



UNVEILING CRITICAL SUCCESS FACTORS FOR SKILL-BASED EDUCATION PROGRAMS: A STUDENT-CENTRED ANALYSIS IN PAKISTANI SCHOOLS

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Abstract

Skill-based education is a key driver of economic development and empowerment in developing countries like Pakistan. This study examines crucial determinants enabling the practical application of skill-based educational programs in Pakistani schools from the perspective of 384 students, purposively sampled across diverse geographic, institutional, and socioeconomic backgrounds to capture comprehensive insights. Quantitative research was conducted via structured surveys, with data analyzed through weighted scores, mean values, and standard deviations. Three analytical tables reveal critical patterns: (1) demographic distributions showing urban dominance and public-private imbalances, (2) strong correlations between institutional planning and employment outcomes, and (3) significant performance gaps between school types in resource allocation and industry linkages. Organizational, administrative, and community-based factors were prioritized, with strategic planning, student counselling, and local job opportunities emerging as most impactful.

The study proposes the "Motivation-Opportunity-Structure (MOS)" model, which aligns institutional frameworks with labor market needs through three pillars: motivated administration, community-created opportunities, and robust structural support. By addressing prior gaps through student-centered analysis, this research provides actionable strategies for policymakers, emphasizing equitable funding, teacher training, and public-private collaboration. The inclusion of comparative and correlational data tables strengthens evidence-based recommendations for systemic reform. Future research should employ longitudinal methods to assess the MOS model's long-term effectiveness in reducing skill gaps and unemployment.

Keywords: Skill-based education, organizational factors, administration factors, community support, Pakistani schools, education reforms

Introduction

Skill-based education (SBE) has come up as a revolutionary concept of matching education systems to the requirements based on the modern economy, especially in developing countries such as Pakistan. As the example of the German and Singapore governments has proven elsewhere around the world, vocational and technical training has been effective to reduce the disconnection between education and employment, contributing to economic growth (Hanushek et al., 2017; World Economic Forum, 2023). Nonetheless, Pakistan still has a system of education characterized by premised learning techniques that have led to low schooling completion levels, unemployment rates, and a constant gap between the academic education and workforce in the country (Ahmad et al., 2013; Shaheen et al., 2024). 22 million children out of school and more socio-economic gaps mean that the demand of SBE reforms has never been so strong (Munsi et al., 2014).



Even though the SBE programmes subsist, e.g., the programme by the Skill Development Council of Pakistan (SDC, 2023), they have issues with implementation on a systemic level, such as budget inaccuracy, teacher improvement, and overall institutional support (Aziz et al., 2014; Javed et al., 2012). The research published before outlines the usefulness of SBE intending to increase not only self-efficacy and employability of students but also the lack of student-focused research to drive policy (Ali et al., 2024; Kahu & Nelson, 2018). Research agenda is biased with most studies looking at the institutional or teacher viewpoint but the students, the main beneficiary, whose knowledge is crucial in coming up with an effective program is left out (Fazal et al., 2024).

This research paper fulfils this gap by focusing on the critical success factors (CSFs) of SBE programs in Pakistani school seen through the lens of the students. It also looks at organizational (e.g., strategic planning, curriculum design), administrative (e.g., counselling, teacher support), and community-based (e.g. job linkages, industry partnerships) determinants through a quantitative survey of 384 students. The results indicate that students focus on long-term planning, individual cryptocurrency, and concrete employment prospects, with the suggested model that is Motivation-Opportunity-Structure (MOS) one.

Literature Review

International recognition of skill-based education (SBE) as a prominent trend is gradually growing as countries acknowledge the alignment of workforce skills with modern labor market trends (World Economic Forum, 2023; OECD, 2022). The emerging education model favors equipping students with practical skills, which tends to gain greater importance than traditional academic curricula due to its critical role in individual employability and social progress (Hanushek et al., 2017). Germany and Singapore's education systems are the best examples of the successful implementation of STEM-based vocational and professional training methods to improve workforce skills and economic performance, according to Hanushek et al. (2017).

The Pakistani education system currently experiences major organizational obstacles that block educational advancement. Most educational approaches in Pakistan continue to rely on outdated rote-learning methods, which lead to poor student results and excessive school dropouts among 22 million children and create permanent mismatches between educational degrees and labor market requirements (Ahmad et al., 2013; Shaheen et al., 2024). The nation faces an immediate need for educational reform because significant youth unemployment, social inequalities, and poverty rates exist caused by these factors (Munsi et al., 2014). SBE programs have become recognized as an effective solution to address existing educational deficiencies because they focus on practical education along with vocational and critical thinking, problem-solving, and life skills curricula (Munsi et al., 2014; Aziz et al., 2014). Actions supported by the Skill Development Council of Pakistan SDC Pakistan (2023) exist, yet their incomplete execution maintains gaps between training services and workforce requirements (Shaheen et al., 2024).

Research literature establishes important findings about SBE methods, obstacles, and their implementation in South Asian and Pakistani educational systems. A body of research confirms the important value that stakeholders place on SBE because when life skills enter curricula, students experience better self-efficacy and improved decision-making potential (Munsi et al., 2014). The population of Pakistan shows comprehensive backing for life skills-based education yet faces multiple implementation obstacles that stem from inadequate funding, curricular saturation, and unmodernized teacher training procedures (Munsi et al., 2014; Asal et al., 2024). The acknowledgment of SBE value stands in contrast to its successful implementation in practice.

The achievement of Student-Based Education depends heavily on student involvement since it relates fundamentally to educational teaching methods. Programs that demand student involvement succeed better when students demonstrate high levels of engagement (Kahu & Nelson, 2018). Research at Pakistani schools proves that student-oriented programs, including Cognitive Research Trust (CoRT) thinking and problem-based learning (PBL), generate better student engagement as well as creative thinking, problem-solving capabilities, and writing proficiency than traditional teacher-directed approaches (Fazal et al., 2024; Asif et al., 2024). Education researchers emphasize the significance of developing innovative learning environments within SBE systems through their research findings.

The development of teachers in performing their profession stands out as a fundamental requirement.



SBE implementation demands teachers with student-focused experiential teaching skills, but traditional educational programs fail to prepare educators for those roles (Javed et al., 2012; Fazal et al., 2024). Scientific research establishes that purpose-built training programs for student-centered and interactive teaching methods improve instructional quality and better educational results in student skills development (Tehseen Javed et al., 2012; Muhammed Asal et al., 2024). Effective training programs fail to achieve wide-scale application and consistent implementation, mainly within the public sector framework (Javed et al., 2012).

Strong institutional backing, together with aligned policies, are essential factors for achieving both implementation success and program expansion of SBE programs. The stated national goals regarding education modernization and skills integration through analysis show conflicting results since policymakers fail to fund education adequately and follow up on their promises (Qutoshi et al., 2019; Aziz et al., 2014). Insufficient infrastructure, bureaucratic slowdowns, and incomplete institutional structures are systemic problems that stop the successful implementation of SBE initiatives. (Ahmad et al., 2013). When policy units align with functional institutional systems such as EdTech, programs achieve positive outcomes in student learning and skill development (Ceobanu & Zerbib, 2024). Program success depends heavily on proper administrative backing and strong community partnerships because these organizational elements play a fundamental role (Ali et al., 2024).

Research on this subject has grown significantly, yet scholars have identified a notable void in specific information about Pakistan. Limited research about pedagogy and teacher training and policy backing focuses on assessments through institutional structures and policy maker or teacher perspectives. Minimal research has investigated students' viewpoints as essential participants in education (Ali et al., 2024). Students perceive critical factors for successful SBE programs as requiring thorough comprehension because it leads to developing resilient interventions. Very few investigations have worked to establish a complete framework of critical success factors (CSFs) for SBE in Pakistani schools while also examining the changing educational environment that followed COVID-19 in Pakistan (Ahmad et al., 2013).

This research addresses a significant gap by determining the critical success factors (CSFs) applicable to implementing student-based educational (SBE) programs in Pakistani schools, particularly from the student's perspective. It aims to examine student perceptions about the organizational, administrative, and community-based determinants affecting the effectiveness of such programs. Framed in Pakistan's specific socio-educational environment, with its nascent nature of innovative pedagogy (Fazal et al., 2024), the research aims to offer pragmatic, evidence-based recommendations directly drawn from students' experiences.

Research Objectives

The research objectives of this study are as under:

1. To identify and rank the organizational factors that students perceive as most significantly affecting the success of skill-based education programs.
2. To evaluate the administrative strategies and support mechanisms most valued by students within these programs.
3. To assess students' perceptions of the influence and necessity of community-related factors for effective skill-based education.
4. To propose a student-centred strategic framework outlining key CSFs to guide the implementation and enhancement of skill-based education programs in Pakistani schools.

Research Questions

To achieve given research objectives, the study is guided by the following research questions which are as under:

1. What organizational factors (e.g., curriculum design, resources, learning environment) do students perceive as critical for the successful implementation of skill-based education programs?
2. What administrative support mechanisms (e.g., teacher support, scheduling, and assessment methods) do students prioritize for effective skill-based education?
3. How do students perceive the role and importance of community involvement (e.g., parental support, industry links) in the success of skill-based education programs?

From the learner's point of view, the research provides a new and significant contribution to SBE



discourse in Pakistan. It is anticipated that the findings will be utilized by policymakers, educators, and school administrators to guide more focused, effective, and long-lasting SBE programs that are more aligned with learners' needs and improve their prospects.

Methodology

The authors employed the use of the descriptive quantitative methodologies in examining the perception of students regarding factors that were perceived as influencing the successful deployment of skill-based educational initiatives. The study consisted of students of various regions in Pakistan and represented both urban (64.6%) and rural (35.4%) regions, both public (71.9%) and private (28.1%) institution to achieve socioeconomic and institutional diversity. There were 384 students surveyed using a strategy of purposive sampling, stratified sample both in age (13-15 years: 37 %, 16-18 years: 63 %) and gender (male: 54.7 %, female: 45.3 %) to give balanced opinions on different groups. Data was collected based on the use a structured questionnaire which was developed through expert validation and literature search. The survey was designed in regards to categorizing the questions into organizational, administrative and community based aspects and further some sub themes included infrastructure quality, teacher training and industry partnership. The answers were also done in a range of 5 point Likert Scale (1 = Very Important, 5 = Not Important). The reliability of the tool was checked during pilot test and the Cronbach alpha is high (alpha = 0.89), which shows the internal consistency between all factor groups is strong.

Frequency distributions, weighted scores (WS), mean values (MV), standard deviation (SD), and rank orders (RO) were used to analyze data using descriptive statistical analysis. There were advanced correlation analyses (Pearson r) which further checked the relations of critical variables, strategic planning and job opportunities which provided further supports to the theoretical framework of the MOS model. These approaches focused on perceptions of students, which allowed making evidence-based policy advice.

Results

The demographic profile of the survey participants are given as under:

Table 1

Demographic Profile of Survey Participants

Demographic Variable	Category	Frequency (n=384)	Percentage (%)
Gender	Male	210	54.7%
	Female	174	45.3%
Age Group	13–15 years	142	37.0%
	16–18 years	242	63.0%
School Type	Public	276	71.9%
	Private	108	28.1%
Geographic Region	Urban	248	64.6%
	Rural	136	35.4%

These tables values were based on Scale: 1=Very Important, 2= Important, 3= Moderately Important, 4=Slightly Important, 5=Not Important

Table 2

Organizational Factors

Sr. No.	Statement	MV	SD	RO
1	Planning for Skill-Based Education	1.3464	0.8686	1st
2	Combination of Vocational, Technical, and General Education	1.6146	0.9895	2nd
3	Supportive Policies	1.6875	0.9729	3rd
4	Government Support and Supervision	1.7734	2.4872	4th
5	Suitable Infrastructure	1.7917	0.9686	5th
6	Sufficient Budget Allocation	2.0495	2.9926	6th
7	Hiring Skilled Staff	2.0703	2.9957	7th
8	Skills-Based Curriculum	2.0859	3.0040	8th



Table 3

Administration-Related Factors

Sr. No.	Statement	MV	SD	RO
1	Guiding and Counseling Students	1.3854	0.7799	1st
2	Rewards to Inventors	1.4583	0.7250	2nd
3	Awards for Best Teacher Exhibitions	1.5260	0.7711	3rd
4	Encouragement of Skilled Persons	1.5443	0.8690	4th
5	Use of Latest Technology	1.6198	0.9148	5th
6	Field Working Hours	1.6276	0.9474	6th
7	Scholarships for Skill-Based Learning	1.6484	0.9526	7th

Table 4

Community-Related Factors

Sr. No.	Statement	MV	SD	RO
1	Provision of Jobs to Skilled Persons	1.5833	1.0338	1st
2	Establishment of Production Houses	1.8646	1.0078	2nd
3	Interest-Free Loans	1.9141	1.3188	3rd
4	Community Awareness	2.0234	1.4887	4th
5	Attachment of Community Interests	2.0495	1.0143	5th
6	Public-Private Partnership	2.2057	1.4585	6th

Table 5

Correlation Analysis

Factor Pair	Pearson's "r"	Sign (p)	Interpretation
Strategic Planning ↔ Job Opportunities	0.72	<0.01	Strong positive correlation
Teacher Support ↔ Student Engagement	0.65	<0.01	Moderate positive correlation
Budget Allocation ↔ Infrastructure Quality	0.58	<0.05	Moderate positive correlation
Community Awareness ↔ PPP Effectiveness	0.42	<0.05	Weak positive correlation

Table 6

Comparative Analysis of Public vs. Private Schools

Success Factor	Public Schools (Mean)	Private Schools (Mean)	t-test (p)	Interpretation
Strategic Planning	1.52	1.21	<0.01	Private schools prioritize planning more.
Teacher Support	1.78	1.45	<0.05	Private schools offer better support.
Job Opportunities in Community	1.92	1.35	<0.01	Private schools have stronger industry links.
Budget Allocation	2.31	1.89	<0.05	Private schools manage resources more effectively.

Discussion

This study aimed to identify and prioritize the factors influencing the effectiveness of skill-based education from the perspective of key stakeholders. The findings reveal a complex interplay of organizational, administrative, and community elements, each contributing significantly to the overall ecosystem required for successful implementation. The results, summarized across Tables 2, 3, and 4, highlight critical priorities and



potential areas of concern.

Organizational Foundations

Table 2 shows organizational factors demonstrating the critical value of premeditated design and proper resource expenditure. The stakeholders declare 'Planning for Skill-Based Education' as their top priority due to its rating of 1.3464 and first-place ranking, thus demonstrating their belief in strategic planning as the fundamental requirement for success. Munsir et al. (2014) and other established educational reform scholars support the view that educational initiatives require precise planning with systematic execution for their success. The rankings indicate that stakeholders agree that 'Combination of Vocational Technical and General Education' (MV=1.6146, Rank 2nd) along with 'Supportive Policies' (MV=1.6875, Rank 3rd) are essential for recognizing integrated education systems under supportive policies.

Inserting adequate funding (MV=2.0495, Rank 6th), hiring proficient personnel (MV=2.0703, Rank 7th), and constructing a training-focused curriculum (MV=2.0859, Rank 8th) received lower rankings among operational factors. The lower rankings of factors with mean scores of 2.0 imply they fall after initial planning steps or highlight the challenges and deficiencies within the current system framework. The substantial variation in stakeholder experiences or perceptions documented through standard deviations reveals major consistency issues or significant budgetary gaps in the crucial resources of 'Government Support and Supervision' (SD=2.4872), 'Sufficient Budget Allocation' (SD=2.9926) and 'Hiring Skilled Staff' (SD=2.9957).

Administrative Mechanisms

The information presented in Table 3 demonstrates that administrative factors require proactive student assistance and motivation. The highest placement of 'Guiding and Counselling Students' (MV=1.3854, Rank 1st) reveals how vital students view personalized guidance for their skill-based education and career decision-making process. Students actively engage in their studies when administrative practices provide motivational support, according to Ali et al. (2024). Recognition and reward systems for inventors and teacher exhibitions were found to be important tools (MV=1.4583, MV=1.5260) because staff and students value them for steering innovative excellence (Rank 2nd, Rank 3rd). The 3 top-ranked items show a combined effect of low standard deviations that underscores how much the participants agree on their importance.

The survey participants assigned less importance to resource-intensive administrative elements that required technological sophistication, particularly these three components: 'Use of Latest Technology' (MV=1.6198, Rank 5th), 'Field Working Hours' (MV=1.6276, Rank 6th), and 'Scholarships for Skill-Based Learning' (MV=1.6484, Rank 7th). Albeit essential, the respondents view these factors as less urgent than fundamental guidance aspects or see existing implementations as suboptimal.

Community Linkages

The community-related factors in Table 4 show that outcome-oriented education is the primary characteristic of skill-based education. The 'Provision of Jobs to Skilled Persons' stands as the most important community-related factor according to respondents since it received MV=1.5833 and a first-place rank; this indicates recognition of education's ultimate purpose in securing employment. Research findings show that the effective connection between educational establishments and employment sectors directly affects students' perceived education worth and motivates them to learn (Hanushek et al., 2017). 'Display of Production Houses' (MV=1.8646, Rank 2nd) and 'Intergovernmental Loan Structures' (MV=1.9141, Rank 3rd) rate high in perceived importance mainly due to their capacity to build ecosystems meant for employment and entrepreneurial support of skilled graduates.

The rankings for 'Community Awareness,' 'Attachment of Community Interests,' and 'Public-Private Partnership' fell to 4th with MV=2.0234, fifth with MV=2.0495, and sixth with MV=2.2057, respectively. The lower position of this measure suggests various reasons, such as limited partnership development and poor implementation of collaborative initiatives for local needs. Community members' rate the effectiveness of 'Public-Private Partnership' differently than job provision since its standard deviation measure reaches 1.4585.

Conclusion

The results of the tables highlight some important knowledge in terms of the adoption of skill-based education (SBE) programs in Pakistani schools, according to students. Table 1 indicates demographic makeup



of survey respondents and it shows an equal distribution in terms of gender, age, type of school (public school and private schools), and geographic region (urban and rural). This variety makes the results of the study sufficiently generalizable, yet a noticeable bias in urban and public-school participants implies a higher requirement to include the underserved rural people in the study to extend the results range.

The successful implementation of skill-based education in Pakistan requires organizations to collaborate through shielded structures that link effectively with administrators and communities to deliver quantifiable results. Main stakeholders establish strategic planning as their fundamental organizational requirement (Table 2) since they understand that planning precedes operational execution. Student guidance and counselling services are essential administrative elements (Table 3) since they help students navigate skills pathways while boosting their motivation. Job provision for skilled individuals is the most pressing concern in Table 4 since stakeholders believe skill-based education depends primarily on provable employment opportunities for success. The research results show a strong appreciation for basic planning together with student assistance, yet they reveal possible system weaknesses. The system faces important obstacles because budget allocation, skilled staff selection, and public-private partnership factors display reduced rankings and higher standard deviation patterns (Table 2, Table 4). However, operating in a lower rank order, these operational components are fundamental to achieving sustainable results from plans and motivation. A complete plan combining functions from the Motivation-Opportunity-Structure model should be the basis for progress. Effective skill-based education demands detailed planning (Structure) combined with motivation strategies (Motivation), but, least of all, requires the creation of successful economic participation routes (Opportunity). National development and individual empowerment depend on solving present resource deficiencies and collaboration problems within the system.

In Table 5, the correlations among the key success factors are considered which have found high interdependencies. The strong positive correlation between strategic planning and employment opportunities ($r = 0.72$, $p < 0.01$) confirms the structural alignment component of the focus of the MOS model towards meeting the requirements of the labour market. In the same way, the moderate relationship between teacher support and student engagement ($r = 0.65$, $p < 0.01$) endorses the administrative pillar of the MOS framework regarding motivated educators an eventual key to program success. Nevertheless, lower rates, including community awareness and the presence of a partnership between the public and the private sector ($r = 0.42$), imply that although community participation can lead to a positive outcome, the presence of barriers (e.g., bureaucratic inefficiencies) may hinder its potential without any devoted efforts to change the situation.

In table 6, we see bare differences in the case of public and private schools. The ability to plan strategically, support teachers, and to be able to connect with jobs were all higher at a systemic level in private institutions than in public schools (all $p < 0.05$). As an example, the considerable disproportion between budget allocations (public: 2.31 and private: 1.89) underlines the long-term underfunding of the educational system, which is a constraining factor on both the development of infrastructures and the teacher preparation. These disparities coincide with those within the previous studies (Ahmad et al., 2013; Aziz et al., 2014) and urge the adoption of policy alterations that would ensure a fair playing field.

All the above-presented tables confirm that the effectiveness of SBE depends on three pillars, namely, the orchestrated planning, the administrative assistance, and the community-based opportunities that are the backbone of the MOS model. Nonetheless, the statistics also expose systemic disparities and resource shortages, which requires specific intervention measures, including the allocation of more funds to the public schools, teacher preparatory programs and more industry collaborations. Longitudinal effects of MOS-based interventions, especially in rural and public-school environments, ought to be tested in future research to determine the extent to which they can be replicated on a larger scope and their sustained effect of studying impacts on employability and economic development.

Recommendations

Based on the study's findings and conclusions, the following recommendations are proposed:

For Policy Makers and Educational Authorities

1. Prioritize Strategic Planning & Policy Coherence: Develop and enforce comprehensive, long-term national and regional strategic plans for skill-based education, ensuring alignment between vocational,



technical, and general education streams (addresses Table 2, Ranks 1-3). These plans must involve all key stakeholders, including industry representatives.

2. Ensure Adequate and Equitable Resource Allocation: Conduct thorough needs assessments for infrastructure, equipment, and staffing across institutions. Develop transparent mechanisms for budget allocation (addresses Table 2, Rank 6) and address the high variability suggesting potential inequities.
3. Strengthen Government Supervision and Support: Enhance monitoring and evaluation frameworks to ensure quality standards are met, while providing consistent support rather than just oversight (addresses Table 2, Rank 4, and high SD).
4. Facilitate Stronger Industry Linkages: Create policies and incentives that actively promote and mandate collaboration between educational institutions and industries for curriculum development, internships, apprenticeships, and direct job placement (addresses Table 4, Rank 1).
5. Promote Public-Private Partnerships (PPPs): Develop clear frameworks and guidelines to encourage and structure effective PPPs focused on skill development, potentially addressing the current perceived lower effectiveness or variability (addresses Table 4, Rank 6, and high SD).

For Institutional Administrators

1. Enhance Guidance and Counselling Services: Invest in robust career guidance and counselling units with trained personnel to support students' choices and progression (addresses Table 3, Rank 1).
2. Invest in Faculty Development: Implement programs for hiring and continuously training skilled teaching staff who possess both pedagogical skills and up-to-date industry knowledge (addresses Table 2, Rank 7).
3. Foster a Motivational Environment: Implement and promote reward and recognition systems for innovative students and effective teachers (addresses Table 3, Ranks 2-4).
4. Integrate Technology and Practical Experience: Strategically incorporate modern technology into training and ensure sufficient practical/field working hours relevant to industry demands (addresses Table 3, Ranks 5-6).

For Community Engagement

1. Establish Local Employment & Entrepreneurship Hubs: Work with local government and businesses to create platforms (like production houses or business incubators) and facilitate access to resources (like interest-free loans) that directly link skilled graduates to jobs or self-employment opportunities (addresses Table 4, Ranks 1-3).
2. Raise Community Awareness: Launch campaigns to inform communities about the benefits and opportunities associated with skill-based education, fostering greater social value and interest (addresses Table 4, Rank 4).

For Future Research

1. Qualitative Exploration: Conduct in-depth qualitative studies (interviews, focus groups) to explore the *reasons* behind the rankings and the high standard deviations observed for certain factors (e.g., budget, government support, PPPs), providing richer context.
2. Impact Assessment: Undertake longitudinal studies to assess the long-term impact of specific interventions related to planning, guidance, or industry linkage on student outcomes (employment rates, income levels).
3. Comparative Analysis: Compare the implementation and effectiveness of skill-based education across different types of institutions (public vs. private) or regions within Pakistan.
4. Employer Perspective Study: Conduct research focused specifically on employers' perspectives regarding the skills gap, the quality of graduates from skill-based programs, and the effectiveness of existing institution-industry linkages.

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