International Journal of Business and General Management (IJBGM)
ISSN (P): 2319–2267; ISSN (E): 2319–2275
Vol. 14, Issue 1, Jan–Jun 2025; 23–38

International Academy of Science, Engineering and Technology
Connecting Researchers; Nurturing Innovations

ANALYZING THE NEXUS: ACADEMIA-INDUSTRY LINKAGES AND STAKEHOLDER OUTCOMES IN NASHIK PROFESSIONAL COLLEGES

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ABSTRACT

In the evolving landscape of higher education and global competitiveness, effective Institute-Industry Linkages (IIL) have emerged as a critical factor in enhancing employability, fostering innovation, and improving academic quality. This study investigates the impact of IIL on key stakeholders—students, faculty, institutions, and industry representatives—in professional colleges across Nashik District, India. Using a quantitative research design, data was collected from a stratified sample of 873 respondents, including faculty, students, and HR managers across engineering, management, pharmacy, and architecture institutes. The study applies descriptive statistics to summarize stakeholder responses and regression analysis to examine the relationship between Institute-Industry Linkages and outcomes such as research output, employability, and institutional quality. via Statistical Package for the Social Sciences (SPSS)to evaluate the relationship between IIL practices (such as internships, guest lectures, and IP projects) and outcomes like research output, student placement, and institutional quality. The findings indicate a significant positive relationship between strong IIL and improvements in faculty research, student employability, and institutional performance. However, notable gaps remain in sustained industry participation, curriculum relevance, and intellectual property collaboration. This paper recommends a systemic reorientation through regulatory support (AICTE/UGC mandates), incentivized collaboration models, and sustained skill alignment to maximize the benefits of IIL for all stakeholders.

KEYWORDS: *Industry-Academia Linkages, Employability, Innovation, Stakeholder Analysis, Higher Education, Nashik, India*

Article History

Received: *25 Jun 2025* | ***Revised:*** *28 Jun 2025* | ***Accepted:*** *30 Jun 2025*

INTRODUCTION

The twenty-first century knowledge economy increasingly demands alignment between academic institutions and industry needs to bridge the employability and innovation gaps.

Despite the growing recognition of the importance of industry-academia collaboration, most current academic settings in India especially in Tier-2 cities still operate within a rigid, examination-oriented framework. Curricula are often outdated and lack regular input from industry professionals, making them misaligned with evolving job market requirements. Faculty members are largely evaluated based on teaching hours and theoretical publications rather than innovation or real-world problem solving. Moreover, institutional policies rarely incentivize interdisciplinary projects, entrepreneurship, or patent generation. Administrative bottlenecks and limited autonomy further restrict the ability of

colleges to form agile and responsive partnerships with industry. This gap between what is taught and what is practiced in the field contributes to poor employability, low research translation, and underutilized intellectual capital particularly in regions like Nashik that are striving to compete with metropolitan hubs. These systemic weaknesses necessitate a focused inquiry into how Institute-Industry Linkages (IIL) can be more effectively structured and leveraged.

Institute-Industry Linkages (IIL) are formal and informal collaborations between educational institutions and industry partners that foster knowledge exchange, skill development, and mutual growth. These linkages play a pivotal role in enhancing research productivity, practical learning, and technology transfer.

This study examines both individual and collective stakeholder outcomes arising from Institute-Industry Linkages (IIL). At the individual level, the research evaluates how IIL impacts students' employability skills and career readiness, faculty members' research output (such as patents, publications, and consultancy), and industry representatives' satisfaction with talent quality and institutional collaboration. At the collective level, the study assesses how these linkages influence the overall institutional quality, reflected through metrics like placement rates, academic reputation, innovation output, and alignment with accreditation standards. By integrating both perspectives, the study offers a holistic view of how IIL functions as a systemic mechanism to improve educational and professional outcomes across all stakeholder groups in professional colleges.

In India, particularly in Tier-2 cities such as Nashik, the absence of robust Institute-Industry Linkage (IIL) mechanisms has led to a significant mismatch between graduates' capabilities and industry expectations (Kumar & Patel, 2022). While metropolitan institutions often benefit from structured relationships with corporates, regional colleges remain constrained by outdated curricula, limited industry exposure, and insufficient practical engagement (Nangia & Pramanik, 2011; Jalote, 2011). These disparities result in underprepared graduates who struggle to meet the evolving skill demands of the industry, especially in high-growth sectors like IT, pharmaceuticals, and engineering (NASSCOM, 2023).

Professional colleges are higher education institutions that offer specialized programs aimed at preparing students for specific careers such as engineering, management, pharmacy, architecture, and law. Unlike traditional colleges that emphasize general education in arts, science, or humanities, professional colleges are regulated by statutory bodies like AICTE, PCI, COA, and BCI, and are required to align their curricula with industry-relevant competencies and technical standards (AICTE, 2023). These institutions emphasize practical learning through internships, labs, and field-based projects, and their success is often measured by student placement rates, licensure exam results, and collaboration with industry. In Tier-2 cities like Nashik, professional colleges play a vital role in regional development by providing domain-specific education, yet they often face challenges in maintaining industry alignment due to limited resources, outdated pedagogy, and weak collaborative ecosystems (Kumar & Patel, 2022; Jalote, 2011).

This paper seeks to examine the present status, effectiveness, and challenges of IIL in professional colleges of Nashik District—spanning management, engineering, pharmacy, and architecture disciplines.

The study is grounded in the belief that holistic education must go beyond theoretical knowledge to include experiential learning. Accordingly, the central research question guiding this study is: *How do Institute-Industry Linkages influence the research output*,(by including publications, patents, and consultancy projects, which are common measurable outcomes in academic-industry research collaboration) *employability, and institutional quality in professional colleges of Nashik District.*

RESEARCH METHODOLOGY

Research Design

This study adopts a **quantitative research methodology** to analyze the influence of Institute-Industry Linkages on multiple stakeholder outcomes. The research is exploratory and analytical in nature, using structured questionnaires to derive primary data.

Population and Sampling

The population includes all AICTE- and Savitribai Phule Pune University-recognized professional institutes in the Nashik district with at least one graduating batch-**(3,000* students)** It spans four streams: Management (MBA), Engineering, Pharmacy, and Architecture.

Sampling Technique

A multistage approach using purposive and stratified random sampling was applied to capture heterogeneous stakeholder perspectives.

Sample Size

- Institutes: 53
- Industries: 132
- Students: 371
- Faculty: 317

Total Respondents: 873

Data Collection

- **Primary Data**: Collected via structured questionnaires and interviews with faculty members, students, institute leaders, and HR managers from industry.
- **Secondary Data**: Obtained from government and institutional websites (AICTE, DTE Maharashtra), placement brochures, academic journals, and previous studies.

Analytical Tools

- **Descriptive Statistics**: Frequency tables, bar charts, and mean rankings.
- **Inferential Statistics**: Regression analysis (via SPSS) was used to test three primary hypotheses concerning faculty research output, student employability, and institutional quality improvement.

Research Hypotheses

- **H1**: Institute-Industry linkage significantly impacts faculty research and innovation.
- **H2**:Institute-Industry Linkage significantly impacts **student employability** (skills and job readiness) and **industry acceptance** (employer willingness to hire students from the institution)
- **H3**: Institute-Industry linkage significantly impacts the quality of professional institutes.(**cut-off scores** of enrolled students and **placement outcomes)**

LITERATURE REVIEW

The collaboration between academic institutions and industries is a well-established strategy to enhance innovation, skill development, and economic productivity. This section reviews national and international studies to contextualize the current research and identify key gaps relevant to the Nashik region.

Global Perspective on Institute-Industry Linkages

Recent global trends highlight the importance of long-term strategic partnerships between academia and industry. According to Perkmann et al. (2021), universities increasingly act as "entrepreneurial ecosystems," facilitating not just knowledge transfer but also startup incubation and joint IP creation. Institutions like Stanford University and Tsinghua University have integrated innovation hubs directly with curriculum development, enhancing student employability and research commercialization (Liu et al., 2020).

Moreover, initiatives like the **European Union's Horizon** Europe program have significantly expanded cross-border industry-academic research collaborations, emphasizing sustainability, digital transformation, and technology transfer (European Commission, 2022).

Petruzzelli (2011) emphasized that geographically proximate collaborations and prior institutional ties significantly affect the success of university-industry partnerships. In the U.S., institutions like MIT have pioneered models that integrate research commercialization through incubators and science parks, illustrating the power of integrated academic-industry ecosystems (Brodie et al., 2011).

In Europe, initiatives such as the UK's Teaching Company Scheme (TCS) and Germany's Technical Universities model have institutionalized joint supervision between academia and industry experts to foster applied research and innovation (Etzkowitz & Leydesdorff, 2000).

Indian Scenario and Regional Gaps

Despite policy frameworks like **AICTE-industry internship** mandates and incubation grants, India faces substantial challenges in effective IIL. Nangia and Pramanik (2011) highlighted the "stand-alone" nature of education and industrial policies that results in misaligned curricula and underprepared graduates.

India has made strides with the National Education Policy (NEP) 2020, which emphasizes vocational integration, multidisciplinary collaboration, and stronger industry partnerships. A report by NASSCOM (2023) indicated that more than 65% of Indian IT firms now have active engagement with academic institutions, primarily for talent acquisition and co-development of AI and data science curricula (NASSCOM, 2023)

However, regional disparities remain. **Kumar and Patel (2022)** identified that Tier-2 cities like Nashik still struggle with limited faculty-industry collaboration and insufficient outcome-based metrics in IIL frameworks. While policy mandates exist (e.g., AICTE's mandatory internship policies), the lack of follow-up and monitoring often leads to token compliance rather than transformational engagement

Jalote (2011) noted that academia-industry collaborations in India are still in their infancy, particularly outside Tier-1 cities. Most collaborations are informal, event-based (guest lectures, visits), and lack sustained engagement.

Prof. Shalini Gupta (2019) identified a paradox in professional institutions: even with mandatory internships, employers remain unsatisfied due to poor exposure and limited skill application.

Gaps Identified

- Limited empirical studies focused on Tier-2 regions like Nashik.
- Lack of comprehensive stakeholder evaluation (institutes, students, faculty, industry).
- Minimal integration of intellectual property creation in IIL studies.

This study aims to bridge these gaps by evaluating satisfaction, challenges, and outcomes associated with IIL across multiple stakeholders in Nashik District.

DATA ANALYSIS AND RESULTS

This section presents the empirical findings derived from a survey of 873 respondents, including professional institutes, students, faculty, and industry representatives in the Nashik district.

The structured questionnaire used for primary data collection covered four key dimensions:

- **Demographic information** (e.g., stakeholder type, stream, experience)
- **Awareness and participation in Institute-Industry Linkages (IIL)** (e.g., internships, guest lectures, visits)
- **Satisfaction levels** with various aspects of IIL (rated on a 5-point Likert scale)
- **Perceived impact** of IIL on employability, research productivity, and institutional performance. The full questionnaire is provided in **Annexure I**.

Present Status of IIL Activities

Data from 53 institutes indicates increased adoption of IIL practices post-COVID, though activities are uneven across disciplines:

Table 1: Status of IIL Activities across Disciplines

IIL Activity	Engineering	MBA	Pharmacy	Architecture	Post-COVID Trend
Seminars/ Workshops	Increasing	Increasing	Moderate	Moderate	Increasing in Engg. & MBA post-pandemic
Industrial Visits	Recovering	Recovering	Lagging	Recovering	Recovering slowly in all streams, Pharmacy lagging
Internship Participation	>80%	Downward trend	Downward trend	>80%	Engineering & Architecture reported >80% participation; MBA& Pharmacy showed downward trend

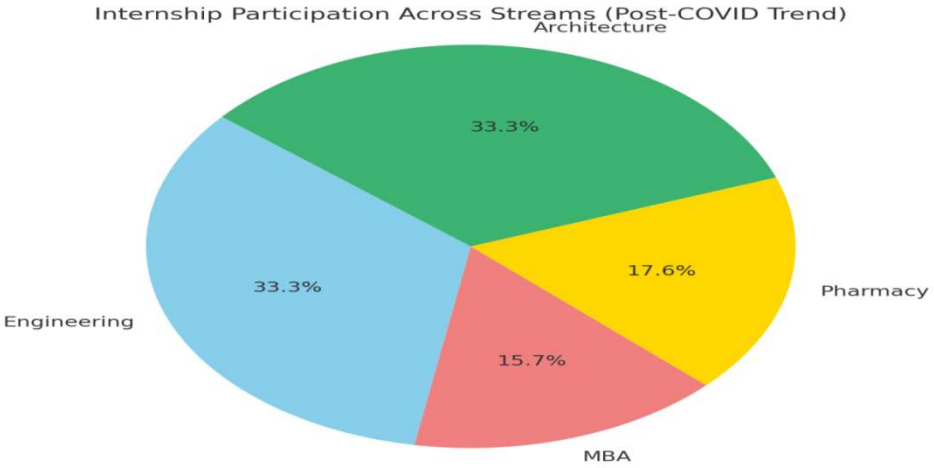

Figure 1

Placement and Internship Outcomes

Table 2: Placement and Internship Outcomes by Discipline

Discipline	Placement Rate	Average Package (₹ LPA)	Recruiter Repetition
Architecture	90%	~₹2.5 LPA	Medium
Pharmacy	90%	~₹2.5 LPA	High
Engineering	60%	>₹3 LPA	High
MBA	30%	~₹2 LPA	Moderate

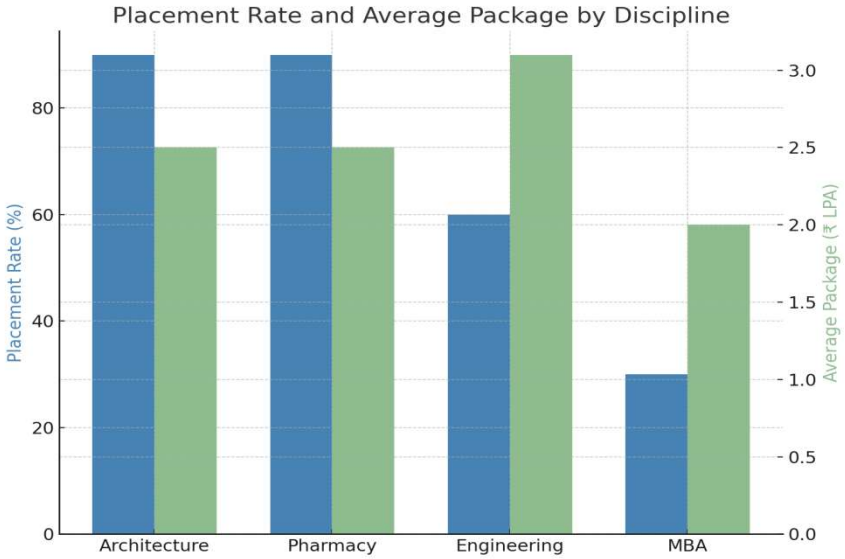

Figure 2

Interpretation

MBA colleges underperform in both participation and outcomes of IIL, suggesting weak industry engagement or curriculum misalignment.

Stakeholder Satisfaction Levels

Table 3

Stakeholder	High Satisfaction Areas (Mean Score)	Low Satisfaction Areas (Mean Score)
Students	Bureaucracy and communication during internships (~3.3)	Industry initiative for seminars, internships (~2.1–2.5)
Faculty	Seminar quality and institutional support (~3.5)	Opportunities for IP creation and research collaboration (~2.1)
Institutes	Bureaucracy ease and event organization (~4.1)	Industry self-initiative and IP collaboration (~2.7)
Industry	Student/faculty dedication (~3.1)	Quality of intellectual property and innovation (~1.9–2.2)

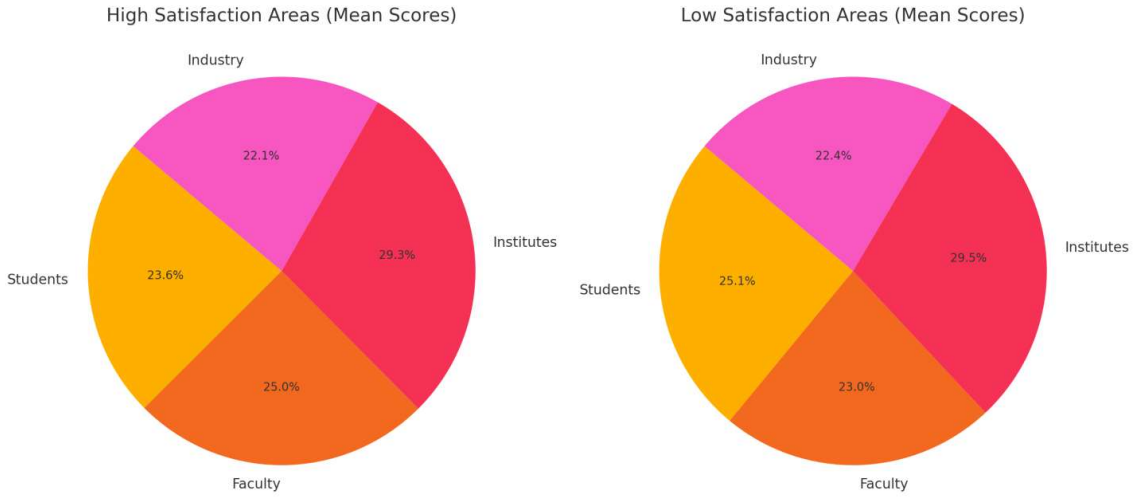

Figure 3

Interpretation

There is a clear gap in *sustained collaborative outputs* like patents, consultancies, and joint research, despite decent engagement in routine activities.

Key Challenges Identified

Table 4: Major Challenges Identified by Stakeholders

Stakeholder	Major Challenge Identified	Mean Score
Students	Lack of initiative from industry for IP	4.16
Faculty	Faculty skill mismatch & low industry interest	4.82
Institutes	Low student/faculty enthusiasm	4.56
Industry	Lack of curriculum alignment, poor IP quality	4.29

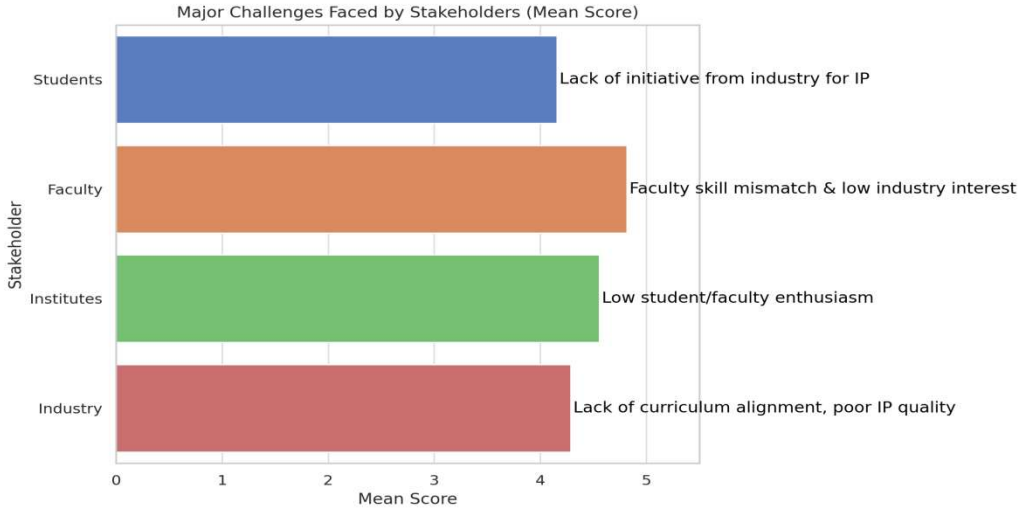

Figure 4

Interpretation

All stakeholders converge on a few critical challenges: poor industry involvement in curriculum, limited creation of intellectual assets, and faculty development needs greater support.

Regression Analysis (Hypothesis Testing)

Table 5: Regression Output Summary for Hypotheses

Hypothesis	R^2- Value	P-Value	Significance
H1: IIL → Faculty Research & Innovation	0.527	**< 0.05**	Significant
H2: IIL → Student Employability & Acceptance	0.70	**< 0.001**	Highly Significant
H3: IIL → Institutional Quality (Proxy: Cut-off score & Placement)	0.123	**< 0.01**	Significant

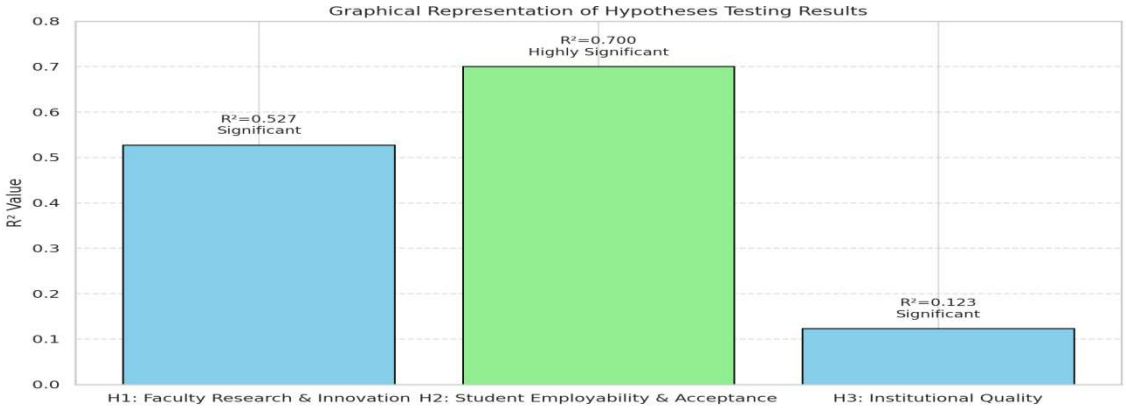

Figure 5

Interpretation

- Institutions receiving industry consultancy and projects show higher faculty publication and IP output.
- Seminars, internships, and visits significantly improve placement and internship acceptance.
- IIL contributes to reputation and intake quality, but other factors (brand, infrastructure) also influence

DISCUSSION

This study affirms that Institute-Industry Linkages (IIL) play a critical role in shaping the educational and professional trajectories of students, the research capacities of faculty, and the reputational value of professional institutions. The data reveals a substantial positive correlation between active IIL practices—like internships, seminars, and consultancy projects—and stakeholder satisfaction and institutional performance.

One of the most significant findings is the disconnect between superficial engagement (e.g., guest lectures) and deeper collaboration (e.g., joint research, patents). Although students and faculty report reasonable satisfaction with event-based activities, they express strong dissatisfaction with the lack of sustained industry collaboration. This gap is particularly notable in MBA institutes, where employability metrics are significantly lower despite comparable IIL efforts.

Interestingly, industry respondents expressed willingness to collaborate more actively but cited concerns over curriculum relevance and inadequate skills of students and faculty. This suggests a critical need for policy-level interventions to standardize industry participation in curriculum design, research supervision, and skill assessment.

The results validate the hypothesis that IIL positively impacts employability, faculty research output, and institutional reputation. However, the relatively weak effect on institutional intake quality ($R^2 = 0.123$) indicates that reputation-building requires more than functional collaboration—it demands strategic branding, alumni success stories, and global industry recognition.

CONCLUSION AND IMPLICATIONS

This study contributes empirical evidence to the discourse on institute-industry collaboration in India's Tier-2 education ecosystem. The findings confirm that robust IIL mechanisms significantly enhance faculty innovation, student employability, and institutional development. However, the depth and sustainability of these linkages remain limited by institutional inertia, industry skepticism, and weak regulatory mandates.

Academic Implications

- The study supports the integration of experiential learning frameworks and emphasizes the importance of intellectual property co-creation in faculty performance metrics.
- It underscores the need to redefine the role of faculty go beyond teaching to foster innovation through: Industry collaboration, Research projects, Guiding student startups, Creating patents or publications.

Policy Implications

- Regulatory bodies like AICTE and UGC should enforce mandatory industry involvement in curriculum design and faculty training.
- Financial incentives should be provided to institutes that demonstrate high-impact collaborations, especially those resulting in intellectual property, startup incubation, or patent licensing.

Practical Implications for Industry

- Industries should consider long-term talent pipelines and knowledge partnerships with academic institutions, moving beyond episodic engagements to structured mentorship, joint projects, and innovation labs.

RECOMMENDATIONS

Based on the findings, the following recommendations are proposed:

A. For Institutions

Recommendation 1: Establish dedicated Industry Relations Cells with full-time staff to coordinate sustained collaboration.

- **Recommendation:** Create a tiered structure within the Industry Relations Cell. This could include:
    - **Partnership Development Managers:** Focused on identifying and forging new relationships with relevant industries based on the institution's strengths and strategic goals. They would be responsible for initial outreach, needs assessment, and developing partnership proposals.
    - **Collaboration Facilitators:** Responsible for managing ongoing collaborations, ensuring smooth communication, and tracking progress on joint projects (e.g., research, curriculum co-design). They would act as the central point of contact for industry partners.
    - **Placement and Internship Coordinators:** Specifically dedicated to building relationships with companies for student internships, co-op programs, and final placements. They would understand industry hiring needs and match them with student skills.
- **Real-world Example:** Vellore Institute of Technology (VIT), India, has a dedicated Industry Liaison Office (ILO) with a team that actively engages with industries for internships, placements, collaborative research, and sponsored projects. They organize regular industry-academia meets and have established strong relationships with numerous companies across various sectors (Vellore Institute of Technology, 2023)
- **Recommendation 2: Create in-house IP and technology transfer offices to facilitate patenting, licensing, and startup incubation.**
- **Recommendation:** Implement a "Technology Readiness Level (TRL)" assessment framework within the IP and Technology Transfer Office. This will help evaluate the maturity of inventions and tailor the support offered. The office should provide:
    - **IP Counseling and Patent Filing Support:** Offering guidance on IP protection and assisting researchers with the patent application process, including access to legal expertise.
    - **Technology Marketing and Licensing Services:** Actively showcasing the institution's technologies to potential industry partners and negotiating licensing agreements.
    - **Pre-incubation and Incubation Facilities:** Providing physical space, mentorship, seed funding access, and business development support for faculty and student-led startups based on their IP.
- **Real-world Example:** Indian Institute of Science (IISc), Bangalore, India, has an Office of Intellectual Property and Technology Transfer (IIPTT). They have a structured process for IP disclosure, evaluation, protection, and commercialization. They also actively support startups through their incubation center, providing resources and connections to investors (Indian Institute of Science, 2023).

B. For Industry

Recommendation 3: Offer curriculum co-design assistance and domain-specific training modules.

Recommendation: Nominate Active Industry Professionals to Advisory Boards Industries should proactively nominate experienced professionals to serve on Academic Advisory Boards of partner institutions. These representatives can:

- Share current and emerging industry needs to influence curriculum updates.
- Suggest upskilling areas and certification trends aligned with evolving roles (e.g., digital transformation, ESG, AI adoption).
- Offer guest lectures, workshops, and case studies to bring real-world perspective into classrooms.
- Co-develop micro-credentials, industry projects, or electives that reflect job market demands.
- Facilitate internship and placement pipelines by mentoring students and guiding institutions on employability skills.

Real-world Example: Many engineering and management schools collaborate with companies to design specialized electives or certificate programs. For instance, IBM has partnered with several universities globally to offer courses on data science, AI, and cloud computing, directly contributing their expertise to curriculum development (IBM, 2023).

Recommendation 4: Invest in academic innovation grants and support student-led research projects through CSR initiatives.

- **Recommendation:** Launch "Industry Innovation Challenge Programs" where companies pose real-world problems to students and faculty, offering grants and mentorship for the most promising solutions. This can be integrated into coursework or extracurricular activities, with potential for further development and commercialization. CSR funds can be specifically earmarked for such initiatives.
- **Real-world Example:** Texas Instruments (TI) runs the "TI Innovation Challenge Design Contest", where engineering students design and build innovative projects using TI technology. They provide grants, components, and mentorship, fostering innovation and providing real-world engineering experience (Texas Instruments, 2023).

Recommendation 5: Mandate industry representation in Board of Studies and Accreditation Committees.

- **Concrete Recommendation:** Implement a policy requiring a minimum of two active industry professionals with relevant domain expertise to be part of every academic department's Board of Studies and accreditation peer review teams. Their feedback on curriculum, infrastructure, and research relevance should be a mandatory component of the evaluation process.
- **Real-world Example:** While not universally mandated, some autonomous institutions and universities proactively include industry experts in their academic bodies. For instance, program accreditation bodies like ABET (USA) emphasize the involvement of industry professionals in defining program outcomes and evaluation criteria (ABET, 2023).

Recommendation 6: Provide funding and ranking incentives based on the quantity and quality of industry collaborations (e.g., patents, joint publications, startup outcomes).

- **Recommendation:** Introduce a specific weightage in the National Institutional Ranking Framework (NIRF) or similar ranking systems for "Industry Engagement and Innovation Output." This could include metrics like the number of joint patents filed with industry, the number of co-authored publications with industry researchers, the amount of industry-sponsored research funding, the number of startups incubated based on institutional IP with industry partnerships, and the success rate of student placements in core industry sectors. Dedicated funding schemes could also be launched to support institutions with strong industry collaboration track records.
- **Real-world Example:** While current ranking systems might touch upon these aspects, a more explicit and heavily weighted component focusing on tangible industry collaboration outcomes—similar to how research output is currently assessed—would be a concrete step. Government bodies in countries like Singapore actively fund research and innovation initiatives that involve strong industry partnerships, recognizing their importance for economic growth (National Research Foundation Singapore, 2023).

D. For Faculty and Students

Recommendation 7: Encourage faculty sabbaticals in industry to upgrade skills and understand real-time applications.

- **Recommendation:** Establish a dedicated "Industry Immersion Fellowship" program that provides financial support and facilitates placements for faculty to spend a semester or a year working in relevant industries. The program should have clear objectives, such as learning new technologies, understanding industry challenges, and identifying potential areas for collaborative research.
- **Real-world Example:** Some universities have existing sabbatical policies that allow faculty to spend time in industry, but often it's self-initiated. A more structured program with dedicated funding—like the Jefferson Science Fellows Program (USA), which places academic scientists in U.S. government agencies—could be adapted for industry immersion (U.S. Department of State, 2023).

Recommendation 8: Integrate real-world problem-solving projects into coursework, supervised jointly by faculty and industry mentors.

- **Recommendation:** Make "Industry-Linked Capstone Projects" a mandatory component of relevant degree programs. Companies would propose real-world problems, and student teams would work on finding solutions under the joint guidance of a faculty member and an industry mentor. This would involve regular interaction, site visits, and feedback from the industry partner.
- **Real-world Example:** Many engineering and business schools already incorporate case studies and projects. However, a more formal and widespread implementation of jointly supervised projects with direct industry involvement—like the Senior Design Projects common in engineering programs at universities such as the Massachusetts Institute of Technology (MIT), USA—but with stronger industry co-supervision, would be a significant step (MIT Department of Mechanical Engineering, 2023)

LIMITATIONS, FUTURE RESEARCH AND SCOPE

Limitations

- The study is geographically limited to Nashik District, which may not fully represent the diverse Indian higher education landscape.
- Self-reported data can be influenced by biases or inaccuracies in respondent perceptions.
- The focus is primarily on professional colleges; results may vary across pure science or liberal arts institutions.

Future Research Directions

- **Longitudinal studies** to assess the impact of sustained IIL engagement over 5–10 years.
- **Cross-regional comparative studies** to identify models of best practices in IIL across urban vs. semi-urban ecosystems.
- **Qualitative research** exploring in-depth motivations and challenges from the industry's perspective.
- Study the **impact of international academic collaborations** and how they shape local institute-industry linkages.

Scope

Future researchers can study another side of study i.e. from Industry point of view.

CONCLUSION

This study offers a nuanced exploration of the dynamics between professional institutions and industry in a Tier-2 city context, specifically Nashik. Through quantitative analysis of 873 stakeholders—including students, faculty, institutional leaders, and industry representatives—the research establishes a strong empirical foundation for understanding the benefits and challenges of Institute-Industry Linkages (IIL).

The results confirm that robust IILs significantly enhance student employability, faculty research productivity, and overall institutional quality. High R^2 values for hypotheses related to employability (0.70) and faculty innovation (0.527) underscore the transformative potential of structured academic-industry collaboration. However, the relatively lower impact on institutional intake quality highlights the need for comprehensive branding and alumni success tracking to build institutional reputation alongside collaboration efforts.

Furthermore, while event-based engagements such as seminars and guest lectures are widespread, the lack of sustained collaboration—especially in the form of intellectual property creation, joint research, and curriculum co-design—remains a critical gap. This indicates a pressing need to move beyond symbolic partnerships towards more strategic and outcome-oriented engagements.

The study's findings provide actionable insights for academia, policymakers, and industry. Institutions must invest in dedicated infrastructure for industry relations, intellectual property, and incubation support. Industry partners, in turn, should be more proactive in curriculum development, mentorship, and innovation funding. Regulatory bodies like AICTE and UGC can act as catalysts by incentivizing high-impact collaborations and embedding industry experts into academic governance.

Bridging the academia-industry divide is not merely an operational challenge but a strategic imperative for India's knowledge economy. The model explored in this study can serve as a replicable framework for other Tier-2 cities aspiring to achieve sustainable educational and industrial development through mutually beneficial linkages.

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ANNEXURE I: RESEARCH QUESTIONNAIRE

The following structured questionnaire was used to collect primary data from stakeholders including students, faculty, institutional leaders, and industry HR representatives. The questionnaire was designed to capture perceptions, satisfaction levels, and experiences related to Institute-Industry Linkages (IIL) in Professional colleges across nashik District.

Section A: Demographic Information

1. Name (Optional): _____
2. Gender: [ ] Male [ ] Female [ ] Other
3. Age Group: [ ] <20 [ ] 21–30 [ ] 31–40 [ ] 41+

4. Stakeholder Type: [ ] Student [ ] Faculty [ ] Industry Representative [ ] Administrator
5. Institution/Organization: _____
6. Stream: [ ] Management [ ] Engineering [ ] Pharmacy [ ] Architecture

Section B: Awareness and Participation in IIL Activities

7. Are you aware of industry-institute collaboration activities in your institution? [ ] Yes [ ] No
8. Have you ever participated in any of the following? (Select all that apply):

   [ ] Guest Lectures [ ] Internships [ ] Industrial Visits [ ] Consultancy Projects [ ] Joint Research
9. Rate the frequency of these activities in your institution:

   [ ] Very Frequent [ ] Frequent [ ] Occasional [ ] Rare [ ] Never

Section C: Satisfaction Levels (1 = Very Dissatisfied, 5 = Very Satisfied)

10. Satisfaction with internship quality: [1] [2] [3] [4] [5]
11. Satisfaction with seminar and guest lecture usefulness: [1] [2] [3] [4] [5]
12. Satisfaction with faculty involvement in industry projects: [1] [2] [3] [4] [5]
13. Satisfaction with communication between institute and industry: [1] [2] [3] [4] [5]

Section D: Perceived Outcomes and Suggestions

14. Has the industry linkage improved your professional skills/research opportunities?

    [ ] Yes [ ] No
15. Please rate the impact of IIL on the following (1 = No Impact, 5 = High Impact):

    - Student Employability: [1] [2] [3] [4] [5]

    - Faculty Research Productivity: [1] [2] [3] [4] [5]

    - Institute Reputation: [1] [2] [3] [4] [5]
16. Suggestions for improving Institute-Industry Linkages: _____