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FACTORS FOR THE EFFECTIVE MANAGEMENT OF THE DEVELOPMENT OF THE VOCATIONAL AND TECHNICAL EDUCATION SYSTEM IN UZBEKISTAN

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Abstract. The article systematises factors that facilitate or impede effective management of vocational and technical education development in Uzbekistan. Instead of a generic list, it proposes an analytical scheme linking the mechanism of influence, an observable sign, an evidence source and a management response. Regulatory-institutional, information, resource, staff, partnership, social and assessment factors are identified. The paper demonstrates that each factor's effect depends on implementation conditions and interactions with other system components. A diagnostic matrix and a prioritisation procedure are proposed, taking into account learning outcomes, learners' rights and safety, controllability, costs and inter-process dependencies.

Keywords: vocational and technical education, development management, factor, evidence, resources, staff, partnership, monitoring.

Introduction

The effectiveness of managing vocational and technical education is often attributed to the presence of specific favorable conditions, such as modern facilities, qualified educators, digital platforms, or agreements with employers. However, none of these elements, in isolation, guarantees the desired educational outcomes. Equipment may go unused in the instructional process; professional development may fail to influence assignments or assessment criteria; and cooperation agreements may lack concrete educational commitments. Therefore, a rigorous analysis must reveal not only a list of factors but also the mechanisms through which they influence the management process.

The purpose of this article is to systematize the factors influencing the development of vocational and technical education in Uzbekistan and to develop a tool that translates broad challenges into verifiable indicators and appropriate management responses. The study proceeds from the premise that no factor is inherently positive or negative; rather, its impact is determined by the nature of management decisions, the conditions of implementation, the quality of data, and the connection to educational outcomes.

Literature Review

International research on Technical and Vocational Education and Training (TVET) emphasizes the need to align labor market demands, curricula, resources, workplace-based learning, and the validation of competencies. A joint report by the World Bank, the ILO, and UNESCO highlights the importance of institutional capacity—the ability to actually implement reforms, rather than merely proclaiming them through policy [10]. The OECD links the adaptability of vocational education to the quality of information regarding skills, the flexibility of programs, and the feedback loops between educational providers and employers [11].

The concept of collaborative governance suggests that effective partnerships require clear rules, active participation, mutual trust, and mechanisms for resolving disagreements [12]. Research on educational leadership underscores the role of administrators in aligning goals, fostering the professional development of staff, and utilizing data to enhance the educational process [13]. For vocational education, these provisions are particularly significant, as the outcome is generated not only within the educational institution but also at the workplace, with responsibility distributed among several stakeholders.

The national regulatory framework establishes levels of vocational education, procedures for organizing institutions, dual education systems, credit-modular mechanisms, and updated management structures [1–8]. However, a distinction must be made between the existence of a legal provision and its actual implementation. While a regulatory document may set forth requirements and mandates, the quality of implementation is assessed based on specific outputs, conditions, and outcomes.

Research Methodology

The study employs content analysis of regulatory and scholarly sources, functional analysis, causal mapping, and comparative assessment. The units of analysis include requirements, responsible entities, resources, observable indicators, evidence, and management responses. For each factor, four questions were examined: through what process does it exert an influence; what observable indicator does it manifest; what source can be used to verify it; and what action corresponds to the identified cause?

Methodologically, a distinction is made between a lack of data and a negative outcome. For instance, the absence of a mentor's records indicates a deficiency in verifiable evidence, but it does not necessarily prove that a practical task was not performed. Alternative sources are examined first, after which a conclusion is drawn. Similarly, the requirements set out in a regulatory act, the planned actions, and the observed outcomes each carry a different evidentiary status.

Results and Discussion

The first group consists of regulatory and institutional factors. A clear delineation of authority helps coordinate decision-making among the ministry, the agency, regional bodies, the technical college, and external partners. Obstacles arise when old and new regulations are applied simultaneously, or when a specific procedure—intended for a single organization—is erroneously extended to the entire system. A management solution here is to maintain a registry of applicable documents, specifying the current version, scope, and the party responsible for implementation.

The second group relates to the quality of information regarding labor market needs. A vague requirement, such as "the need for modern specialists," is insufficient for updating a curriculum. Instead, requirements must be broken down into specific job functions, operations, technologies, quality criteria, and working conditions. When different employers state varying requirements, these should not be mechanically averaged; rather, the industry, the scale of the enterprise, the technology employed, and the reliability of the source must be documented. Such a "needs profile" mitigates the risk of a curriculum being shaped by a single, isolated opinion.

The third group comprises resource-related factors. An inventory list alone is insufficient for analysis; one must systematically verify the availability of a resource, the feasibility of its use, and its direct link to the intended learning outcomes. Equipment may be on the balance sheet but could be faulty, unavailable due to scheduling conflicts, or ill-suited to the content of a specific module. Consequently, a resource plan must encompass not only procurement but also consumables, technical maintenance, instructor training, and the specific learning tasks in which the resource will be utilized.

The fourth group concerns the professional capacity of administrators and educators. Managerial competence is demonstrated by the ability to identify the root cause of a performance issue, align legal requirements with operational processes, and reconcile the interests of various partners. For educators, professional development is evidenced not by the number of courses attended, but by tangible changes to instructional materials, assignments, or assessment rubrics—supported by proof that these changes have been implemented in practice. At the same time, one must consider the risk of an excessive reporting burden: collecting the same data repeatedly reduces the time available for pedagogical work.

The fifth group concerns social partnership. An educational institution is interested in sustainable practices and the fulfillment of its program; an enterprise is interested in operational efficiency; and a learner is interested in acquiring knowledge, ensuring their own safety, and improving their professional prospects. While these interests overlap, they do not coincide entirely. If a learner performs only repetitive, auxiliary tasks, the enterprise may gain a short-term benefit, but the learner will fail to acquire the full range of competencies required by the program. Therefore, the agreement should be supplemented with a task map, a definition of the mentor's responsibilities, the types of evidence required, and a procedure for resolving disputes.

The sixth group relates to equal opportunities and educational pathways. A learner's attendance and program completion may be affected by factors such as transportation, housing, financial circumstances, family obligations, or the accessibility of the environment. Attributing every absence simply to a "lack of motivation" leads to an incorrect response. Specific obstacles require targeted solutions—such as adjusting schedules, providing counseling, adapting the workplace, or modifying the information and support provided. Furthermore, career guidance should respect the learner's autonomy in making choices and allow for well-founded adjustments to their educational path.

The seventh group involves digital data and monitoring. An electronic system cannot fix an ambiguously defined metric. Errors, data duplication, and unclear scope persist—and can even spread more rapidly—in a digital format. Before implementing automation, it is essential to establish data ownership, update schedules, verification protocols, permitted uses, and procedures for protecting personal information [9]. Analytical reports should, whenever possible, be presented in an aggregated format, and data that is not necessary for decision-making should not be collected.

The eighth group concerns assessment and incentives. Metrics influence an organization's behavior. For instance, if performance is measured solely by the number of agreements signed, it creates an incentive to enter into purely formal, "paper-only" contracts. Relying solely on the completion rate carries the risk that requirements might be lowered. Therefore, this performance metric is supplemented by substantive evidence. A high completion rate is considered alongside the results of practical assignments, while the number of partners is evaluated in the context of fulfilled joint commitments.

Table 1.

Matrix of factors for managing the development of vocational and technical education

Factor	**Facilitating condition**	**Indication of an obstacle**	**Evidence and response**
Regulatory	Task and authority are	A mix of old, new, and	Review and analysis of the charter;

alignment	defined	specialized procedures	clarification of the applicable rule
Demand information	Need is expressed through a work function	Generic or outdated requirements	Employer data; requirements profile
Resources	Resource is available and linked to the program	Equipment is available, but the conditions for its use are missing	Inventory and observation; update of the resource plan
Personnel	Competence is demonstrated in the work product	Training has not translated into pedagogical practice	Updated materials; methodological support
Partnership	Assignment and mentoring are aligned	The agreement is not backed by collaborative work	Task map and mentor's notes
Equal opportunities	Barrier is set on an individual basis	Reasons for non-participation are generalized	Interviews and observation; targeted support
Data quality	Definition and timeframe are consistent	Duplications and incomplete coverage	Data audit; adjustment of accounting rules
Evaluation	Outcome influences the decision	Follow-up actions after the report are undefined	Decision record and re-verification

The matrix translates an abstract formulation into a verifiable problem. Instead of concluding that a "partnership is weak," one might, for instance, note the absence of records confirming the completion of tasks stipulated by the program. The next step is to determine whether this stems from a lack of activity, unclear responsibilities, or a flaw in the record-keeping system. Only after the root cause is identified is a specific course of action chosen. This approach guards against the common pitfall of applying a "one-size-fits-all" solution—such as holding a meeting, making a purchase, or issuing a directive—to problems that may have entirely different origins.

Factors form causal chains. An ill-defined request from an employer leads to a vague program goal; this, in turn, results in unclear tasks, which produce incomparable evaluations, ultimately yielding useless management information. Addressing the final link in this chain without clarifying the initial need fails to resolve the underlying cause. A positive chain functions in a similar way: a clearly defined outcome simplifies the process of agreeing on tasks, documentation from a mentor provides evidence, and comparable evaluations allow for the refinement of the solution.

Table 2.

Criteria for selecting a priority management intervention

Criterion	Guiding Question	Priority increases if…

Impact on the result	What learning outcome is affected by the issue?	A key professional competency is compromised
Rights and safety	Is there a risk to rights, health, or dignity?	The risk is immediate or systemic
Controllability	Does addressing the issue fall within the institution's mandate?	A specific adjustment can be made at the current level
Costs and feasibility	Are the resources proportionate to the expected impact?	Resources are available and the timeframe is feasible
System dependency	Does the issue obstruct other processes?	Addressing the root cause improves several subsequent stages

Prioritization should not be reduced to selecting only easily solvable issues. Doing so creates an illusion of activity while leaving critical constraints in place. At the other extreme is the tendency to wait for major, large-scale reforms—an attitude that often leads to the postponement of actions that are well within the scope of a technical college's own authority. A sound approach to prioritization balances several criteria: significance for the desired outcome, legal and safety considerations, the feasibility of intervention, cost, and systemic impact. For problems that fall outside the college's jurisdiction, the appropriate course of action is to develop an evidence-based proposal for a higher-level authority, rather than making a hollow, localized commitment.

The scientific novelty of this approach lies in conceptualizing a "factor" as a manageable relationship rather than a static condition. Each factor is defined through a framework consisting of a mechanism, an indicator, a source, and a response; this allows for the clear separation of a hypothesized cause from an observed effect. The practical value of this matrix is that it can be utilized for internal diagnostics, the development of strategic plans, and discussions with employers—all without the need to create a separate, cumbersome reporting system.

Conclusion

Effective management of the development of vocational and technical education is determined not by the mere sum of favorable factors, but by the coherence of legal, informational, resource-related, personnel, partnership, social, and evaluative connections. Depending on the quality of its implementation, any given factor can either facilitate development or hinder it. The "mechanism–indicator–evidence–response" matrix makes it possible to pinpoint where a breakdown occurs and to select an intervention that directly addresses the identified cause.

It is recommended that internal analysis begin with a single priority process. Findings should be verified using multiple types of evidence; furthermore, an absence of data should not be equated with a negative outcome, and a date for a follow-up review should be established. Future research should involve testing this matrix in comparable technical colleges, assessing the clarity of the indicators, and evaluating whether its application leads to better-substantiated decision-making and improved quality in practical training.

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