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Original Article

Industry Expectations And Curriculum Development In Higher Education: Bridging The Gap Between Academic Learning And Workplace Requirements

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ABSTRACT

The changing nature of employment, technological advancement, digital transformation, and the emergence of Industry 4.0 have significantly altered the competencies expected from graduates. Higher education institutions are increasingly required to ensure that academic programmes provide not only disciplinary knowledge but also practical, digital, interpersonal, analytical, and entrepreneurial competencies. The present paper examines the conceptual relationship between industry expectations and curriculum development in higher education. The study is based on a systematic review and synthesis of selected studies published between 2018 and 2026, with particular attention to employability skills, industry–academia collaboration, experiential learning, work-integrated learning, Industry 4.0, and the Indian higher-education context. The review indicates that employers increasingly value communication, teamwork, problem-solving, adaptability, digital literacy, analytical ability, leadership, creativity, and practical exposure alongside subject-specific knowledge. However, a continuing mismatch is reported between competencies expected by employers and those developed through conventional academic programmes. The paper proposes an industry-responsive curriculum framework in which employer expectations are translated into curriculum objectives, learning outcomes, practical activities, assessment mechanisms, and continuous curriculum review. The paper also identifies research gaps concerning stakeholder integration, Commerce and Management education, regional evidence, post-NEP 2020 implementation, and assessment of industry-oriented competencies. The study concludes that curriculum development should be viewed as a continuous and collaborative process involving higher education institutions, industry, students, policymakers, and other stakeholders.

Keywords: Industry expectations, curriculum development, employability, higher education, skill gap, industry–academia collaboration, experiential learning, Industry 4.0, Commerce education.

INTRODUCTION

Higher education has traditionally been associated with the acquisition of disciplinary knowledge and academic qualifications. However, changes in technology, business models, employment patterns, and workplace practices have transformed the expectations placed on graduates. Employers increasingly seek individuals who can apply theoretical knowledge to practical situations, communicate effectively, work collaboratively, analyse information, use digital technologies, solve unfamiliar problems, and adapt to changing professional environments.

Consequently, the relevance of higher education cannot be assessed solely through examination performance or degree completion. The ability of graduates to transfer academic learning into workplace situations has become an important consideration in curriculum development.

Employability research has consistently emphasized that graduates require a combination of subject-specific knowledge and transferable competencies. Yorke and Knight (2006) argued that curriculum design has an important role in developing capabilities that enable graduates to respond effectively to employment and broader social requirements.

Similarly, Knight and Yorke (2004) highlighted the importance of integrating employability development

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into learning and curriculum rather than treating it as a separate activity.

Technological transformation has further intensified this requirement. Industry 4.0 has increased the importance of digital literacy, data-related competencies, artificial intelligence, automation, analytical thinking and adaptability. Research examining the relationship between Industry 4.0 and higher education suggests that educational institutions need to reconsider curriculum structures and learning approaches in response to changing workplace requirements (Yüceol, 2021; Miah et al., 2024).

The Indian higher-education system has also moved towards greater emphasis on multidisciplinary education, skill development, experiential learning, internships and industry interaction. The National Education Policy (NEP) 2020 provides an important policy context for such reforms by emphasizing holistic education, vocational exposure, practical learning, flexibility and employability (Ministry of Education, 2020).

Despite these developments, evidence continues to indicate the existence of a gap between academic preparation and workplace expectations. Employer and student perceptions do not always coincide, and conventional curricula may not adequately reflect rapidly changing occupational requirements. Mahajan et al. (2022), for example, found differences among employers, faculty and students regarding employability competencies. More recent Indian evidence also indicates continuing deficiencies in areas such as problem-solving, creativity, ICT proficiency and job-search competencies (Murari, 2026).

Therefore, there is a need to examine how industry expectations can be systematically incorporated into curriculum development. This issue is particularly relevant for Commerce and Management education, where technological developments such as FinTech, artificial intelligence, data analytics, digital marketing, e-commerce and digital payments are changing the nature of business employment.

2. Conceptual Background

2.1 Industry Expectations

Industry expectations refer to the knowledge, skills, competencies, attitudes and professional behaviours that employers consider necessary for effective performance in a particular occupational environment.

These expectations may be classified into several broad categories:

- Disciplinary knowledge – knowledge related to the graduate's academic field.
- Technical competencies – ability to perform job-specific tasks.
- Digital competencies – ability to use digital tools, platforms and emerging technologies.
- Analytical competencies – data interpretation, critical thinking and decision-making.
- Communication competencies – oral, written and interpersonal communication.
- Teamwork and leadership – ability to collaborate, coordinate and lead.
- Problem-solving and creativity – ability to address unfamiliar situations.
- Entrepreneurial competencies – opportunity identification, innovation and business planning.
- Adaptability – willingness and ability to learn and respond to change.
- Professional values – ethics, responsibility, discipline and integrity.

The literature indicates that employers increasingly value combinations of these competencies rather than isolated technical qualifications.

2.2 Curriculum Development

Curriculum development is a systematic process through which educational objectives, learning content, teaching methods, learning experiences and

assessment mechanisms are designed, implemented and reviewed.

A contemporary curriculum should therefore answer two interconnected questions:

What should students know? and

What should students be able to do with that knowledge?

This represents a movement from a predominantly knowledge-centred curriculum towards a competency- and outcome-oriented curriculum.

2.3 Relationship Between Industry Expectations and Curriculum

The relationship can be conceptualized as a continuous process:

Industry changes

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Identification of required competencies

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Curriculum objectives

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Course content and learning outcomes

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Experiential and practical learning

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Assessment of competencies

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Graduate employability and workplace readiness

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Industry feedback

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Curriculum revision

This indicates that industry input should not merely be considered during curriculum preparation. It should form part of a continuous curriculum-review mechanism.

3. Review of Literature

3.1 Employability and Curriculum Relevance

Osmani et al. (2019) examined graduate employability skills through a review of literature and job-market requirements. Their analysis identified communication, teamwork, planning, time management, self-motivation, leadership and problem-solving as important employability attributes. The study indicates that higher education must consider transferable competencies in addition to academic knowledge.

Sarin (2019) examined the skill gap between higher education and employability by comparing perceptions of students and HR professionals. The findings indicated differences between student perceptions and employer expectations. The study emphasized greater cooperation among educational institutions, students and employers.

Sebastian (2020) compared employability-skill perceptions among students, graduates and employers. The findings suggested that stakeholder groups do not always attach equal importance to particular competencies. Employers placed considerable emphasis on analytical ability, creativity and problem-solving. This provides support for involving multiple stakeholders in curriculum design.

3.2 Industry–Academia Alignment

Singh and Singh (2021) investigated employability skills and their relationship with placement outcomes by examining private engineering institutions and IT firms. Their findings indicated differences between institutional emphasis and employer expectations, supporting the need for stronger curriculum alignment with industry requirements.

Mahajan et al. (2022) developed an employability-skills framework using the perspectives of employers, faculty and students. The study identified multiple dimensions of employability and emphasized the importance of convergence among stakeholder groups. Digital competencies, business fundamentals and behavioural capabilities emerged as important areas.

These studies demonstrate that curriculum relevance cannot be determined from the perspective of educational institutions alone. Employers provide information about current workplace requirements, while faculty members contribute pedagogical and disciplinary expertise and students provide evidence concerning learning experiences and preparedness.

3.3 Industry 4.0 and Digital Competencies

Yüceol (2021) examined the implications of Industry 4.0 for higher education and argued that changes in technology require corresponding changes in educational programmes, teaching approaches and university–industry relationships.

Nithyanandam et al. (2022) demonstrated an industry-informed approach in which digitalisation projects were incorporated into university curricula. Their findings indicate that authentic industry projects can expose students to emerging technologies while connecting theoretical learning with practical applications.

Miah et al. (2024), through a systematic review of research concerning Industry 4.0 and workforce skills in South Asia, identified the increasing importance of digital, technical and social competencies. The findings reinforce the argument that higher education must prepare graduates for technology-enabled workplaces.

3.4 Work-Integrated and Experiential Learning

Dollinger and Brown (2019) examined different forms of work-integrated learning and emphasized the value of authentic workplace experiences. Their study demonstrates that industry interaction can take several forms, including placements, field visits, industry projects and curriculum partnerships.

Bae et al. (2022) examined the gap between industry expectations and academic preparation among civil engineering students. The study found that students developed employability through formal education as well as internships, extracurricular activities and professional experiences. The findings suggest that students may not always recognize how classroom activities contribute to workplace competencies.

Richardt et al. (2024) investigated graduate performance from an employer perspective and reported differences between workplace expectations and graduate performance in several areas. The authors emphasized the role of work-integrated learning and regular engagement between educational institutions and industry.

3.5 Indian Higher Education and NEP 2020

The Indian higher-education environment is undergoing significant curricular transformation following NEP 2020. The policy emphasizes multidisciplinary learning, flexibility, vocational education, internships, experiential learning, skill development and stronger connections between education and employment (Ministry of Education, 2020).

Gadre and Deoskar (2021) discussed the implications of Industry 4.0 and NEP 2020 for Indian higher education. Their work highlights the need to reconsider conventional approaches to curriculum design in light of technological and employment changes.

Murari (2026) provides more recent evidence from the Indian post-NEP context. The study identified continuing gaps in areas including problem-solving, creativity, ICT proficiency and job-search skills. Such findings indicate that policy-level emphasis on employability does not automatically guarantee curriculum–industry alignment.

4. Synthesis of Literature

The reviewed studies reveal several common patterns.

4.1 Increasing Importance of Transferable Skills

Employers increasingly expect graduates to possess communication, teamwork, problem-solving, leadership, creativity and adaptability in addition to technical knowledge.

4.2 Growing Importance of Digital Competence

Digital transformation has expanded the competency requirements of graduates. AI, analytics, automation, digital platforms and other technologies are increasingly relevant across occupational sectors.

4.3 Continuing Skill Gap

Several studies indicate a mismatch between competencies expected by employers and competencies developed through conventional academic programmes.

4.4 Importance of Experiential Learning

Internships, industry visits, live projects, simulations and work-integrated learning provide opportunities for students to apply theoretical knowledge.

4.5 Need for Stakeholder Participation

Curriculum development can become more responsive when employers, faculty members, students and other stakeholders participate in identifying competencies and evaluating curriculum relevance.

5. Research Gap

The literature identifies several areas requiring further investigation.

First, a considerable proportion of existing empirical research focuses on engineering, IT and technical education. Comparatively fewer studies examine Commerce and Management education, particularly in the context of rapidly emerging business technologies.

Second, many studies investigate either student perceptions or employer perceptions. There is comparatively less research combining employer, faculty and student perspectives within a single conceptual framework.

Third, identifying a skill gap is not sufficient. There is a need to examine how identified industry competencies can be translated into specific curriculum components, learning outcomes, practical activities and assessment mechanisms.

Fourth, although NEP 2020 emphasizes employability, experiential learning and industry interaction, empirical evidence concerning the effectiveness of post-NEP curriculum implementation remains relatively limited.

Finally, rapidly emerging competencies such as AI, FinTech, business analytics, digital marketing, e-commerce and digital payments require further investigation within Commerce and Management programmes.

6. Objectives of the Study

To identify the major competencies expected by industries from graduates.

To examine the extent to which existing higher-education curricula address industry expectations.

To identify the perceived gap between industry requirements and graduate competencies.

To examine the role of digital and emerging-technology skills in contemporary employability.

To propose an industry-responsive curriculum framework for higher education.

7. Case studies on Industry Expectations in Curriculum Development

Five Case Studies on Industry Expectations and Curriculum Development

Case Study 1:

Tata Consultancy Services (TCS) – Digital Skills and Employability

Background:

The IT industry is changing rapidly because of artificial intelligence, cloud computing, cybersecurity, data analytics, and automation. Employers therefore expect graduates to possess skills beyond traditional computer knowledge.

Industry Expectations:

- Programming and digital literacy
- Data analytics
- AI and emerging technologies
- Problem-solving
- Communication and teamwork
- Ability to learn new technologies
- Curriculum Response:

- Universities can incorporate:
- AI and machine learning
- Data analytics
- Cloud computing
- Cybersecurity
- Industry-based projects
- Coding and technology certifications

Learning:

The case demonstrates that curriculum development must be continuously updated according to technological changes rather than remaining focused only on traditional theoretical knowledge.

Discussion Question:

How can universities update technology-related courses quickly enough to match changing IT-industry requirements?

Case Study 2: Maruti Suzuki – Automobile Industry and Practical Learning

Background:

The automobile industry requires graduates and technicians who can combine theoretical knowledge with practical understanding of manufacturing, quality control, automation, and sustainability.

Industry Expectations:

- Knowledge of manufacturing processes
- Quality management
- Automation and robotics
- Problem-solving
- Workplace safety
- Teamwork
- Knowledge of electric vehicles
- Curriculum Response: Institutions can introduce:
- Industrial training
- Workshops and laboratory work
- Automobile manufacturing case studies
- EV technology modules
- Industry visits
- Internships and live projects
- Learning:

The case highlights the importance of experiential learning. Students understand workplace requirements more effectively when theoretical concepts are connected with real industrial situations.

Discussion Question:

Should industrial training be made compulsory for students pursuing technical and management programmes?

Case Study 3: HDFC Bank – Banking, FinTech and Digital Transformation

Background:

Banking has moved from traditional branch-based operations toward mobile banking, digital payments, artificial intelligence, cybersecurity and data-driven decision-making.

Industry Expectations:

- Banking and financial knowledge
- Digital banking skills
- Financial technology awareness
- Data interpretation
- Customer relationship management
- Cybersecurity awareness
- Communication skills
- Curriculum Response:
- Commerce and Management programmes can include:

- FinTech
- Digital banking
- UPI and digital payment systems
- Financial analytics
- Risk management
- Cybersecurity in banking
- Customer relationship management
- Practical banking simulations

Learning:

The case shows how industry transformation creates a need for curriculum transformation.

For Commerce students, this is particularly relevant because traditional subjects such as banking and finance increasingly intersect with technology and data analytics.

Discussion Question:

Does a traditional banking curriculum adequately prepare students for employment in digital banking and FinTech?

Case Study 4: Amazon – E-commerce, Analytics and Supply Chain Skills

Background:

The growth of e-commerce has changed the requirements of marketing, retail, logistics and supply-chain management. Employers increasingly require employees who can understand both business concepts and technology.

Industry Expectations:

- E-commerce knowledge
- Digital marketing
- Supply-chain management
- Data analytics
- Customer behaviour analysis
- Inventory management
- Communication and problem-solving
- Curriculum Response: Business and Commerce curricula can incorporate:
- E-commerce management
- Digital marketing
- Supply-chain analytics
- Consumer analytics
- Business intelligence
- Online retail strategy
- Case-based learning
- Practical Activity:
- Students can be given a project:

"Develop an e-commerce business plan for a small Indian business."

Students identify a product, target customers, pricing strategy, digital marketing channels, logistics requirements and expected revenue.

Learning:

This demonstrates how project-based learning can convert theoretical business knowledge into practical competencies.

Case Study 5: Start-up Ecosystem – Entrepreneurship and Innovation

Background:

The growth of India's start-up ecosystem has increased demand for graduates who can identify business opportunities, innovate, use technology and create new business models.

Industry Expectations:

- Creativity
- Innovation
- Entrepreneurial thinking

- Business-model development
- Financial literacy
- Digital marketing
- Leadership
- Risk-taking and decision-making
- Curriculum Response:
- Institutions can introduce:
- Entrepreneurship development
- Start-up management
- Design thinking
- Business-plan competitions
- Incubation programmes
- Innovation projects
- Interaction with entrepreneurs
- Pitch presentations

Practical Activity:

Students can be asked to develop:

Problem → Business Idea → Business Model → Market Research → Financial Plan → Marketing Strategy → Pitch

Learning:

The case demonstrates that curriculum development should prepare students not only to seek employment but also to create employment.

The five cases establish a common conceptual relationship:

Changing Industry Requirements

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Identification of Required Skills & Competencies

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Curriculum Revision

↓

Practical/Experiential Learning

↓

Skill Development

↓

Graduate Employability & Workplace Readiness

↓

Industry Feedback

↺ Continuous Curriculum Improvement

Key conclusion: Curriculum should be treated as a dynamic and industry-responsive system, while maintaining a strong foundation of academic knowledge. The objective is not simply to make students job-ready for today's market, but to develop adaptability and lifelong-learning capabilities so they can respond to future changes as well.

Result:

The curriculum moves from a predominantly theory-based model toward an industry-integrated model.

8.Research implication

Industry expectations act as an important bridge between academic learning and workplace requirements. However, effective curriculum development requires continuous industry feedback, faculty upskilling, practical exposure, adequate infrastructure, and periodic curriculum revision.

9. Suggestions and Recommendations

Some major suggestions and recommendations for industries and Educational institutions are as follow:

- **Strengthen Industry–Academia Collaboration**

Universities and colleges should establish regular interaction with industry representatives to understand changing skill requirements.

- **Introduce Regular Curriculum Revision**

Curriculum should be reviewed periodically to incorporate emerging technologies, business practices, and employment trends.

- **Increase Practical and Experiential Learning**

Internships, live projects, case studies, industrial visits, simulations, and field-based assignments should form an integral part of the curriculum.

- **Develop Industry-Relevant Digital Skills**

Commerce and Management students should receive practical training in AI, data analytics, Excel, ERP, FinTech, digital marketing, e-commerce, and other relevant technologies.

- **Improve Soft Skills and Employability Skills**

Communication, teamwork, leadership, problem-solving, critical thinking, negotiation, and presentation skills should be embedded across courses.

- **Regular Faculty Development**

Faculty members should receive opportunities for industry exposure, internships, workshops, certifications, and training in emerging technologies.

- **Establish Industry Advisory Boards**

Institutions can create advisory committees involving employers, alumni, entrepreneurs, professional experts, and faculty to provide continuous curriculum feedback.

- **Promote Entrepreneurship and Innovation**

Curriculum should provide opportunities for students to develop business ideas, prepare business plans, participate in startup competitions, and interact with entrepreneurs.

- **Strengthen Internship and Placement Linkages**

Colleges should develop structured partnerships with companies to provide meaningful internships and workplace exposure rather than only short-term observational visits.

- **Adopt Outcome-Based Education**

Curriculum should clearly define what students are expected to know, do, and demonstrate after completing a course.

- **Use Industry Feedback as a Continuous Process**

Feedback should be collected from employers, alumni, interns, recruiters, and students and used systematically for curriculum improvement.

- **Maintain Balance Between Theory and Practice**

Industry orientation should not eliminate fundamental academic knowledge. Curriculum should combine conceptual understanding, practical skills, ethical awareness, and holistic development.

CONCLUSION

The review establishes that the relationship between industry expectations and curriculum development has become increasingly important in higher education. Contemporary employers seek graduates who can combine disciplinary knowledge with digital capability, analytical thinking, communication, teamwork, creativity, adaptability and practical competence.

The literature also indicates that a gap continues to exist between academic preparation and workplace expectations. This gap cannot be addressed solely by adding isolated skill-development courses. Instead, employability and industry relevance should be embedded across curriculum objectives, course content, teaching methods, practical activities and assessment.

Industry participation can strengthen this process by providing information about changing occupational requirements and evaluating whether graduates possess the competencies required in practice. At the same time, higher education institutions must maintain academic depth and develop transferable capabilities rather than simply responding to short-term labour-market requirements.

For Commerce and Management education, the issue is particularly significant because technological developments are transforming traditional business functions. Competencies related to AI, FinTech, analytics, digital marketing, e-commerce, entrepreneurship and digital business are becoming increasingly relevant.

Therefore, curriculum development should be viewed as a continuous, evidence-based and collaborative process involving academia, industry, students and policymakers. An effective industry-responsive curriculum should prepare graduates not only for existing jobs but also for continued learning and adaptation as occupational requirements evolve.

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