



## **Women’s Collaborative Leadership in Technical and Vocational Education: A Systematic Review**

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# Women's Collaborative Leadership in Technical and Vocational Education: A Systematic Review

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## Abstract

Women's leadership in Technical and Vocational Education and Training (TVET) remains underexamined despite the sector's dependence on coordinated relationships among schools, employers, government, and communities. This systematic literature review synthesizes 22 peer-reviewed studies published from 2015 to 2025 to examine women's collaborative leadership in TVET and directly relevant educational or structurally analogous contexts. Following PRISMA 2020 procedures, records were identified through ScienceDirect and Google Scholar and analysed using inductive thematic synthesis. Four themes were identified: persistent structural and cultural barriers; individual, relational, and institutional enablers; leadership practices associated with transformational and distributed approaches; and the strategic importance of external partnerships. The evidence indicates that women's leadership is shaped less by an inherently gendered style than by access to authority, professional networks, care-sensitive organizational arrangements, and opportunities to lead cross-boundary collaboration. Direct evidence at the intersection of women, collaborative leadership, and TVET is notably sparse. The review therefore proposes a Contextual Collaborative Leadership Framework for Women in TVET, which integrates enabling conditions, collaborative practices, boundary-spanning practices, and institutional outcomes. The framework is a research proposition requiring empirical validation.

**Keywords:** Collaborative Leadership; Women's Leadership; Gender Equity; School–Industry Partnership; Educational Leadership; Social Welfare.

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## INTRODUCTION

Technical and Vocational Education and Training (TVET) is expected to connect learning institutions with changing labour markets, technological practices, and local development priorities. Achieving that mandate depends on collaboration rather than on the authority of a single office holder: vocational schools must coordinate teachers, learners, employers, government agencies, families, and community actors. Studies of women's leadership development through TVET programmes and distributed leadership in vocational institutions show that shared responsibility, professional trust, and role clarity are central to this work [1], [2]. In Indonesian vocational high schools (VHSs), this cross-boundary task is especially visible in teaching-factory initiatives, which require sustained school–industry coordination and internal quality management [3], [4].

The gender dimension of this leadership challenge is consequential for educational equity and social welfare. Research on school leadership indicates that women leaders can be effective in instructional, administrative, and community-facing domains, while the presence of women in school leadership structures may also be associated with organizational performance [5], [6]. However, these findings do not imply that women possess a fixed or inherently collaborative leadership style. Instead, role-congruity expectations, masculine leader stereotypes, and organizational practices can constrain women's access to authority and the legitimacy of their decisions [7], [8], [9], [10]. Positive role models may widen leadership aspirations, whereas exclusionary cultures and the Queen Bee phenomenon can weaken solidarity and opportunity [11], [12].

Existing scholarship has examined innovation-oriented leadership in TVET, women's leadership in male-dominated operational sectors, and women's career trajectories in public administration and STEM [13], [14], [15], [16]. Yet the convergence of women's leadership, collaborative practices, and TVET governance remains fragmented. Direct TVET evidence is scarce, and studies from adjacent sectors are often treated as if they were interchangeable with vocational education. This review addresses that limitation by distinguishing direct, education-sector, and structurally analogous evidence rather than overgeneralizing from indirect findings.

Accordingly, this systematic literature review aims to: (1) map evidence on women's collaborative leadership in TVET and relevant adjacent contexts; (2) identify structural barriers and enabling conditions; (3) synthesize leadership and partnership practices; and (4) develop a focused future research agenda. Its contribution is a proposed Contextual Collaborative Leadership Framework (CCLF) for Women in TVET. The review aligns with scholarship on gender, education, institutional capacity, workforce participation, and social welfare by identifying mechanisms through which more inclusive leadership can strengthen vocational institutions and their public value.

## METHODS

### *Review Design and Reporting Standard*

This study employed a systematic literature review (SLR) with transparent identification, screening, eligibility, and inclusion procedures guided by PRISMA 2020 [17]. The review used thematic synthesis because the retained studies differed substantially in setting, design, measures, and outcome types; these characteristics made statistical pooling inappropriate [18].

The review was not preregistered. Its analytical focus was evidence about women’s collaborative leadership in TVET, while allowing carefully bounded use of education-sector and structurally analogous evidence when direct evidence was unavailable.

### Search Strategy and Sources

The search was conducted in ScienceDirect and Google Scholar and covered peer-reviewed English-language articles published from 2015 through 2025. The 2015 lower boundary reflected the period in which gender equality and quality education received renewed global policy attention and expanded scholarly discussion [19]. Searches were restricted to open or freely accessible full texts to permit full appraisal. Table 1 reports the database-specific strings and filters. The Google Scholar search incorporated the term “distributed leadership” to improve recall, whereas the ScienceDirect search used a narrower phrase structure.

**Table 1.** Search Strategy and Database Filters

Database	Search String	Filters
ScienceDirect	("women leadership" OR "female leadership") AND ("collaborative leadership") AND ("vocational education")	2015–2025; English; open/full-text access; peer-reviewed research or review articles; Social Sciences/Psychology.
Google Scholar	("female leadership" OR "women leadership") AND ("collaborative leadership" OR "distributed leadership") AND ("vocational education" OR "TVET")	2015–2025; English; relevance-ranked search; open/full-text access.

The review treated analogous evidence as contextually informative rather than equivalent to direct evidence. A study was classified as structurally analogous only when it involved field-intensive operations, external stakeholder accountability, documented gendered leadership constraints, or comparable boundary-spanning demands. This approach follows the principle that a literature review should make its evidence boundaries explicit rather than infer universal conclusions from heterogeneous studies [20].

### Eligibility Criteria

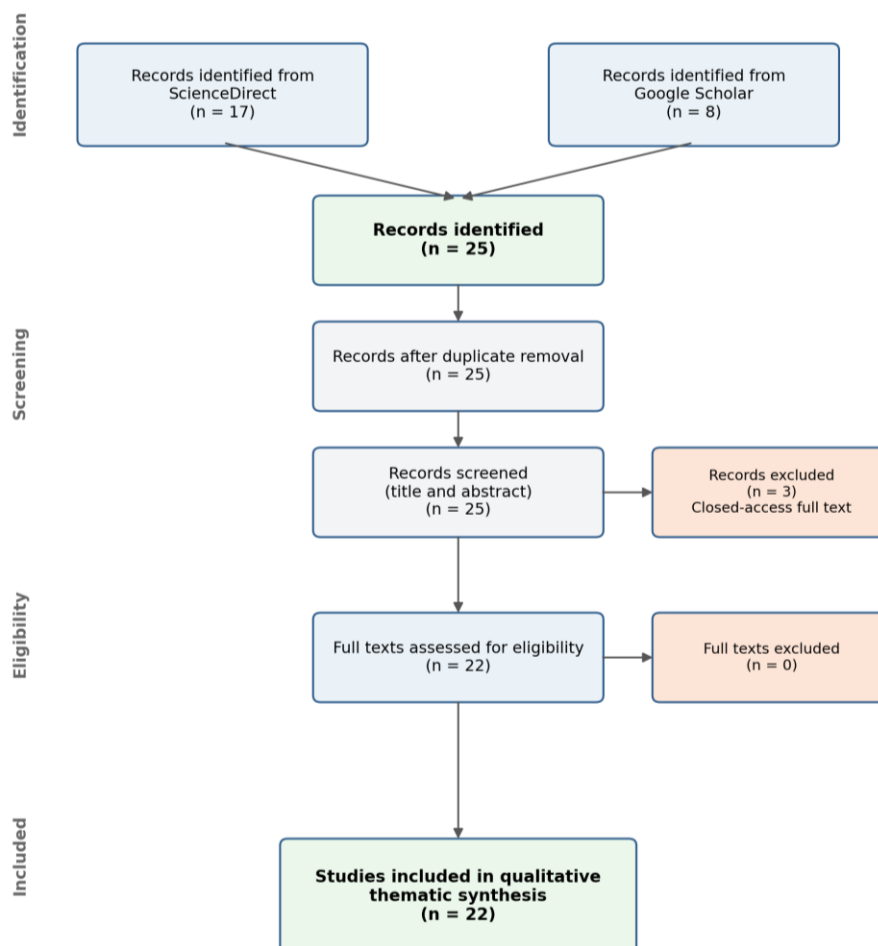
**Table 2.** Inclusion and Exclusion Criteria

Criterion	Inclusion	Exclusion
Direct scope	Explicit attention to women/female leadership, collaborative or distributed leadership, and TVET/vocational education.	General leadership studies with no vocational or TVET relevance.
Adjacent evidence	Educational leadership or structurally analogous sectors with field-based operations, external accountability, and gendered leadership barriers.	Sectors without a plausible structural relation to TVET governance.

Criterion	Inclusion	Exclusion
Publication	Peer-reviewed research or review article with available full text.	Books, theses, editorials, conference papers, opinion pieces, and inaccessible reports.
Period and language	Published 2015–2025 in English.	Published before 2015 or not available in English.

### Screening, Data Extraction, and Quality Appraisal

The initial search produced 25 records: 17 from ScienceDirect and 8 from Google Scholar. No duplicates were identified. Following title and abstract screening, three records were excluded because the full text was not openly available. All remaining 22 full texts met the prespecified scope and publication criteria and were included in the thematic synthesis. Figure 1 presents the review flow. The research team extracted publication year, country or regional context, sector, design, sample, leadership concept, reported barriers, enabling conditions, collaboration practices, and partnership implications. Each study was then appraised for clarity of purpose, methodological fit, analytical transparency, relevance to the review question, and apparent risk of bias. Studies were not discarded on the basis of a single quality feature because the corpus was intentionally heterogeneous.



**Figure 1.** PRISMA Flow Diagram for Identification, Screening, Eligibility, and Inclusion of Studies

### Thematic Synthesis

Two coding rounds were used. First, recurring evidence was coded inductively at the level of reported barriers, enablers, leadership practices, and external relationships. Second, codes were consolidated through author discussion into four themes: T1, persistent structural and cultural barriers; T2, individual, relational, and institutional enablers; T3, collaborative and transformational leadership practices; and T4, external partnerships. The analysis followed a reflexive thematic logic in which themes were interpreted as patterned evidence across the corpus rather than as causal effect estimates [18], [21].

Because the article reviews published evidence and does not recruit human participants, formal human-subject ethics approval was not required. The analysis nevertheless followed principles of transparent reporting, accurate representation of source claims, and careful separation of direct from analogous evidence.

## RESULTS AND DISCUSSION

### Results

#### Evidence Profile and Directness of Evidence

The 22 included studies represent a heterogeneous evidence base. Eight used quantitative designs, five used qualitative designs, two used mixed methods, and seven were reviews, bibliometric analyses, or scoping reviews. Only one study directly examined leadership and innovation in a TVET context. Eight additional studies addressed educational leadership or school-based organizational settings, while 13 investigated structurally analogous sectors such as logistics, civil service, STEM, tourism, agribusiness, and community development. This distribution is itself a substantive finding: empirical scholarship rarely examines women's collaborative leadership and TVET together.

**Table 3.** Profile of Included Studies by Evidence Directness and Research Design (n = 22)

Profile Dimension	Category	Number of Studies	Interpretive Value
Evidence directness	Direct TVET leadership evidence	1 (4.5%)	Directly informs vocational leadership, innovation, or partnership practice.
Evidence directness	Education-sector leadership evidence	8 (36.4%)	Informs school leadership, professional learning, and gendered leadership conditions.
Evidence directness	Structurally analogous-sector evidence	13 (59.1%)	Provides contextual insight; cannot be treated as TVET-equivalent evidence.
Research design	Quantitative	8 (36.4%)	Identifies associations, prevalence, or comparative patterns.
Research design	Qualitative	5 (22.7%)	Illuminates trajectories, lived experience, and organizational processes.
Research design	Mixed methods	2 (9.1%)	Combines patterned evidence and contextual interpretation.

Profile Dimension	Category	Number of Studies	Interpretive Value
Research design	Review/bibliometric/scoping	7 (31.8%)	Maps existing knowledge, gaps, and conceptual tendencies.

The evidence profile cautions against universal statements about women leaders in TVET. The most defensible conclusion is not that a single leadership style belongs to women, but that women’s capacity to lead collaboratively depends on institutional authorization, relational resources, and the design of cross-boundary work. The four themes therefore provide a structured interpretation of the corpus rather than a weighted estimate of intervention effectiveness.

### *Persistent Structural and Cultural Barriers*

T1 appeared in 11 of 22 studies (50.0%). The barrier theme included gender stereotyping, role-congruity expectations, work–family conflict, uneven access to informal networks, unequal career development, and complex intra-gender relations. In operational settings, women’s authority was also questioned through assumptions that field work, technical expertise, industry interaction, or high-visibility representation were masculine domains. The evidence therefore suggests that barriers are not confined to recruitment or promotion; they shape day-to-day credibility, access to information, and the time available to undertake boundary-spanning work.

The reported “double burden” is particularly relevant for TVET leadership. Collaborative school–industry work often occurs beyond regular instructional hours and requires travel, employer meetings, partnership events, and rapid problem solving. Where care responsibilities are treated as private rather than organizational concerns, women can be structurally excluded from the informal arenas in which leadership networks form. The corpus also shows that solidarity cannot be assumed simply because women occupy leadership roles. In some settings, competition over scarce positions and internalized gender norms may reproduce exclusion rather than challenge it.

### *Individual, Relational, and Institutional Enablers*

T2 was the most prevalent theme, occurring in 12 studies (54.5%). Enablers operated at three levels. At the individual level, studies highlighted self-efficacy, strategic career planning, resilience, and the ability to interpret setbacks without withdrawing from leadership aspirations. At the relational level, mentoring, sponsorship, supportive family arrangements, peer networks, and visible role models increased access to advice, legitimacy, and opportunity. At the institutional level, transparent selection procedures, leadership development, fair workload allocation, anti-discrimination safeguards, and actively monitored gender-equality policies were repeatedly identified as necessary.

A consistent pattern is that formal policy is insufficient when it is disconnected from organizational practice. Women’s leadership pathways are strengthened when institutions make promotion criteria visible, reserve time for professional learning, recognise partnership work in performance systems, and establish mentoring arrangements that provide both

psychosocial support and access to influential networks. For TVET, these enablers should also include industry-facing leadership development, because employer communication and partnership negotiation are not peripheral tasks but central elements of institutional effectiveness.

### *Collaborative and Transformational Leadership Practices*

T3 was identified in 8 studies (36.4%). Across the corpus, effective practices were described through shared vision, participative decision-making, staff development, communicative openness, and distributed responsibility. These practices overlap with transformational and distributed leadership literature, but the review treats them as observable organizational processes rather than as gender-essential characteristics. Women leaders may deploy these practices effectively, yet their enactment depends on whether authority, expertise, and recognition can be shared without eroding accountability.

The strongest implication for TVET is that collaboration should not be reduced to consultation. Collaborative leadership requires structures through which teachers, programme heads, career-guidance staff, students, and employer representatives contribute to decisions, receive feedback, and share responsibility for implementation. It also requires leaders to coordinate professional learning across academic and technical departments, especially where teaching-factory projects combine curriculum, production, assessment, safety, and market-facing activities.

### *External Partnerships and Boundary-Spanning Work*

T4 was identified in 6 studies (27.3%). Although it was the least frequent theme, it is particularly consequential for TVET. The studies show that women’s leadership is embedded in networks that extend beyond the institution, including professional associations, employers, government bodies, communities, and family systems. Partnership work can expand women’s leadership capital, but it can also expose women to gatekeeping when informal industry networks are male dominated.

In TVET, boundary spanning links internal collaboration to outcomes such as curriculum relevance, teaching-factory implementation, work-based learning, graduate transition, and local economic contribution. The relative scarcity of partnership evidence in the corpus therefore represents a major research deficit. Future studies should examine how women leaders initiate, maintain, and govern school–industry partnerships; which partnership arrangements generate shared decision-making; and how these arrangements affect staff learning, student opportunity, and institutional credibility.

### *Thematic Prevalence, Research Gaps, and Proposed Framework*

**Table 4.** Prevalence of Thematic Evidence Across the Included Studies

Theme	Studies (n)	Share of Corpus	Synthesis
T1. Structural and cultural barriers	11	50.0%	Gendered expectations, double burden, network exclusion, and contested authority remain persistent constraints.

Theme	Studies (n)	Share of Corpus	Synthesis
T2. Enablers	12	54.5%	Mentoring, sponsorship, family and peer support, transparent systems, and active institutional policy enable leadership pathways.
T3. Leadership practices	8	36.4%	Shared vision, participation, staff development, and distributed responsibility are repeatedly associated with effective leadership.
T4. External partnerships	6	27.3%	Boundary-spanning networks are strategically important but empirically underdeveloped in the TVET-focused evidence base.

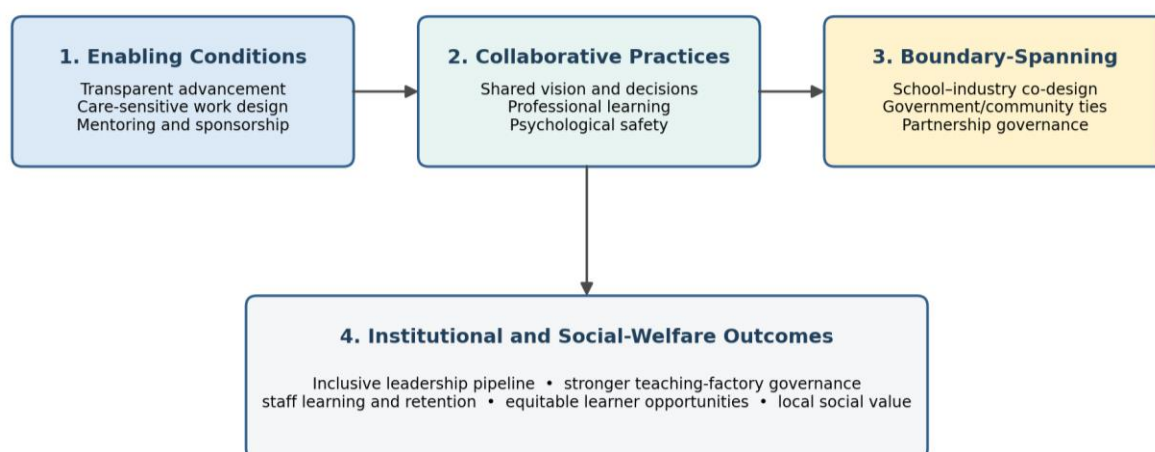
Four research gaps follow from the synthesis. First, there is a direct-evidence gap: few studies investigate women’s collaborative leadership in TVET institutions. Second, there is a mechanism gap: studies often label leadership styles without tracing how practices such as agenda setting, conflict resolution, data use, and partnership negotiation occur. Third, there is an intersectionality gap: career stage, family-care arrangements, discipline, geography, institutional status, and social class remain insufficiently examined. Fourth, there is an outcome gap: studies rarely connect leadership arrangements with vocational outcomes such as employer trust, programme quality, learner transition, staff retention, or equitable access.

To organise future research, this review proposes the CCLF as a context-sensitive proposition rather than a validated model. The framework combines conditions that enable leadership with the collaborative and boundary-spanning practices through which leadership may produce institutional and social-welfare outcomes.

**Table 5.** Proposed Contextual Collaborative Leadership Framework (CCLF) for Women in TVET

Component	Core Elements	Illustrative Observable Practices	Potential Outcomes
Enabling conditions	Transparent appointment; care-sensitive work design; mentoring and sponsorship; gender-responsive policy; leadership development.	Published promotion criteria; workload recognition; structured mentoring; equitable access to employer-facing roles.	Leadership pipeline, legitimacy, retention, and psychological safety.
Collaborative practices	Shared vision; distributed decision-making; professional learning; open communication; accountability.	Cross-functional teams; joint planning; feedback loops; teacher leadership; data-informed review.	Staff capability, implementation coherence, and organizational trust.

Component	Core Elements	Illustrative Observable Practices	Potential Outcomes
Boundary-spanning practices	School–industry co-design; government and community coordination; partnership governance.	Employer advisory forums; co-designed projects; work-based learning protocols; partnership review meetings.	Curriculum relevance, partnership durability, learner opportunity, and local social value.
Contextual moderators	Technical field; labour-market conditions; institutional status; social norms; family-care regime; region.	Context-sensitive implementation and monitoring rather than one-size-fits-all policy.	Equitable and sustainable adaptation of collaborative leadership.



**Figure 2.** Proposed Contextual Collaborative Leadership Framework (CCLF) for Women in TVET

### Discussion

The review indicates that the central challenge is not whether women can lead collaboratively, but whether TVET institutions create the conditions under which collaborative leadership can be enacted, recognised, and sustained. This interpretation is consistent with evidence that distributed leadership in vocational schools depends on the interaction between formal leaders and team members rather than on the simple delegation of tasks [2]. It also accords with broader reviews showing that distributed leadership is variably defined and often measured without sufficient attention to the context through which influence travels [22], [23], [24]. The present synthesis therefore resists the common shortcut of portraying collaboration as a personal attribute. In a TVET setting, it is an organizational accomplishment involving clear authority, professional trust, relational coordination, and collective accountability.

The barrier theme extends established gender-and-leadership research by showing why style-based explanations are insufficient. Role-congruity theory explains how prejudice arises when the expectations attached to women conflict with stereotyped beliefs about leadership [7]; meta-analytic evidence similarly shows that leader stereotypes have historically been masculine [8]. These mechanisms are intensified in technical and operational environments, where expertise, industry access, and field mobility can be symbolically coded as male. The

evidence on women's effectiveness in schools and on women's presence in secondary-school leadership structures demonstrates that performance cannot be inferred from stereotypes [5], [6]. Yet individual effectiveness alone does not remove the organizational barriers that determine who gains access to influential networks, partnership-facing tasks, or advancement opportunities.

The enabler theme clarifies why formal equal-opportunity statements are rarely enough. Across the corpus, mentoring, sponsorship, family support, and professional networks support leadership trajectories by providing information, credibility, and emotional resources [11], [15], [16]. Scholarship on women in academic leadership likewise finds that systemic responses—rather than resilience narratives alone—are necessary to address gendered workload, bias, and work–family conflict [7]. For vocational institutions, this means shifting from generic leadership courses toward career architectures that include transparent promotion, workload recognition for partnership activity, protected development time, and sponsorship into industry-facing networks. In this sense, gender equity becomes an institutional-capacity issue rather than an individual deficit.

The third theme provides a careful interpretation of transformational and collaborative practices. Critiques of distributed leadership caution that professional collaboration should serve democratic agency rather than merely improve policy delivery [25]. Evidence also shows that school leaders foster collaborative teacher learning through deliberate structures and practices [26]. Reviews of transformational leadership in education have linked such approaches with engagement and organizational development, but they also caution that uncritical reliance on inspirational leadership can contribute to workload intensification and burnout [27]. The present review therefore identifies a more specific pathway: women leaders may strengthen TVET institutions when they build shared vision, enable staff learning, distribute decisions, and preserve accountability.

The partnership theme is the most TVET-specific contribution of the synthesis. The broader evidence base demonstrates that leadership is context dependent: outcomes associated with gender-diverse boards, female executives, gender-equality initiatives, and tourism careers are conditioned by sectoral work organization, institutional governance, and social norms [28], [29], [30], [31]. This reinforces the need to avoid importing findings from adjacent fields without qualification. In TVET, studies of vocational leadership and teaching-factory implementation emphasise that quality provision requires coordinated leadership across programme heads, productive-subject teachers, employers, and institutional managers. Women's participation in these partnership spaces remains underexplored. The CCLF therefore positions boundary-spanning practice alongside internal collaboration.

The review's novelty lies in integrating four elements that are commonly studied separately: gendered access to leadership, collaborative organizational practice, TVET partnership governance, and institutionally relevant outcomes. This integration is necessary because culture, migration-linked family arrangements, affirmative action, unpaid care responsibilities, intra-gender dynamics, and education-system complexity all shape women's leadership possibilities in different settings [32], [33], [34], [35], [36], [37], [38]. The proposed CCLF does not claim that women leaders are homogeneous or naturally more collaborative. Instead, it specifies a contextual mechanism: enabling conditions permit women to exercise collaborative and boundary-spanning practices; these practices may then contribute to inclusive

leadership pipelines, stronger teaching-factory governance, staff learning, learner transition pathways, and local social value.

The framework also carries policy and practice implications. First, TVET providers should publish promotion criteria, audit access to industry-facing assignments, recognise partnership work in workload systems, and establish mentoring–sponsorship arrangements for emerging women leaders. Second, leadership-development programmes should incorporate partnership negotiation, technical credibility, conflict management, and cross-functional team facilitation. Third, policymakers should monitor gender-disaggregated access to leadership preparation, employer networks, and partnership governance—not only the number of women in formal posts. Fourth, quality vocational provision depends on institutional arrangements that connect collaborative leadership to teaching-factory effectiveness and sustainable community-oriented governance [39], [40].

The findings should nevertheless be interpreted with caution. The corpus was small, conceptually heterogeneous, and predominantly indirect to TVET. Several studies drew on sectors that are informative but not fully comparable with vocational education. Additionally, qualitative accounts illuminate mechanisms but cannot establish causal effects, while quantitative studies frequently measured representation or outcomes without documenting collaborative processes. Future research should therefore test the CCLF through comparative multi-site designs, longitudinal leadership-pathway studies, social-network analysis of school–industry collaboration, and mixed-method evaluations that connect leadership arrangements with staff, learner, partnership, and welfare outcomes. Such work should link women’s TVET leadership to women’s empowerment and the broader Sustainable Development Goals [41], [42], while attending to differences in school leadership, diversity, and precarious “glass cliff” appointments [43], [44], [45], [46].

## CONCLUSION

This review synthesised 22 studies to examine women’s collaborative leadership in TVET and adjacent contexts. The evidence shows that leadership pathways are shaped by structural and cultural barriers, supported by relational and institutional enablers, and expressed through collaborative and boundary-spanning practices. Direct research at the intersection of women, collaborative leadership, and TVET remains limited; this scarcity is a central finding rather than a weakness to be concealed. The proposed CCLF responds by connecting enabling conditions, collaborative practices, partnership governance, and institutional/social-welfare outcomes. For practice, the review recommends transparent advancement systems, care-sensitive work design, mentoring and sponsorship, and deliberate inclusion of women in school–industry leadership spaces. For research, the framework requires empirical validation across diverse TVET systems before causal or universal claims can be made.

## LIMITATIONS

The review used two databases and restricted inclusion to English-language, open/full-text articles published between 2015 and 2025. These choices enhanced transparency and feasibility but may have excluded relevant work in other languages, databases, and publication formats. The inclusion of structurally analogous sectors was necessary because direct TVET

evidence was scarce; however, this limits the strength of TVET-specific inference. The study also relied on heterogeneous designs and did not calculate pooled effect estimates. Finally, the CCLF is conceptual and should be understood as a testable proposition, not an empirically validated measurement model.

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## AUTHOR CONTRIBUTION

W.T. led conceptualization, database searching, screening, data extraction, thematic synthesis, and primary manuscript drafting. B.R. provided scholarly supervision, contributed to review design and interpretation, and critically revised the manuscript. R. contributed to the literature review structure, thematic interpretation, and manuscript revision. T.Y. validated the data-extraction matrix, supported reference verification, and reviewed the conceptual framework. S. contributed to final editing, formatting, and review of the manuscript's institutional relevance. All authors read and approved the final manuscript and accept accountability for all aspects of the work.

## CONFLICT OF INTEREST

"The authors declare no conflict of interest."

## DECLARATION OF USE OF AI IN SCIENTIFIC WRITING

The authors used ChatGPT (OpenAI) for language refinement, structural editing, and reference-formatting assistance during manuscript preparation. The authors reviewed, verified,

and edited all content and assume full responsibility for the accuracy, integrity, and scholarly contribution of the final manuscript.

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