industry-aligned curricula and TVET–industry collaboration in Jiangxi Province, China. The results also offer practical solutions for TVET institutions, industry partners, and policymakers to address the issue of “skills mismatch” and make curricula more relevant.

1. INTRODUCTION

Technical and Vocational Education and Training (TVET) is one of the central pillars of national skills development strategies, particularly in the context of rapid industrialisation. According to Li (2024), with the transition towards advanced manufacturing, digital production, and high-tech industries, employers' need for job-ready technical skills has increased. However, Rikala, Braun, Järvinen, Stahre, and Hämäläinen (2024) argue that, despite the important role of TVET institutions in workforce development, skill mismatch remains high, negatively

affecting productivity. For example, 1.3 billion people globally are affected by skill mismatch, which imposes a 6% annual cost on the global economy through lost productivity (Puckett, Hoteit, Perapechka, Loshkareva, & Bikkulova, 2020). This issue is profound in China because of rapid technological development. For example, only 39.7% of employees in China believe that their education levels match their job requirements (Zhang, Zhao, Liao, & Chen, 2023), whereas almost 25% of recent college graduates in China are working in jobs unrelated to their college majors (Jiang & Guo, 2022). Therefore, in rapidly industrialising provinces in China, TVET institutions play a critical role in preparing a workforce with industry-relevant technical competencies.

Such a dynamic of skill mismatch is profound in Jiangxi Province, China. According to Wang and Zhang (2025), located in central China, Jiangxi Province has undergone rapid industrialisation due to resource availability, political initiatives, and its strategic location. However, this growth has also created employers' expectations for young employees capable of operating complicated machinery, handling digital tools, and meeting stringent production standards. As opined by Kebede, Asgedom, and Asfaw (2024), such collaboration can not only help enhance relevance but also improve employability and strengthen the responsiveness of the education system. Hence, it has become an essential precondition for successful TVET–industry cooperation to ensure that TVET curricula are aligned with the skills needed in industry. TVET institutions benefit from aligning curricula with current technologies and competency requirements in industry, while industry partners benefit from industry-ready employees, institutional legitimacy, organisational performance, and regional competitiveness. According to Jiangxi Province (Wang & Zhang, 2025), advanced manufacturing, electronic information, new materials, and new energy are strategic industries or sectors for regional economic development. These sectors have expanded rapidly, resulting in an increased need for technically capable employees and, consequently, increasing demand for TVET institutions to have the capacity to deliver industry-relevant skills. Therefore, there has been a growing emphasis on improving curriculum alignment and developing long-term partnerships with industry stakeholders to address the province's workforce goals. However, despite such changes in China, there is limited empirical evidence to identify the influence of curriculum alignment on the breadth and depth of collaboration between TVET institutions and industries in Chinese provinces. Resource Dependence Theory (Ansmann et al., 2021) suggests that curriculum alignment strengthens resource interdependence between TVET institutions and industry partners, whereas Social Capital Theory (Liu & Yang, 2025) highlights the importance of relational mechanisms, such as trust and communication, in facilitating collaboration. However, limited empirical research has examined whether inter-organisational trust mediates the relationship between curriculum alignment and collaboration within TVET–industry partnerships, particularly in Jiangxi Province. Therefore, there is a need for an empirical, theory-driven analysis to understand the impact of industry-aligned curricula on collaborative activities and the mediating factors shaping this relationship.

1.1. Research Aim

This research aims to examine the impact of industry-aligned curricula on the extent and nature of collaboration between TVET institutions and industries in Jiangxi Province.

1.2. Research Questions

1. To what extent are TVET curricula aligned with industry skill needs in Jiangxi Province?
2. What types of collaborative activities currently occur between TVET institutions and industry partners?
3. How does inter-organisational trust mediate the relationship between industry-aligned curricula and joint TVET–industry collaboration activities in Jiangxi Province?

1.3. Research Objectives

- To assess the level of curriculum alignment between TVET programmes and local industry skill requirements in Jiangxi Province.

- To identify the types and frequency of collaborative activities occurring between TVET institutions and industry partners.
- To analyse the relationship between industry-aligned curricula and collaborative activities and examine the mediating role of inter-organisational trust within the TVET–industry ecosystem.

The rationale for this study can be underscored by its timeliness, theoretical gaps, and policy-level requirements. Firstly, the rapid industrial growth in Jiangxi has created significant pressure for the TVET industry to redesign curricula to suit industrial requirements and establish long-term relationships with employers. Therefore, by acknowledging the role of curricula as a driver of collaboration, actionable insights can be generated to create talent pipelines. Moreover, theoretical gaps will be addressed by grounding the research in Resource Dependence and Social Capital theories. This implies that, by integrating these theoretical perspectives, the role of curriculum alignment as a resource-exchange mechanism, along with a trust-formation mechanism, can be analysed, which is critical for understanding collaboration dynamics. Regarding the policy-level rationale, Jiangxi, as a developing industrial hub, provides an important context for identifying how educational reforms can be translated into effective collaborative practices. Therefore, this study will extend the theoretical perspective by empirically analysing the relationship between curriculum alignment and collaboration intensity, while supporting TVET leaders, policymakers, and industry partners in designing targeted interventions to address skill mismatches in industry.

2. LITERATURE REVIEW

2.1. TVET Systems and Workforce Development

Technical and Vocational Education and Training (TVET) is globally recognised as a pillar of workforce development and skills formation. International organisations, such as UNESCO and the OECD, recognise the role of TVET in closing skills gaps, supporting economic diversification, and facilitating the transition to high-value industries (OECD, 2018; UNESCO, 2022). However, even though TVET institutions aim to develop a skilled workforce, most institutions struggle to align training content with industrial requirements (Rajamanickam, Rus, & Raji, 1857). This gap creates a persistent skills mismatch in the workforce.

Although previous studies consistently recognise TVET as a key driver of workforce development, evidence suggests that improvements in employability and skill matching vary considerably across countries and industrial contexts. While some studies report that curriculum reforms significantly improve graduate employability, others argue that curriculum reform alone cannot eliminate skill mismatches without sustained industry engagement. These inconsistent findings indicate that institutional collaboration may be equally important in determining the effectiveness of TVET systems.

In this context, the Chinese government supports industrial development, which perpetuates the significance of TVET. Here, state policies, such as the Modern Vocational Education Reform Plan, emphasise integration with industry, curriculum reform, and a dual-training model (Laube, 2025). However, TVET institutions in China struggle with outdated curricula, limited industry engagement, and insufficient practical training due to rapid technological changes (Zhou, Rashid, & Cheng, 2024). Such issues are significant at the provincial level due to differences in institutional capacity, resource availability, and regional industrial structure. Consequently, as a rapidly developing industrial hub, Jiangxi Province struggles with a skills mismatch, as misalignment between training content and industry requirements becomes a critical barrier to talent development and industrial competitiveness.

2.2. Industry-Aligned Curriculum

An industry-aligned curriculum contributes to the extent to which TVET programs reflect contemporary workplace requirements, technological standards, and occupational competencies. According to Jokić, Pardanjac, Tasić, Vignjević, and Dobardžić (2024), industry-aligned curricula reflect several dimensions, including content alignment with occupational standards, technological alignment with industry-grade equipment, and pedagogical

alignment through work-integrated learning and competency-based approaches. Such curriculum alignment has a positive impact. For example, Howard, Janover, Czech, and Ayton (2025) stated that graduates from aligned programs demonstrate workplace readiness, whereas Hasan, Ismail, and Omar (2025) highlighted that alignment strengthens employer confidence in TVET institutions. Consequently, in the Chinese workforce, an aligned curriculum can facilitate an effective transition into employment in manufacturing and technical sectors. Despite the generally positive evidence, existing studies report inconsistent outcomes regarding the effectiveness of industry-aligned curricula.

While several studies associate curriculum alignment with improved graduate employability and employer confidence (Hasan et al., 2025; Howard et al., 2025), others suggest that curriculum reform alone is insufficient to strengthen long-term collaboration unless employers actively participate in curriculum development and implementation. These inconsistencies suggest that additional organisational and relational factors may influence whether curriculum alignment translates into sustained collaboration between TVET institutions and industry partners. Based on the above discussion and Resource Dependence Theory, industry-aligned curricula are expected to strengthen collaborative activities between TVET institutions and industry partners. Therefore, the following hypothesis is proposed.

H₁: Industry-aligned curriculum has a positive effect on joint TVET–industry collaboration activities.

2.3. TVET-Industry Collaboration

Collaboration between TVET institutions and industries encompasses activities such as joint curriculum development, internships, apprenticeship programmes, teacher–industry exchanges, technical workshops, and dual-training models. In this context, Hasan et al. (2025) asserted that such collaboration can enhance the relevance of training, which is essential for skill development, and improve institutional responsiveness to labour market needs. Consequently, for employers, such collaboration can provide access to a skilled workforce, reduce training costs, and ensure a match between skills and job requirements. For TVET institutions, it can enhance curriculum relevance and improve student outcomes, which is critical for institutional legitimacy. Accordingly, active industry participation in curriculum development is expected to strengthen collaboration. Therefore:

H₂: Industry participation in curriculum development positively affects joint TVET–industry collaboration activities.

However, Jiang and Guo (2022) highlight challenges that include limited communication, misaligned expectations, resource constraints, and the absence of shared decision-making structures. Therefore, industries may be reluctant to collaborate because of perceptions of outdated curricula and weak institutional capacity. Furthermore, previous studies have reported considerable variation in the effectiveness of TVET–industry collaboration across institutional and national contexts. Such differences are often attributed to unequal resource commitments, differing organisational priorities, weak governance structures, and limited trust between education providers and industry partners. These findings suggest that successful collaboration depends not only on structural arrangements but also on the quality of inter-organisational relationships. Effective communication facilitates coordination and information exchange between collaborating organisations. Therefore:

H₃: Communication quality between TVET institutions and industry partners positively influences collaboration activities.

2.4. Inter-Organisational Trust as a Mediating Mechanism

Inter-organisational trust plays a critical role in shaping the quality and sustainability of collaboration between TVET institutes and industry partners. Trust in collaborations can be defined as the expectation that a partner will act competently, reliably, and with goodwill in vulnerable situations (Kucharska, 2017). In collaborations, trust between partners can reduce perceived risks and enhance information sharing, which is critical for organisations to commit resources to joint initiatives that may be uncertain or costly. Consequently, trust can enhance relationship quality and encourage sustained cooperation by reducing transactional frictions and improving mutual problem-

solving (Metz et al., 2022). Drawing on Social Capital Theory, trust is expected to encourage long-term collaborative relationships. Therefore:

H₁: Inter-organisational trust positively influences joint TVET–industry collaboration activities.

Although trust has been widely recognised as a critical determinant of successful inter-organisational collaboration, most empirical studies have focused on commercial partnerships and supply chain relationships rather than TVET–industry collaboration. Moreover, limited research has examined trust as a mediating mechanism through which curriculum alignment influences collaborative activities, particularly within the Chinese TVET context.

This reflects a limited understanding of the relational processes that translate institutional practices into sustained collaboration. Furthermore, Resource Dependence Theory and Social Capital Theory suggest that curriculum alignment may enhance collaboration indirectly through the development of inter-organisational trust. Therefore:

H₂: Inter-organisational trust mediates the relationship between industry-aligned curriculum and TVET–industry collaboration activities.

2.5. Theoretical Underpinnings

Resource Dependence Theory suggests that organisations engage in strategic partnerships to access critical resources amid uncertainty (Ansmann et al., 2021). In the context of the TVET industry, institutions depend on firms for updated labour market information, equipment standards, and internship placements, whereas industries rely on TVET institutions to develop a skilled workforce. Here, curriculum alignment signals that institutions have the capacity to meet industry requirements and can, hence, strengthen resource interdependence.

Social Capital Theory extends this relational dimension by comprising trust, shared norms, and communication networks, which are critical for successful cooperation (Liu & Yang, 2025). In this context, trust reduces perceived risks, enhances information exchange, and encourages long-term engagement. Consequently, in TVET–industry collaboration, trust can influence employers’ willingness to participate in curriculum development, provide training resources, and host students for activities. Therefore, curriculum alignment can help develop trust, which is critical for sustained collaboration.

Together, Resource Dependence Theory and Social Capital Theory provide complementary explanations for the proposed research model. Resource Dependence Theory explains why curriculum alignment and industry participation strengthen collaboration by facilitating resource exchange and reducing dependence uncertainty, whereas Social Capital Theory suggests that communication quality and inter-organisational trust foster the relational conditions necessary for sustained collaborative activities. Accordingly, these theories provide the conceptual foundation for the proposed hypotheses.

2.6. Research Gap

Although previous studies have extensively examined curriculum alignment, TVET–industry collaboration, and workforce development independently, limited research has investigated how curriculum alignment promotes collaborative activities through relational mechanisms such as inter-organisational trust. Along with limited empirical research on the antecedents of collaboration in the Chinese province of Jiangxi, research integrating resource dependence theory and social capital theory is also limited in explaining how curriculum alignment can develop collaboration through mechanisms such as trust and communication. Furthermore, most existing studies have been conducted outside China or have focused on graduate employability rather than collaboration between TVET institutions and industry partners. Consequently, empirical evidence explaining these relationships within Jiangxi Province remains limited.

3. RESEARCH METHODOLOGY

This study adopted a quantitative cross-sectional research design, which is suitable for analysing relationships between variables (Wang & Cheng, 2020). In this context, a deductive research approach was chosen, meaning that hypotheses were derived from established theoretical models (Casula, Rangarajan, & Shields, 2021). In this study, the theoretical models are Resource Dependence Theory and social capital theory. Here, quantitative methods can help conduct statistical analyses of curriculum alignment, collaboration activities, communication quality, industry participation, and inter-organisational trust, including direct and mediating effects.

This study was underpinned by a positivist research philosophy, which means that social phenomena are measurable, observable, and governed by identifiable patterns (Ali, 2024). The research aims to analyse the relationships between predefined variables, such as industry-aligned curriculum, communication quality, trust, and collaboration activities, through objective measurement and statistical analysis. Ontologically, this study was grounded in objectivism, which assumes that curriculum alignment and collaboration behaviours are external phenomena that can be quantified across respondents.

The target population in the study comprises TVET programme heads, coordinators, HR managers, technical supervisors, and faculty members in Jiangxi Province. As this target population has first-hand knowledge of curriculum–industry interactions, these individuals are the most suitable respondents. Therefore, a purposive sampling strategy was employed to recruit participants from key sectors, such as electronics, advanced manufacturing, and energy storage. In this context, a sample of 350 to 400 respondents is targeted to provide adequate statistical power for regression and mediation analysis. Purposive sampling was adopted because the study required respondents with direct experience of TVET–industry collaboration rather than members of the general population. Participants were recruited from multiple public vocational colleges, higher vocational institutions, and industry organisations located across Jiangxi Province. The participating institutions represented key industrial sectors, including advanced manufacturing, electronics, and new energy, where collaboration between TVET institutions and industry partners is particularly important. Respondents included programme heads, faculty members, curriculum coordinators, HR managers, and technical supervisors who were directly involved in curriculum planning or industry collaboration activities. To preserve institutional confidentiality, the names of participating organisations are not disclosed.

Data were collected through a structured, closed-ended survey questionnaire consisting of five-point Likert-scale items. The key constructs of the study were captured using a measurement scale that included an industry-aligned curriculum, industry participation in curriculum development, communication quality, inter-organisational trust, and collaboration activities. Items were adapted from established instruments in TVET, organisational trust, and inter-organisational collaboration research to ensure content validity. The questionnaire was distributed through social media platforms such as Douyin and LinkedIn, as well as other channels, institutional email, and professional networks within TVET institutions and industries.

Data were analysed using statistical analysis software, namely SPSS. In this context, descriptive statistics can help derive the demographic characteristics of the respondents, while also providing a general overview of the key variables. Cronbach's alpha was used in a reliability test to evaluate the internal consistency of the scales. Exploratory factor analysis was applied to confirm construct validity. In addition, inferential analysis, including multiple regression analysis, enabled the evaluation of the direct effects of the hypotheses. Mediation analysis examined the mediating role of trust between curriculum alignment and collaboration activities.

The research involves human participants and thereby raises ethical considerations. Therefore, to uphold the ethical standards of the research, respondents were given an information sheet outlining the purpose, objectives, and their right to withdraw. In addition, to ensure the confidentiality and anonymity of participants, no identifying questions were asked. Ethical approval was obtained from the relevant institutional review committee before data collection began.

3.1. Sample Size and Characteristics

After excluding incomplete and invalid responses from the collected survey responses, 360 responses remained; therefore, 360 is the final sample size of this study and was used for the final data analysis procedures. As per Table 1, the KMO coefficient is 0.871, which is higher than 0.6, indicating that 360 represents an adequate sample size. Bartlett's test also indicated significant sphericity (chi-square = 15366.31, $p < 0.05$), demonstrating that the sample size is statistically valid for the selected set of items.

Table 1. KMO Bartlett's test for sample adequacy.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.871
Bartlett's Test of Sphericity	Approx. Chi-Square	15366.31
	Df	378
	Sig.	0.000

Table 2 indicates that 58.33% of the respondents are male, whereas 40.56% are female. Most participants (66.67%) are between 30 and 49 years old; specifically, 37.50% are 30 to 39 years old and 29.17% are 40 to 49 years old. Only 16.67% are 50 to 59 years old, while 12.50% are 20 to 29 years old. Most participants (79.17%) have 1 to 10 years of experience in TVET.

Table 2. Demographic characteristics of sample.

Variables	Categories	Count	N %
Sex	Male	210	58.33%
	Female	146	40.56%
	Other	4	1.11%
Age	20 to 29	45	12.50%
	30 to 39	135	37.50%
	40 to 49	105	29.17%
	50 to 59	60	16.67%
	60+	15	4.17%
Experience	Less than 1 year	15	4.17%
	1 to 5 years	105	29.17%
	6 to 10 years	180	50.00%
	10 to 20 years	45	12.50%
	20+ years	15	4.17%

Table 3 presents the scales used in the questionnaire, along with their respective items and the sources from which the scale items were adapted. The questionnaire included a total of 28 items, divided into five exclusive scales, with each item measured using a five-option Likert scale ranging from Strongly Disagree to Strongly Agree.

Table 3. Questionnaire items in each scale.

Scale (Sources)	Items
Industry-Aligned Curriculum (IAC) (Affandi, Sohimi, Subri, Herrera, & Yunus, 2024)	Curriculum content includes industry technologies and practices.
	The aimed skills increase students' employability in the industry.
	The curriculum is regularly updated as per industry changes.
	Practical skills are emphasised in the curriculum as per industry needs.
	Learning outcomes are aligned with labour market demands.
Industry Participation in Curriculum Development (IPCD) (Triyono & Moses, 2019)	Industry representatives actively participate in curriculum planning meetings.
	Companies participate in assessing the curriculum adequacy.
	Industry experts contribute to the evaluation of training programs.
	Curriculum revision considers feedback from industry stakeholders.
	Partnerships with industry facilitate faculty training in new technologies.
Communication Quality (CQ)	Regular communication between TVET and industry partners.
	Detailed information shared between TVET and industry.

Scale (Sources)	Items
(Ramamurthy, Alias, & DeWitt, 2021)	Established structures and responsibilities for communication.
	Established channels for communication.
	Channels and mechanisms are audited and updated.
Inter-Organisational Trust (Gibbs, 2003)	We believe our industry partners act reliably.
	We feel safe sharing the information with TVET/industry partners.
	We trust our partners to fulfil their commitments as agreed.
	We depend on industry partners to act in good faith.
	Trust facilitates the sharing of resources and knowledge.
	We trust our partners enough to build a long-term partnership.
Joint TVET–Industry Collaboration Activities (JICA) (UNESCO-UNEVOC, 2021)	Our organisation co-designs training programs with industry partners.
	We jointly organise workshops and seminars.
	We jointly organise skill competitions and assessments.
	Internship or apprenticeship programs are jointly managed.
	Formal agreements always outline the collaboration roles and responsibilities.
	Our organisation participates in joint research or innovation projects.
	We collaborate on curriculum delivery.

3.2. Survey Tool Development

Principal Component Extraction was used along with Oblimin Rotation and Kaiser Normalisation for factor analysis to assess the reliability and validity of the scales based on all 28 items of the questionnaire. Table 4 depicts that the items are adequately loaded ($FL > 0.7$) onto their intended scales, highlighting each item's strong contribution to the intended latent variable.

Table 4. Factor Loadings, Validity and Reliability of Scales.

Items	Factor Loadings					AVE	CR	Cronbach's Alpha
	JCA	IAC	CQ	IPCD	IOT			
IAC1		0.942				0.853	0.967	0.937
IAC2		0.914						
IAC3		0.877						
IAC4		0.949						
IAC5		0.934						
IPCD1				0.915		0.874	0.972	0.975
IPCD2				0.970				
IPCD3				0.949				
IPCD4				0.952				
IPCD5				0.886				
CQ1			0.937			0.831	0.961	0.963
CQ2			0.920					
CQ3			0.933					
CQ4			0.933					
CQ5			0.831					
IOT1					0.759	0.633	0.911	0.932
IOT2					0.851			
IOT3					0.731			
IOT4					0.842			
IOT5					0.729			
IOT6					0.850			
JCA1	0.829					0.743	0.953	0.945
JCA2	0.869							
JCA3	0.876							
JCA4	0.904							
JCA5	0.914							
JCA6	0.752							
JCA7	0.878							
Extraction Method: Principal Component Analysis.								
Rotation Method: Oblimin with Kaiser Normalisation.								
The rotation converged in 10 iterations.								

The AVE values for the scales ranged from 0.633 to 0.874, with high composite reliability ($CR > 0.9$) and very high internal consistency (Cronbach's $\alpha > 0.9$).

4. RESULTS AND FINDINGS

Table 5 highlights that the average Industry-Aligned Curriculum score (3.342 ± 1.062) is notably higher than those of all other aspects, followed by Inter-Organisational Trust (3.255 ± 0.908). Industry Participation in Curriculum Development is currently lower than the other aspects (3.078 ± 1.245). Communication Quality (3.189 ± 0.962) and Joint Collaboration Activities (3.135 ± 1.009) are at moderate levels.

Table 5. Descriptive Statistics of Mean Latent Variables.

Latent Variables	Mean	SD	Min.	Max.	Q1	Q2 (Median)	Q3
Industry Aligned Curriculum (IAC)	3.342	1.062	1	5	2.8	3.6	4
Industry Participation in Curriculum Development (IPCD)	3.078	1.245	1	5	2	3.1	4
Communication Quality (CQ)	3.189	0.962	1.2	5	2.6	3	4
Inter-Organisational Trust (IOT)	3.255	0.908	1	5	2.667	3.25	4
Joint Collaboration Activities (JCA)	3.135	1.009	1	5	2.429	2.857	3.857

Table 6 indicates that Sex, Age, and Experience are not correlated with any of the latent variables, indicating that demographic variables are not related to factors associated with industry partners and TVET organisations. Hence, demographic variables cannot have a confounding effect on the model, and there is no need to control for them.

Table 6. Correlation analysis within demographic variables and latent variables.

Latent Variables	Measures	Sex_Female	Age	Experience
IAC	Correlation Coefficient	0.048	0.008	0.064
	Sig. (2-tailed)	0.362	0.876	0.226
IPCD	Correlation Coefficient	-0.008	0.024	0.032
	Sig. (2-tailed)	0.88	0.656	0.541
CQ	Correlation Coefficient	0.044	-0.085	-0.036
	Sig. (2-tailed)	0.41	0.108	0.494
IOT	Correlation Coefficient	0.087	0.047	0.082
	Sig. (2-tailed)	0.1	0.373	0.119
JCA	Correlation Coefficient	-0.037	-0.028	0.04
	Sig. (2-tailed)	0.483	0.602	0.444

Note: ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

The mediation analysis was conducted using Hayes' method using Process Macro Model 4. A total of three regression models were estimated: the 1st model (M1) predicts the mediator variable using all independent variables; the 2nd model (M2a) predicts the dependent variable using all independent variables; and the 3rd model (M2b) predicts the dependent variable using both independent and mediator variables. Table 7 shows that the VIFs are within the acceptable range for all three regression models ($VIF < 5$), indicating no risk of multicollinearity.

Process Macro Model 4 uses regression analysis by individually conducting 3 process macro regression models for each IV serving as the main variable and the other IVs as covariates, while considering IOT as the mediator in each model. As shown in Table 8, Industry Aligned Curriculum (IAC), Industry Participation in Curriculum Development (IPCD), and Communication Quality (CQ) collectively predict 59.31% of the variability in Inter-Organisational Trust (IOT). The model's predictive ability is significant ($F = 173$, $p < 0.05$). Table 8 indicates that CQ ($B = 0.395$, $p < 0.05$) and IPCD ($B = 0.393$, $p < 0.05$) have a strongly positive and significant effect on the mediator IOT.

Table 7. Multi-collinearity test of models.

Models	IVs	Tolerance	VIF
Model 1, DV: IOT	IAC	0.961	1.041
	IPCD	0.968	1.033
	CQ	0.989	1.012
Model 2a, DV: JCA	IAC	0.961	1.041
	IPCD	0.968	1.033
	CQ	0.989	1.012
Model 2b, DV: JCA	IAC	0.705	1.419
	IPCD	0.573	1.746
	CQ	0.693	1.442
	IOT	0.407	2.458

Therefore, higher industry participation in curriculum development and higher communication quality independently and significantly increased inter-organisational trust. IAC ($B = 0.335$, $p < 0.05$) has a positive and significant effect on mediator IOT, indicating that a higher Industry-Aligned Curriculum increases Internal Organisational Trust.

Table 8. Process macro model 4 regression model for predicting mediator (IOT).

Predictors, DV: IOT	Coefficient (b)	SE	t	p	95% CI (LLCI to ULCI)
IAC	0.335	0.030	11.372	< 0.001	[0.278, 0.393]
IPCD	0.393	0.025	15.677	< 0.001	[0.344, 0.442]
CQ	0.395	0.032	12.311	< 0.001	[0.332, 0.458]
Constant	-0.335	0.164	-2.044	0.042	[-0.658, -0.013]
Model Fit	$R^2 = 0.5931$, $F(3, 356) = 173.00$, $p < 0.001$				

According to the regression analysis, the independent variables (IAC, IPCD, and CQ) collectively predicted 43.3% of the variability in JCA (R -square = 0.433), whereas including the mediator IOT significantly increased the model's explained variance to 60.4% (R -square = 0.604) (Table 9). Model 2a indicated that all independent variables had significant and positive total effects on JCA (Table 9). Table 10 indicated that the mediator IOT ($B = 0.721$, $p < 0.05$) had the strongest and significantly positive direct effect on JCA.

Table 9. Regression model for total effects by predicting DV using IVs without mediator.

DV: JCA	Coef. (b)	SE	t	Sig.	95% CI (LLCI to ULCI)
(Constant)	-0.072	0.215	-0.333	0.740	[-0.493, 0.349]
IAC	0.179	0.039	4.622	0.000	[0.103, 0.255]
IPCD	0.337	0.033	10.267	0.000	[0.272, 0.402]
CQ	0.492	0.042	11.701	0.000	[0.410, 0.574]
Model Fit	$R^2 = 0.433$, $F(3, 355) = 90.539$, $p < .001$				

Table 10. Process macro model 4 regression model for predicting DV using IVs and mediator.

Predictor, DV: JCA	Coef. (b)	SE	t	p	95% CI (LLCI to ULCI)
IAC	-0.063	0.038	-1.668	0.096	[-0.137, 0.011]
IOT (Mediator)	0.721	0.058	12.400	< 0.001	[0.607, 0.835]
IPCD	0.054	0.036	1.515	0.131	[-0.016, 0.125]
CQ	0.208	0.042	4.939	< 0.001	[0.125, 0.29]
Constant	0.170	0.181	0.941	0.348	[-0.185, 0.526]
Model Fit	$R^2 = 0.6042$, $F(4, 355) = 135.49$, $p < .001$				

Table 11 was developed by collectively considering the indirect-effect results for all three Process Macro models for each IV, while treating the other variables as covariates and using the same mediator. Table 11 highlights that

IAC has no direct effect on JCA, whereas it has a significantly positive indirect effect ($B = 0.242$, $p < 0.05$) on JCA through the mediator IOT, it is evident that IAC has a significant positive influence on JCA, whereas the effect is significant only indirectly through IOT, which is a significant mediating variable. Similarly, IPCD does not have any direct effect on JCA, whereas it has a significant positive indirect effect ($B = 0.283$, $p < 0.05$) on JCA through the mediating variable IOT. It is evident that IPCD has a significant positive influence on JCA, whereas the effect is significant only indirectly, with IOT serving as a significantly strong mediating variable. Only CQ ($B = 0.208$, $p < 0.05$) has a significantly positive and strong direct effect on JCA despite the indirect effect through the mediator. CQ also has a significantly positive indirect effect ($B = 0.285$, $p < 0.05$) on JCA through the mediator IOT, indicating that IOT plays a significant mediating role between the variables. Therefore, CQ significantly influences JCA through both direct and indirect relationships, with the indirect effect marginally stronger than the direct effect.

Table 11. Direct and indirect effects and path-specific results from process macro models (Model 4).

Effect	Coef. (b)	SE	p	95% CI (LLCI to ULCI)
Direct Effect (IAC->JCA)	-0.063	0.038	0.096	[-0.137, 0.011]
Indirect Effect (IAC->IOT->JCA)	0.242	0.030 (BootSE)	<0.05	[0.186, 0.303]
Direct Effect (IPCD->JCA)	0.054	0.036	0.131	[-0.016, 0.125]
Indirect Effect (IPCD->IOT->JCA)	0.283	0.028 (BootSE)	<0.05	[0.232, 0.341]
Direct Effect (CQ->JCA)	0.208	0.042	< .001	[0.125, 0.290]
Indirect Effect (CQ->IOT->JCA)	0.285	0.032 (BootSE)	<0.05	[0.225, 0.348]

Note: Bootstrapped Sample = 5000.

5. DISCUSSION

This study examined how industry-aligned curricula influence joint TVET–industry collaboration activities in Jiangxi Province and the mediating role of inter-organisational trust. Overall, the findings suggest that curriculum alignment alone is insufficient to strengthen collaboration directly. Instead, communication quality and inter-organisational trust play important roles in translating curriculum alignment and industry participation into sustained collaborative activities.

5.1. Curriculum Alignment and Collaboration in the Jiangxi Context

According to the research findings, the perception of curriculum alignment is relatively high, indicating that TVET institutions in Jiangxi have effectively internalised the skill demands of advanced manufacturing and digital production. However, the findings also revealed moderate collaboration activities, which means that, rather than serving as a direct catalyst for partnership, curriculum alignment is more likely to be a necessary precondition. This difference is theoretically significant because, according to Resource Dependence Theory, alignment can effectively enhance the institutions' ability to provide valuable human resources, thereby increasing their attractiveness as partners (Ansmann et al., 2021). However, Resource Dependence Theory also states that organisations may not engage in relationships solely because of complementary resources, which means that industries must perceive TVET institutions as reliable and predictable before engaging in collaborative activities. This provides additional empirical support for Resource Dependence Theory, as the study underscores that resource interdependence needs to be mediated by the relational quality of partners to influence joint action.

The findings also resonated with existing literature findings, such as Affandi et al. (2024) and Jokić et al. (2024), who stated that alignment can improve institutional credibility and demonstrate competence, thereby enabling the transition from education to employment. However, the results also extended this assumption by showing that alignment cannot lead to collaborative activities without favourable relational condition. This also resonated with Kebede et al. (2024), as the authors highlighted that technical changes need to be complemented by strong institutional relationships to translate into employer involvement. Overall, these findings provide partial support for

H1 by indicating that curriculum alignment contributes to collaboration primarily through relational mechanisms rather than through a direct effect.

5.2. Industry Participation and Communication Quality as Relational Drivers

The research findings also provided partial support for Hypothesis 2 and strongly supported Hypothesis 3. Consistent with Hypothesis 2, industry participation in curriculum development had a significant positive impact on collaboration at the direct level; however, its direct impact became non-significant when inter-organisational trust was included in the model. These findings provide partial support for H2 because the effect of industry participation became non-significant after the inclusion of inter-organisational trust, indicating full mediation. Conversely, the findings support H3, indicating that communication quality influences collaboration both directly and indirectly through inter-organisational trust.

Theoretically, these findings provide additional empirical evidence supporting Social Capital Theory by demonstrating the different roles of structural and relational social capital within TVET–industry collaboration. Industry participation strengthens relational social capital by reinforcing trust, whereas communication quality can enhance structural and relational social capital, which constitute information flow, coordination routines, and more. Here, the full mediation of industry participation in curriculum development by trust suggests that participation cannot promote cooperative behaviour unless it is perceived as sincere, consistent, and embedded in reliable interaction patterns. Therefore, the research findings provide additional insights into Social Capital Theory by demonstrating that not all collaborative inputs have equivalent relational value, and communication has an exclusive impact on activating joint action in emerging TVET–industry ecosystems.

Also, the findings resonated with a study undertaken by Triyono and Moses (2019), which emphasises that employer participation enhances instructional value and relevance. Here, Ramamurthy et al. (2021) also argued that clear communication structures reduce uncertainty and enhance effectiveness in partnerships. The present study also reinforces these findings, while clarifying that employer participation and enhanced partnerships occur only when enabled by trust, whereas communication quality can enhance collaboration before trust emerges. This difference defines the variable relational strength of different organisational practices.

5.3. Inter-Organisational Trust as a Central Mediating Mechanism

The research findings also strongly supported H4, whereas they provided full support for H5. H4 proposed the positive influence of inter-organisational trust on collaboration activities; thus, acceptance of this hypothesis demonstrated that trust had the strongest direct influence on joint TVET–industry collaboration, exceeding all other predictors. In this respect, H5 defined trust as mediating the relationship between curriculum alignment and collaboration, as shown by full mediation, indicating that the direct impact of curriculum alignment was non-significant, whereas the indirect effect was strongly positive.

From a theoretical perspective, this finding reinforced the application of Social Capital Theory. Social Capital Theory highlights trust as a significant element of relational social capital, which supports collective decision-making. However, this study shows that trust is not only an enabling element but also a necessary aspect for translating technical and structural factors, such as curriculum alignment and participation, into collaborative behaviour. Further, Resource Dependence Theory emphasises that complementary resources can enhance cooperation, but the results indicate that, despite the existence of resource alignment, organisations need relational assurance, which can be established through trust. Therefore, this research strengthens the relational meaning of social capital and Resource Dependence Theory in TVET–industry collaboration.

The research findings also resonated with existing literature that highlighted trust as a mediator of effective and long-term inter-organisational collaboration. For example, Kucharska (2017) emphasised that trust can reduce perceived vulnerability in partnerships, meaning that partners can share knowledge and information as committed

resources. Similarly, Metz et al. (2022) asserted that trust can enhance stability in industrial partnerships by leveraging reciprocity and willingness to engage in joint activities. Therefore, the research findings support these prior views and illustrate their applicability to collaboration involving curriculum alignment and joint activities in TVET–industry relationships.

5.4. Implications of the Study

The research findings revealed that, despite being necessary, enhancing curriculum alignment is not sufficient to improve collaboration between TVET institutions and industries in Jiangxi. In this context, collaborative relationships between TVET institutions and industries need to be supported by relational practices such as trust and high-quality communication. TVET institutions therefore need to enhance institutional practices that promote transparency, productivity, and responsiveness in supporting curriculum changes. Regular curriculum review cycles with industry representatives, the co-development of assessment standards, and enhanced exchange programmes between TVET institutions and industries can enable TVET institutions to improve curriculum alignment, thereby establishing credible behavioural commitments and building trust over the long term.

For industry partners operating in Jiangxi Province, the research findings demonstrate the significance of constant engagement with TVET institutions rather than occasional consultation. The study confirms that active engagement in curriculum framing, the provision of workplace training opportunities, and participation in communication and decision-making can enhance industry's role as a co-creator of a skilled workforce. In this context, communication quality may have a direct and indirect impact on collaboration, meaning that industries need to invest in formal collaboration channels, such as shared digital platforms, for conducting meetings and enabling constant information exchange.

Furthermore, policymakers, such as provincial authorities, should prioritise policies that institutionalise trust-building between TVET institutions and industries. In this context, they should provide incentives for long-term collaboration agreements and allocate funds for joint innovation and apprenticeship projects. Therefore, these implications position trust between TVET institutions and industries not only as a curriculum-alignment mechanism but also as a means of enhancing skills matching in Jiangxi.

6. CONCLUSION

This research generates a comprehensive understanding of how technical, structural, and relational elements collectively impact collaboration between TVET institutions and industries in Jiangxi. The results demonstrated that, despite a strong perception of curriculum alignment, its impact on collaboration is indirect, suggesting that collaboration between industries and TVET institutions can be facilitated through inter-organisational trust. This indicates that curriculum alignment alone cannot ensure deeper industry engagement, although industrial participation in curriculum development can enhance trust. Here, trust can predict collaboration; however, for trust to be meaningful, industry partners should be reliable, consistent, and credible. The research also found that communication quality is a dual-pathway driver, meaning that it directly impacts collaboration by enhancing coordination and reducing ambiguity.

Also, this research concludes that organisational trust is the strongest predictor of collaboration activities, exceeding the technical and structural predictors. This means that, in the changing ecosystem of industries in Jiangxi, collaboration between industries and TVET institutions depends on relational trust between partners rather than formal structures. Here, the research findings demonstrate that trust is the central element in making curriculum alignment and institutional engagement effective.

In this context, to enhance collaboration between TVET institutions and industries, TVET institutions need to implement effective trust-building strategies alongside curriculum alignment. Such strategies include establishing a curriculum review, creating transparent channels for incorporating industry feedback, and engaging in exchange

programs that demonstrate competence and reliability. Furthermore, TVET institutions should formalise structured communication systems that include shared digital platforms, scheduled coordination meetings, and collaboration dashboards to ensure the flow of information and eliminate uncertainty.

On the contrary, this research relies on a cross-sectional survey, which can limit causal inference and cannot capture how relationships evolve over the long term. Additionally, the use of self-reported data may introduce perceptual bias, while the sole focus on a single province may limit generalisability because collaboration dynamics differ across regions. To address these limitations, future studies should adopt longitudinal or mixed-method approaches to understand the dynamic formation of trust and collaboration. Cross-province and international comparisons could also test the robustness of the model across different institutional environments. Qualitative studies could further highlight how trust is developed through regular interactions.

Funding: This study received no specific financial support.

Institutional Review Board Statement: This study was approved by the Institutional Review Board of School of Marxism, Ji'an College, China, under protocol number [JAU-SM-202504-EL073], dated [April 5, 2025].

Informed Consent Statement: Informed verbal consent was obtained from all participants, and all data were anonymised to protect participant confidentiality.

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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