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Bridging Tradition and Industry: Assessing Industry–Academia Linkages and Skill Readiness of Youths

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Abstract

The youths face the challenges due to two issues: skill and will. The skill gap between industry and academia creates unemployment, distress leading to long-term impact. India's demographic dividend offers major potential for economic growth, but persistent educated unemployment highlights serious weaknesses in the education and skill development system. Although enrolment in higher education and vocational programmes has increased, many young people remain insufficiently prepared for employment. This contradiction is especially visible in Maharashtra, where advanced manufacturing, service industries, traditional sectors, and a strong higher education network exist together. Despite its major contribution to India's industrial output and gross state domestic product, the state continues to face skill mismatch, graduate employability, and uneven regional development. This paper uses secondary data to examine how industry–academia linkages influence youth skill readiness in Maharashtra. Drawing on policy documents, skill gap reports, employability surveys, academic studies, and institutional publications, it evaluates collaboration mechanisms, skill outcomes, and the employment role of traditional industries. The study finds that, despite supportive policies, implementation remains fragmented, and requiring stronger, integrated partnerships for inclusive and productive human capital development.

Keywords: *Industry–academia linkages, skill readiness, youth employability, secondary data, Maharashtra, traditional industries*

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1. Introduction

Youths are the growth engines for the society, economy. The skilled youths are the human capital earning and shaping the economies. On the other hand, lack of industry skills create gaps, grave concerns. India is currently experiencing a demographic transition characterized by a rapidly expanding youth population. Around more than half of India's population is below the age of 30, positioning the country to benefit from a demographic dividend over the coming decades (India Skills Report, 2024). The potential benefits of this demographic advantage are increasingly undermined by rising levels of unemployment and underemployment among educated youth. Several employability surveys indicate that a significant proportion of graduates lack the skills required for immediate workforce integration despite holding formal educational qualifications (World Bank, 2022). The challenge of youth unemployment in India is not solely quantitative but deeply qualitative in nature. Employers frequently report gaps in communication abilities, critical thinking, teamwork, digital competence, and problem-solving skills among graduates. These deficiencies are often attributed to rigid curricula, limited industry exposure, and an overemphasis on theoretical learning within academic institutions. As a result,

industries incur additional costs in retraining graduates, while young people struggle to secure meaningful employment (Confederation of Indian Industry, 2023).

Maharashtra is considered as one of the progressive states in India. It contributes significantly to national GDP, industrial production, exports, and employment (NITI Aayog, 2021). The state hosts diverse industrial ecosystems, including automobile manufacturing in Pune, pharmaceuticals in Aurangabad, textiles in Solapur and Ichalkaranji, financial services and information technology in Mumbai, and agro-processing industries across Nashik, Vidarbha, and Marathwada. In addition, Maharashtra has a vast network of universities, engineering colleges, polytechnics, Industrial Training Institutes (ITIs), and skill development centres (Government of Maharashtra, 2023). Alongside these modern sectors, Maharashtra possesses a rich heritage of traditional industries such as handloom weaving, leather crafts, pottery, metalwork, cooperative sugar factories, folk arts, and agro-based enterprises (Ministry of Textiles, 2022). Historically, these sectors functioned as informal yet effective systems of skill transmission through apprenticeship-based learning and community-based knowledge sharing. However, contemporary education systems have increasingly marginalized these traditional industries in favour of formal, examination-oriented instruction (UNESCO, 2021). Despite Maharashtra's structural advantages, persistent skill mismatch and youth unemployment remain pressing concerns (Tilak, 2018). Educational institutions often operate in relative isolation from industry requirements, while collaboration mechanisms remain limited in scope and depth. In this context, strengthening industry–academia linkages and integrating traditional industries into formal skill development frameworks are critical for improving youth employability (OECD, 2019).

2. Background of Study

India is undergoing a significant demographic transition characterized by a rapidly growing youth population. With more than half of its population below the age of thirty, the country possesses a strong demographic dividend that has the potential to accelerate economic growth, productivity, and innovation. However, this opportunity is increasingly threatened by the persistent problem of unemployment and underemployment among educated youth. Several national employability surveys indicate that a considerable proportion of graduates lack the practical skills required by employers, despite possessing formal academic qualifications. This situation highlights a widening gap between educational outcomes and labour market expectations, which has become a critical concern for policymakers and industry leaders (Blom & Saeki, 2011). The issue is not only related to the availability of jobs but also to the mismatch between the competencies developed within educational institutions and the skills demanded by modern industries. Employers frequently report deficiencies in communication ability, analytical thinking, teamwork, adaptability, and digital literacy among young graduates, which forces organisations to invest additional resources in training new employees. Maharashtra provides a particularly important context for examining the relationship between education, skills, and employment due to its strong industrial and educational infrastructure (Gaikwad, 2021). The state hosts diverse industrial clusters including automobile manufacturing in Pune, pharmaceuticals in Aurangabad, financial services and information technology in Mumbai, textiles in Solapur and Ichalkaranji, and agro-processing industries across Nashik, Vidarbha, and Marathwada. Alongside these modern sectors, the state also has a long-standing tradition of artisanal and community-based industries such as handloom weaving, pottery, leather crafts, metalwork, and cooperative sugar production (OECD, 2021). These sectors served as informal yet effective systems of skill development through apprenticeship and community knowledge transfer. However, contemporary education systems often operate with limited interaction with such industries, leading to a disconnect between academic learning and practical skill

requirements. Strengthening industry–academia collaboration and integrating traditional knowledge systems within formal education frameworks therefore becomes essential for enhancing youth employability and ensuring sustainable economic development in the state (Government of Maharashtra, 2023).

3. Scope and Significant of Study

The present study focuses on examining the nature and effectiveness of industry–academia linkages in the state of Maharashtra. It primarily analyses how collaboration between educational institutions and industries contributes to improving the skill readiness and employability of youth. The study considers both modern industrial sectors such as manufacturing, information technology, pharmaceuticals, and financial services, as well as traditional industries including handloom, agro-processing, and artisanal occupations that historically played an important role in skill transmission. In addition, the research reviews the policy environment and institutional mechanisms that influence collaboration between industry and academia, including government initiatives, skill development programmes, and educational reforms. By analyzing these dimensions, the study aims to understand the broader role of institutional partnerships in strengthening workforce preparedness and supporting sustainable economic development in Maharashtra. The study is based entirely on secondary data obtained from government reports, policy documents, academic literature, employability surveys, and institutional publications. As a result, certain limitations must be acknowledged. The findings depend on the availability, reliability, and accuracy of published data sources, which may not fully capture recent developments or institution-specific variations in collaboration practices. Furthermore, the absence of primary data collection restricts the ability to validate findings through direct interaction with industry representatives, educators, or students. Despite these limitations, the study attempts to enhance the reliability of its conclusions by triangulating information from multiple credible sources, thereby providing a comprehensive and balanced understanding of industry–academia collaboration and youth skill development in Maharashtra.

4. Objectives of the Study

- To examine the structure and scope of industry–academia linkages in Maharashtra
- To assess the level of skill readiness among youth based on secondary data sources
- To analyse the role of traditional industries in youth skill development and employment
- To identify gaps between educational curricula and industry skill requirements
- To propose policy and institutional measures for strengthening industry–academia collaboration

5. Review of Literature

Existing literature extensively examines the relationship between education, skill development, and employability (Agrawal and Agrawal 2017). That vocational education contributes to improved employment outcomes only when training programmes are aligned with labour market requirements and supported by active participation from industry stakeholders. Their study highlights that rigid and theory-oriented curricula in many Indian institutions limit the development of practical competencies required by employers. Similarly, research on higher education reforms suggests that stronger collaboration between educational institutions and industries can significantly enhance graduates' workplace readiness by integrating internships, practical training, and experiential learning opportunities within academic programs (Blom & Saeki, 2011).

Emphasizes that skill development policies must balance economic productivity with broader social inclusion objectives. The author points out that young people from rural areas and marginalized communities often face structural barriers in accessing quality education, training facilities, and employment opportunities (Gooptu 2018). These disparities highlight the need for regionally inclusive skill development strategies that integrate local industries, community-based training models, and targeted government interventions. Complementing this perspective,(Behera and Gaur 2022) observe that India's skill development ecosystem remains fragmented due to overlapping institutional responsibilities and inconsistent quality standards across training programmes. They argue that effective coordination among government agencies, industry partners and educational institutions is essential for improving training quality and employment outcomes.

Recent research has also examined the role of technology and institutional collaboration in strengthening workforce preparedness. (Naik et al. 2020) demonstrate that technology-enabled learning platforms can significantly enhance digital skill acquisition among students, particularly in emerging sectors of the knowledge economy. However, the authors caution that unequal access to digital infrastructure may intensify regional disparities in skill development. In order to bridge the skill gap and increase industry-academia initiatives, the use of smartphone-based apps can prove the best ways. The students are get unlimited exposure through standard resources, gamification, simulation to understand the best industry practices (Gaikwad, 2023).

Jaiswal (2023) further provides empirical evidence that structured industry partnerships such as curriculum co-design, industry internships, faculty training programmes, and collaborative research initiatives substantially improve graduate employability and industry readiness. At the international level, the German dual vocational training system is frequently cited as a successful model of industry–academia collaboration that integrates classroom instruction with workplace-based training. Nevertheless, scholars emphasize that such models require contextual adaptation to align with India's institutional structure, labour market conditions, and socio-economic realities (OECD, 2019).

6. Research Methodology

- **Nature of the Study:** The study is descriptive and analytical in nature and is based exclusively on secondary data. The descriptive approach is employed to systematically document existing policies, institutional mechanisms, and skill development initiatives related to industry–academia linkages in Maharashtra. The analytical approach enables a critical examination of patterns, gaps, and relationships emerging from the reviewed data. No primary data collection methods such as surveys, interviews, or field experiments are used.
- **Research Design:** The research adopts a desk-based secondary research design, which is appropriate for analyzing macro-level trends, policy effectiveness, and structural challenges in education–industry collaboration. This design allows for synthesis of evidence from multiple credible sources to develop a comprehensive understanding of youth skill readiness and collaboration mechanisms at the state level.
- **Sources of Data**

- National Education Policy (2020) and related government policy documents
- Reports published by the National Skill Development Corporation (NSDC)
- Maharashtra state skill gap assessment reports
- Labour market and employability studies

- Peer-reviewed academic journals
- Publications from international organisations and think tanks
- Reports from industry associations and institutional websites
- **Method of Data Collection:** Data were collected through systematic literature review using academic databases, government portals, and institutional repositories. Keywords such as *industry–academia linkage*, *skill development*, *youth employability*, and *Maharashtra* were used to identify relevant studies. Sources were screened for relevance, credibility, and alignment with the study objectives.
- **Method of Data Analysis:** Qualitative content analysis and thematic analysis were employed to analyse the collected data. Information from multiple sources was compared and synthesized to identify recurring themes, challenges, and best practices related to skill readiness and collaboration. Policy intent and implementation outcomes were critically examined to identify gaps.

6. Discussion and Analysis

The present study adopts an integrated conceptual and theoretical framework to analyse the relationship between industry–academia linkages and the skill readiness of youth in Maharashtra. The framework combines insights from Human Capital Theory, the Triple Helix Model, and a multidimensional Skill Readiness perspective to explain how education systems, institutional collaboration, and skill development processes interact to influence employability outcomes. This integrated approach allows the study to move beyond a narrow understanding of skill gaps and instead examine the broader structural and institutional conditions shaping youth employment prospects. In a state such as Maharashtra, where modern industrial sectors coexist with traditional occupations, understanding the interaction between educational institutions, industry partners, and policy frameworks becomes particularly important for ensuring that skill development initiatives translate into meaningful employment opportunities.

Human Capital Theory forms the foundational theoretical basis of the study by viewing education and training as investments that enhance the productive capacity of individuals and contribute to economic growth. Within this perspective, expenditure on higher education, vocational training, and skill development generates long-term economic returns in the form of improved productivity, higher earnings, and national competitiveness. However, the theory also emphasizes the importance of aligning educational investments with labour market demand. In the context of Maharashtra, the persistence of graduate unemployment despite large investments in higher education highlights the problem of skill mismatch. Strengthening industry–academia linkages helps address this gap by enabling curriculum co-design, internships, apprenticeship programmes, and industry exposure that align academic training with real workplace requirements. Furthermore, Human Capital Theory supports the recognition of traditional and informal skill systems as valuable forms of human capital, since skills acquired through industries such as handloom weaving, agro-processing, and cooperative enterprises contribute significantly to regional economic productivity. The framework is further enriched by the Triple Helix Model and the Skill Readiness Framework, which emphasize collaboration among academia, industry, and government as well as the multidimensional nature of employability. The Triple Helix Model highlights how these three institutional actors collectively shape innovation systems, skill development initiatives, and economic transformation through coordinated policies, shared resources, and knowledge exchange. In Maharashtra, government-led initiatives promoting public–private partnerships in Industrial Training Institutes (ITIs), technical education institutions, and university–industry collaborations illustrate this model in practice. At the same time, the Skill Readiness Framework conceptualizes employability as a

combination of technical competence, digital literacy, soft skills, critical thinking, entrepreneurial orientation, and professional attitudes. Industry–academia collaboration strengthens these competencies by facilitating experiential learning through internships, apprenticeships, live projects, and industry-led training programmes. Together, these theoretical perspectives provide a comprehensive analytical lens for examining how institutional partnerships influence youth skill readiness and employment outcomes in Maharashtra.

- **Challenges Identified**

Analysis of data reveals several systemic challenges that constrain the effectiveness of industry–academia linkages and limit youth skill readiness in Maharashtra. These challenges operate at curricular, institutional, infrastructural, and socio-economic levels and require coordinated interventions.

Table 1: Thematic Analysis of Challenges Affecting Skill Readiness in Maharashtra

Theme	Key Challenge	Description	Implications for Skill Readiness
Curriculum Structure	Curriculum rigidity and slow revision	Academic curricula are revised infrequently and often fail to reflect emerging technologies, industry practices, and changing skill requirements. Lengthy approval processes delay updates.	Graduates possess outdated or overly theoretical knowledge, reducing employability.
Institutional Governance	Limited industry participation in academic governance	Industry involvement is often restricted to guest lectures or placements, with minimal engagement in curriculum design or assessment processes.	Weak alignment between educational outcomes and industry expectations.
Experiential Learning	Poor quality and supervision of internships	Internships lack structured learning outcomes, supervision, and evaluation mechanisms.	Limited hands-on experience and inadequate workplace exposure.
Traditional Sector Integration	Marginalization of traditional industries	Traditional industries remain excluded from formal education and training frameworks.	Declining youth participation and erosion of indigenous skills.
Digital Infrastructure	Digital divide and infrastructural disparities	Urban institutions enjoy better digital access, while rural institutions face connectivity and infrastructure constraints.	Unequal access to digital skill development, widening employability gaps.
Student Support Systems	Inadequate career guidance and counselling	Many institutions lack professional career counselling and industry orientation programmes.	Students make uninformed career choices, leading to underemployment.

Interpretation: The thematic analysis demonstrates that challenges affecting youth skill readiness in Maharashtra are structural rather than isolated. Curriculum rigidity, weak governance mechanisms, and infrastructural inequalities collectively undermine the effectiveness of industry–academia collaboration. Addressing these challenges requires systemic reforms rather than piecemeal interventions.

7. Policy Implications and Recommendations

The study highlights several policy and institutional measures necessary to strengthen industry–academia linkages and enhance youth skill readiness in Maharashtra. First, industry participation should be institutionalized in curriculum design through formal advisory boards that ensure academic programmes remain aligned with evolving labour market requirements and emerging technologies. Second, structured apprenticeship and dual training systems should be expanded so that classroom learning is complemented by workplace experience, with incentives provided particularly to micro, small, and medium enterprises to increase training capacity and improve employment outcomes. Third, traditional industries should be integrated into formal vocational education frameworks through cluster-based training, certification mechanisms, and entrepreneurship support, enabling the combination of traditional skills with modern technology, design innovation, and market access. Additionally, faculty development initiatives should include industry exposure through internships, sabbaticals, and collaborative projects to enhance the practical relevance of teaching. Skill development programmes must also prioritize digital and future-oriented competencies such as automation, data analytics, and technological adaptability while addressing rural–urban disparities in digital infrastructure. Finally, the establishment of region-specific skill development clusters aligned with local industries can promote inclusive economic growth, strengthen local employment opportunities, and reduce migration pressures by fostering coordinated collaboration among industry, academia, and government institutions.

Figure 1: Industry-Academia Linkage and Youth Readiness

The industry–academia linkages act as a central mechanism for enhancing the skill readiness of youths by integrating educational inputs with industry requirements. It shows that key drivers such as work-based learning, skill development initiatives, funding support, and policy interventions enable collaboration between educational institutions and industry. These linkages facilitate practical exposure, knowledge transfer, and alignment of curriculum with market needs, thereby addressing critical challenges like skill gaps, curriculum mismatch, limited collaboration, and rapid technological changes. Through targeted solutions such as tailored training programs, internships, apprenticeships, research collaboration, and advisory partnerships, the framework leads to improved outcomes including

employability, innovation capability, workforce readiness, and overall economic growth, emphasizing a cyclical and mutually reinforcing relationship between academia and industry.

8. Conclusion

The study concludes that industry–academia linkages play a crucial role in enhancing youth skill readiness and employability in Maharashtra. Although national and state policies increasingly emphasize collaboration between educational institutions and industries, the implementation of such partnerships remains uneven across regions and institutions. This fragmented engagement limits the effectiveness of skill development initiatives and contributes to the persistent mismatch between educational outcomes and labour market expectations. Moreover, traditional industries, despite possessing significant skill potential and historical relevance, continue to remain marginal within formal education and training frameworks. Addressing these challenges requires a comprehensive and coordinated approach that bridges the gap between traditional knowledge systems and modern industrial practices. Curriculum reforms, expansion of experiential learning opportunities, stronger digital skill development initiatives, and inclusive vocational education programmes can significantly enhance the preparedness of youth for evolving labour market demands. Ultimately, strengthening collaboration among academia, industry, and government institutions is essential for converting Maharashtra's demographic advantage into sustainable and inclusive human capital development, thereby supporting long-term economic growth and regional prosperity.

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