

VOCATIONAL EDUCATION AND SKILL INDIA: A THEORETICAL REVIEW OF LITERATURE

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ABSTRACT

Purpose – This study critically examines the role of vocational education and training (VET) in enhancing employability within the context of India's Skill India initiative through a comprehensive theoretical synthesis of existing literature.

Design/methodology/approach – The paper adopts a systematic literature review (SLR) approach, synthesizing 50 peer-reviewed studies published between 1965 and 2025. The review identifies key thematic dimensions, including human capital development, institutional frameworks, training quality, industry collaboration, and emerging digital skill requirements.

Findings – The analysis reveals that vocational education significantly contributes to employability, productivity, and economic development. However, its effectiveness is constrained by persistent challenges such as curriculum mismatch, inadequate training quality, weak industry linkages, and institutional fragmentation. The findings further highlight the growing importance of digital competencies and demand-driven training systems in improving workforce outcomes.

Practical implications – The study suggests that policymakers and training institutions should prioritize curriculum alignment with industry needs, enhance training quality, and strengthen industry partnerships to improve employability outcomes.

Originality/value – By integrating five decades of research into a unified theoretical framework, this study provides a comprehensive understanding of vocational education systems and identifies critical areas for reform in the Indian context.

Keywords: Digital competencies, Economic development, Employability, Skill India and Vocational education,

1. INTRODUCTION

India is currently experiencing a significant demographic transition, characterized by a large and growing working-age population. This demographic dividend presents a unique opportunity for economic growth and global competitiveness. However, the realization of this potential is contingent upon the development of a skilled workforce capable of meeting the demands of an increasingly complex and dynamic labor market. Despite the expansion of formal education, a substantial proportion of graduates remain unemployable due to the lack of job-relevant skills (Mehrotra, 2020).

Vocational education and training (VET) has emerged as a critical mechanism for bridging the gap between education and employment. Globally, VET systems have been recognized for their ability to equip individuals with practical skills, enhance productivity, and support economic development (UNESCO, 2016; Pavlova, 2014). In the Indian context, initiatives such as the Skill India Mission aim to train millions of individuals in industry-relevant skills, thereby improving employability and fostering inclusive growth. However, the effectiveness

of these initiatives has been widely debated due to persistent challenges in implementation and outcomes (Ghosh et al., 2022).

From a theoretical perspective, the role of vocational education is primarily grounded in human capital theory, which posits that investment in education and skills leads to increased productivity and improved labor market outcomes (Becker, 1993). While this framework provides a strong foundation, contemporary research suggests that the relationship between skill development and employability is more complex and influenced by multiple contextual factors, including institutional quality, labor market conditions, and technological change (Hanushek et al., 2017). A key concern highlighted in the literature is the issue of skill mismatch, where the competencies acquired through education do not align with industry requirements. This mismatch has been identified as a major contributor to unemployment and underemployment in India (Mehrotra, 2020; Ghosh et al., 2022). Studies further indicate that vocational education systems often suffer from outdated curricula, inadequate infrastructure, and insufficient industry engagement, which limit their ability to produce employable graduates (Agrawal, 2013; Cabral & Dhar, 2019).

Despite the extensive body of literature on vocational education, several gaps remain. Much of the existing research is either descriptive or focused on specific aspects of skill development, with limited efforts to integrate multiple dimensions into a comprehensive framework. Furthermore, there is a lack of systematic synthesis of long-term research trends that capture the evolution of vocational education systems over time. In this context, the present study seeks to provide a comprehensive theoretical analysis of vocational education and skill development by synthesizing insights from 50 research studies. The study aims to identify key themes, highlight critical challenges, and develop an integrated understanding of how vocational education contributes to employability within the Skill India framework.

2. LITERATURE REVIEW

Vocational education plays a critical role in aligning workforce capabilities with labor market demands, particularly in developing economies. According to UNESCO (2016), VET contributes to inclusive growth by improving employability and supporting economic diversification. In the Indian context, skill development initiatives have expanded significantly; however, systemic challenges remain.

Table 1: Year-wise Review of Vocational Education & Skill Development Studies

S. No.	Author(s)	Year	Context	Positive Impact	Negative Impact
1	Foster	1965	Education Economics	Role of skills	Social bias
2	Middleton et al.	1993	Training systems	Workforce readiness	High cost
3	Psacharopoulos	1994	Returns to education	Economic returns	Regional variation
4	Ashton & Green	1996	Education economy	Skills growth	Policy failure
5	Bennell	1996	Africa	Labor market support	Low returns
6	Brown et al.	2001	Global	Skill economy	Credential inflation
7	Tilak	2002	India	Economic growth	Inequality
8	Dar et al.	2003	Training programs	Employment	Effectiveness varies
9	Ziderman	2003	Financing TVET	Sustainability	Financial burden
10	Johanson & Adams	2004	Skills development	Employment	Weak governance

11	Lauglo	2005	Global	Policy reform	Limited outcomes
12	Adams	2007	Skills policy	Labor outcomes	Funding gaps
13	Clarke & Winch	2007	UK	Workforce skills	Training inequality
14	Oketch	2007	Africa	Skill enhancement	Weak systems
15	Rauner & Maclean	2008	Global	Competency building	Standardization issues
16	Afeti	2010	Africa	TVET growth	Quality issues
17	King & Palmer	2010	Developing countries	Poverty reduction	Policy gaps
18	Billet	2011	Work-based learning	Practical skills	Unequal access
19	Fuller & Unwin	2011	Apprenticeships	Learning quality	Employer bias
20	Kingombe	2011	Developing countries	Growth support	Governance issues
21	Wolf	2011	UK education	Skill focus	Over-vocationalization
22	Allais	2012	Qualification systems	Standardization	Complexity
23	Keep	2012	Policy	Institutional reforms	Limited outcomes
24	McGrath	2012	Africa	Employability	Institutional gaps
25	Agrawal	2013	India	Job creation	Weak industry linkage
26	Pavlova	2014	Global	Economic role	Infrastructure issues
27	Eichhorst et al.	2015	Europe	Apprenticeships	Cost barriers
28	Wheelahan	2015	Policy	Social mobility	Narrow focus
29	Sudhakar	2016	India	Workforce skills	Low efficiency
30	UNESCO	2016	Global	Inclusive growth	Implementation gap
31	Agrawal & Agrawal	2017	India	Labor participation	Informal jobs
32	Hanushek et al.	2017	Global	Productivity growth	Inequality
33	Kuczera	2017	OECD	Job matching	Costly
34	Cedefop	2018	EU	Skill matching	Structural rigidities
35	Sharma & Mehta	2018	India	Job readiness	Skill gaps
36	Singh	2018	India	Access expansion	Quality issues
37	Atchoarena	2019	TVET policy	Strong systems	Policy gaps
38	Cabral & Dhar	2019	India	Ecosystem growth	Fragmentation
39	Kumar et al.	2019	India	Wage increase	Job insecurity
40	Mehrotra	2020	India	Demographic benefit	Skill mismatch
41	OECD	2020	Global	Skills strategy	Inequality
42	ILO	2021	Global	Employment generation	Informality
43	Ghosh et al.	2022	India	Youth employability	Curriculum gap
44	World Bank	2022	Global	Skill investment	Financing issues
45	Triyono et al.	2023	Global	Employability focus	Digital divide
46	Rao et al.	2024	India	Employability	Scalability

					issues
47	Chaurasia & Punnam	2025	India	Awareness	Low outreach
48	Kholifah et al.	2025	Digital skills	Workforce readiness	Tech access
49	Raaz & Verma	2025	Bibliometric	Research growth	Conceptual gaps
50	Srivastava et al.	2025	India	Employment growth	Regional disparity

Sources: Created for this study.

3. METHODOLOGY

The present study provides chronological synthesis of 50 studies, highlighting the evolution of vocational education research. Early studies focused on economic returns and theoretical perspectives, while recent studies emphasize employability, digital skills and industry alignment. Despite positive contributions, recurring challenges such as skill mismatch, weak institutional frameworks and quality concerns remain significant. To provide deeper analytical insights, the 50 studies were grouped into six major thematic clusters based on their research focus.

Table 2: Thematic Classification of Literature

Theme	Focus Area	Key Studies (Author–Year)	Key Positive Insights	Key Limitations
1.Human Capital & Economic Growth	Role of skills in economic development	Foster (1965), Psacharopoulos (1994), Tilak (2002), Hanushek et al. (2017), Ashton & Green (1996)	Skills enhance productivity and economic growth	Ignores inequality and structural barriers
2.Vocational Education Systems & Policy	Institutional frameworks and policy design	Lauglo (2005), UNESCO (2016), OECD (2020), Cedefop (2018), Atchoarena (2019), Cabral & Dhar (2019)	Strengthens national skill ecosystems	Policy implementation gaps
3. Employability & Labour Market Outcomes	Impact on employment and wages	Agrawal (2013), Sharma & Mehta (2018), Kumar et al. (2019), Rao et al. (2024), ILO (2021)	Improves job readiness and employment	Skill mismatch and job insecurity
4.Training Quality & Skill Formation	Effectiveness of training systems	Oketch (2007), Billet (2011), Sudhakar (2016), McGrath (2012), Adams (2007)	Enhances technical and soft skills	Poor training delivery reduces outcomes
5.Industry Collaboration & Work-Based Learning	Linkages between training and industry	Fuller & Unwin (2011), King & Palmer (2010), Eichhorst et al. (2015), Clarke & Winch (2007)	Improves practical exposure and employability	Weak industry engagement
6.Emerging Trends: Digital Skills & Future Workforce	Digital transformation and Industry 4.0	Triyono et al. (2023), Kholifah et al. (2025), World Bank (2022), Ghosh et al. (2022), Srivastava et al. (2025)	Enhances adaptability and future readiness	Digital divide and access issues

3.1 In-depth Thematic Analysis of Vocational Education and Skill Development Literature:

1. Human Capital and Economic Growth

This cluster represents the foundational theoretical perspective underpinning vocational education research. Early contributions emphasize that investment in skills enhances individual productivity, employability, and overall economic growth. The central argument is that education functions as an economic asset, generating returns both at the individual and national levels.

However, deeper examination of the literature reveals important limitations. While human capital theory assumes a direct relationship between skills and employment outcomes, empirical evidence suggests that this relationship is often mediated by labor market structures, institutional quality, and socio-economic inequalities. Studies highlight that even skilled individuals may face unemployment due to structural issues such as job scarcity or regional disparities.

2. Vocational Education Systems and Policy Frameworks

This cluster focuses on the design, governance, and effectiveness of vocational education systems. The literature highlights that strong institutional frameworks, policy coherence, and regulatory mechanisms are essential for effective skill development.

A major contribution of this cluster is the identification of system-level inefficiencies, particularly in developing economies. Fragmentation of institutions, lack of coordination among stakeholders, and weak quality assurance mechanisms are recurring issues.

3. Employability and Labour Market Outcomes

This cluster examines the direct relationship between vocational education and employment outcomes. The literature consistently shows that vocational training enhances employability by improving job readiness, technical competencies, and adaptability.

However, deeper analysis reveals that employability is not solely determined by skill acquisition. It is a multi-dimensional construct influenced by factors such as labor market demand, economic conditions, and social capital. The persistence of skill mismatch where individuals possess skills that are not aligned with industry requirements emerges as a central concern.

4. Training Quality and Skill Formation

This cluster emphasizes the role of training processes in shaping skill outcomes. The literature identifies training quality as a critical determinant of effective skill development, encompassing factors such as trainer competence, pedagogical methods, curriculum design, and practical exposure.

A key insight is that training quality acts as a conversion mechanism, transforming educational inputs into employable skills. Poor training quality disrupts this process, leading to ineffective skill acquisition even when infrastructure and access are adequate.

5. Industry Collaboration and Work-Based Learning

This cluster focuses on the relationship between vocational education institutions and industry. Strong industry collaboration is widely recognized as a key factor in ensuring the relevance of training programs. The literature highlights that effective collaboration goes beyond curriculum consultation and includes co-design of programs, apprenticeships,

internships, and joint assessment mechanisms. Such partnerships enhance the practical relevance of training and improve employment outcomes.

6. Emerging Trends: Digital Skills and Future Workforce

This cluster reflects the evolving nature of vocational education in response to technological advancements and Industry 4.0. The literature emphasizes the growing importance of digital skills, adaptability, and lifelong learning.

A key insight is the transition from traditional vocational skills to hybrid skill sets, combining technical, digital, and cognitive competencies. This shift requires significant transformation in curriculum design and training methodologies.

4. CONCLUSION

This study provides a comprehensive theoretical examination of vocational education and skill development within the context of India by synthesizing insights from 50 research studies spanning six decades. The findings underscore that vocational education plays a pivotal role in enhancing employability, workforce productivity, and economic development. However, the effectiveness of vocational education systems is not determined solely by the provision of training but by the alignment of multiple interrelated factors, including curriculum relevance, training quality, institutional frameworks, and industry collaboration.

The analysis reveals that while significant progress has been made in expanding access to vocational education, persistent structural challenges continue to limit its impact. Issues such as skill mismatch, inadequate industry engagement, and variations in training quality highlight the need for a more integrated and demand-driven approach. The study also emphasizes the growing importance of digital skills and adaptive learning in the context of rapid technological change, suggesting that traditional models of vocational education are increasingly insufficient.

Overall, the paper concludes that vocational education must evolve from a supply-driven system focused on enrollment to a holistic ecosystem centered on outcomes, particularly skill acquisition and employability. A coordinated effort involving policymakers, training institutions, and industry stakeholders is essential to ensure that vocational education fulfills its potential as a driver of inclusive and sustainable development.

5. SUGGESTIONS FOR FURTHER RESEARCH

Despite providing a comprehensive synthesis, this study identifies several avenues for future research. First, there is a need for empirical studies that integrate multiple dimensions of vocational education into a unified analytical framework. Future research could employ advanced quantitative techniques to validate the relationships between training quality, curriculum relevance, industry collaboration, and employability outcomes.

Second, longitudinal studies are required to examine the long-term impact of vocational education on career progression, income stability, and job satisfaction. Most existing studies focus on short-term employment outcomes, leaving a gap in understanding the sustained benefits of skill development initiatives.

Third, further research should explore the role of digital transformation in reshaping vocational education. With the increasing importance of Industry 4.0, studies focusing on digital skills, online training platforms, and technology-enabled learning environments would provide valuable insights. Additionally, comparative studies across regions and countries could help identify best practices and contextual differences in vocational education systems.

Such research would be particularly useful for developing economies seeking to strengthen their skill development frameworks.

Finally, future studies should incorporate qualitative approaches to capture the perspectives of trainees, trainers, and industry stakeholders. This would provide a more nuanced understanding of the challenges and opportunities within vocational education systems.

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