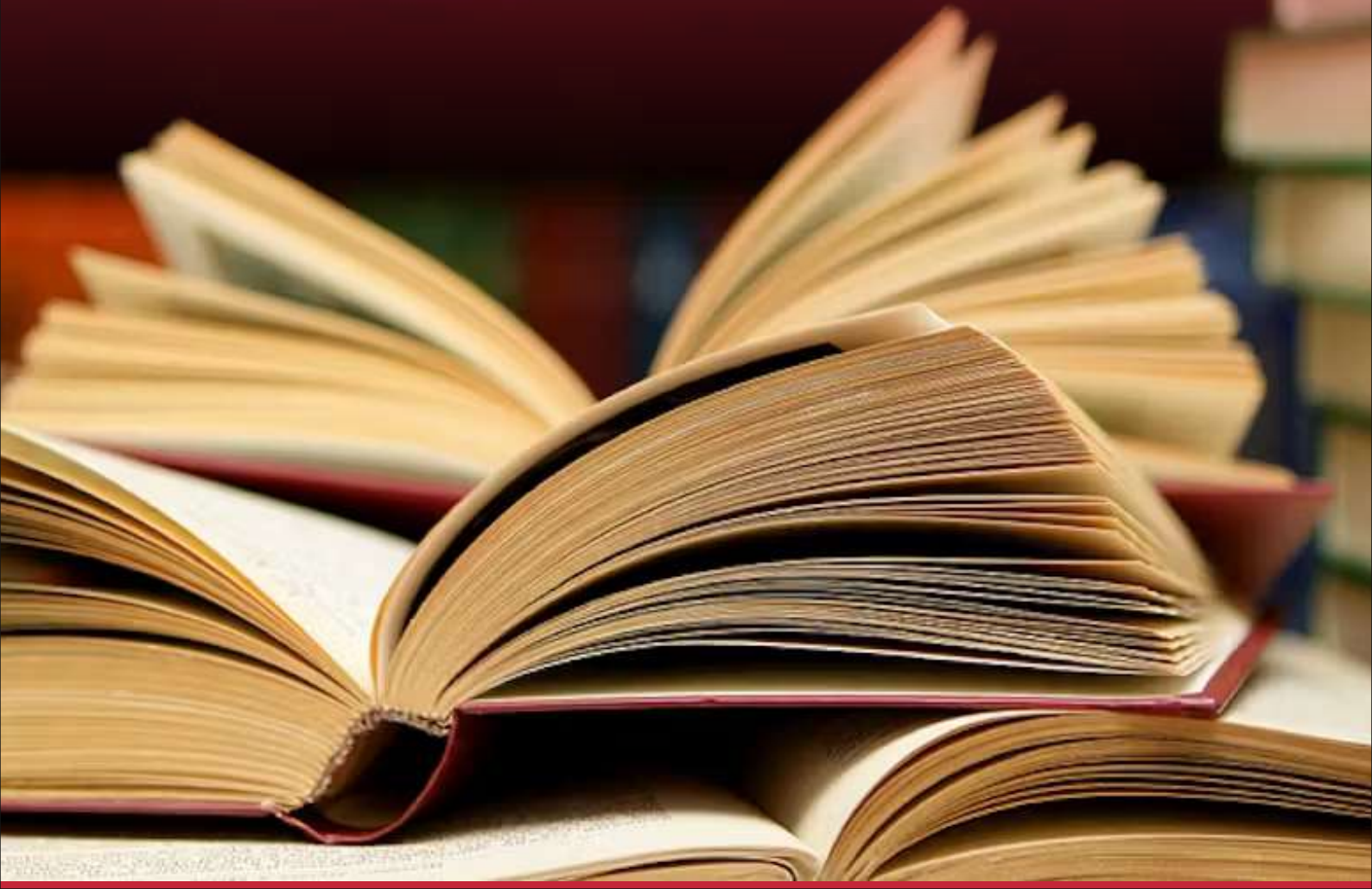




EDUCATION, SKILLING AND EMPLOYMENT



WHERE ARE WE?

Strengths

- Good Education Access Parameters and School/University/ITI Infrastructure
- Digital Literacy and Internet Penetration
- Excellent MSME Landscape Ensuring Robust Employment Opportunities
- Well-Provisioned Budget and Schemes

Areas of Improvement

- Low Learning Levels
- Higher Dropout Rates at Secondary Level
- Lack of Teacher capacity building Provisions for Integrating New Teaching Methodologies
- Low Female Workforce Participation Rates and Business Ownership
- Youth Employability
- Lack of Provisions of Social Security of Gig and Informal Sector Workers

Opportunities

- Industry Integration with Universities and Skilling System
- Emerging New Future Work and Skill Areas
- Emerging AI and Green Tech Hubs in the State
- Ease-of-Doing Business Improvements

Threats

- Technology Changing the Education Delivery Model
- MSME Modernisation and Transformation
- Unpredictable Global Environment.
- Prevailing Gender Norms

WHERE DO WE WANT TO GO?

VISION



By 2047, to achieve a trillion dollar plus GSDP, Haryana will reorient its education and employment landscape. This includes fostering Future-Focused Education and Skills from early learning, emphasising holistic development, emotional intelligence, critical thinking, creativity, and gender sensitisation. This strategic shift will ensure dignified and secure work for our youth, women, gig and informal sector workers.

MISSION



Transform into a knowledge economy based on a comprehensive **Future-Focused Education and Skills** framework built on three foundational pillars: **Redesign, Reimagine, and Reinvest (RRR)**. This framework will accelerate human capital development while addressing critical gaps to position Haryana as a global exemplar in education-industry integration by 2047.

GOALS

- 100% learning achievements and enrolment
- 45% Female Labour Force Participation Rate (15 years and above)
- 100% Female Literacy Rate
- 95% Employability Rate
- Industry-Institution Collab Index - 85
- 90% MSME International Standards Certification
- 90% MSMEs implementing green processes

A future where the state is a model for educational excellence in India by embracing universal quality education and implementing forward-thinking innovation policies that create sustainable job markets.

The state becomes a hub for AI and green economy that generates diverse employment opportunities across traditional and emerging sectors.

HOW WILL WE REACH THERE?

Uniformity of Quality Education: Upgrade infrastructure, ensure accessibility, inclusivity, enhance teacher recruitment, teacher performance, and in-service training, deploy AI-enabled personalised learning, and align curriculum with global standards while promoting inclusive, data- informed education systems from primary to secondary level, and promote 21st century skills among students as per National Education Policy (NEP) 2020.

Changing Role of Teachers and Skill Providers: Invest in teacher upskilling, promote inclusive hiring, empower innovation through Centres of Excellence, and integrate school education with lifelong learning to adapt teaching roles to evolving education and skilling needs.

Skills and Jobs Mismatch: Establish industry-aligned training through data-driven planning, modernised infrastructure, inclusive skilling, and real-time labour market analysis, while forming multi-stakeholder task forces to bridge current and future skill gaps till 2047.

Entrepreneurship and Employment Challenges: Digitise business processes, identify high-potential sectors, strengthen rural incubators, support marginalised entrepreneurs, and create district innovation zones with targeted funding and mentorship to build an inclusive entrepreneurial ecosystem, and education reforms accordingly.

MSME Modernisation and Green Transition: Support MSMEs in adopting global and green standards through audits, subsidies, certifications, and shared eco-infrastructure while promoting carbon-neutral supply chains and sustainability-focused skill development, and to support such changes through advancement of research at Skill, Vocational and Higher Education Institutions.

Social Security for Gig and Unorganised Workers: Create inclusive social protection through digital registration, policy reforms, targeted benefits, tech-enabled service delivery, and explore universal basic income, ensuring long-term security and dignity for informal and gig workers.

3 BIG ACTIONS

01 Teach-to-Transform 2.0

02 Future Skills Programme

03 Project Infinity

INTRODUCTION

Haryana has established a strong educational foundation with 23,494 schools (private and government-managed) serving 5.7 million students and 59 universities supporting higher education aspirations.¹ The state has made notable progress in infrastructure development and enrolment rates, demonstrating a commitment to educational advancement. Significant investments in school facilities and digital infrastructure have expanded access to learning opportunities across the state. Haryana is at the forefront of implementing NEP-2020, focusing on school education reforms to boost quality, equity, and future readiness. The state's holistic strategy integrates physical literacy and sports. Moreover, it leverages its rich cultural heritage to instill core values, preserve traditional skills, and foster local entrepreneurship. The state's formidable sporting culture consistently produces a remarkable number of athletes excelling across disciplines, from wrestling and boxing to athletics and shooting, bringing immense laurels to both Haryana and the nation. This dedication to physical excellence contributes to a resilient and capable youth population, notably reflected in the selection of 2,893 Agniveers from the state in 2023-24². There remains significant potential to further leverage sports as a core element of education and skill development across all levels, fostering talent and providing structured pathways for these aspiring sportsperson.

Despite these achievements, Haryana faces substantial challenges, including persistent skill-job mismatches that leave graduates unprepared for industry demands. Stark gender disparities in workforce participation, uneven quality of education between urban and rural regions, and inadequate social security frameworks for the growing gig economy and unorganised sector workers. MSME adaptation to emerging technologies remains a major issue to be tackled. Addressing these challenges is critical to ensuring inclusive growth and building a resilient, future-ready workforce in Haryana.

WHERE ARE WE?

Current Status

School Education

a. Education

- Total schools: 23,494³
- Student enrolment (pre-primary to class 12): 57.69 lakhs⁴
- Pupil-Teacher Ratio: Foundational (11), Preparatory (13), Middle (17), Secondary (15) (UDISE 2024-25)
- GER (2023-24): Foundational (Pre-Primary to Class II) - 45.4, Preparatory (Class III to Class V) - 96.5, Middle (Class VI to Class VIII) - 102.5, Secondary (Class IX to XII) - 81 (UDISE 2024-25)
- Dropout rates at secondary level: 4.9% (2023-24)⁵

b. Higher Education

- Universities: 59⁶
- Colleges: 1209⁷
- GER in higher education: Increased from 27.8 (2012-13)⁸ to 33.3 (2021-22)⁹

Infrastructure & Inclusion

- Schools with functional Children with Special Needs (CwSN) friendly toilets (All Management): 51.6%¹⁰

- Schools with ramps for CwSN: 75.2%¹¹
- Schools with internet facilities: 78.9%¹²
- Rural literacy: 81.3% (compared to urban: 90.5%)¹³
- Female rural literacy: 76.7% (compared to male rural: 90.6%)¹⁴

Skilling¹⁵

a. Training Infrastructure

- Government ITIs: 152 co-ed, 36 for women
- Government-aided ITIs: 7
- Private ITIs: 195

Employment

a. Employment Indicators

- Labour Force Participation Rate for age group 15 years and above: Males (72.7%), Females (24.2%)¹⁶
- Unemployment Rate (15 years and above): Rural (3.1%), Urban (4.7%)¹⁷
- Youth employability: 68% according to India Skills Report 2025¹⁸

b. Entrepreneurship Ecosystem

- Ranked 5th in Export Preparedness Index 2022¹⁹
- Classified as "Aspiring Leaders" in States' Startup Ranking 2022²⁰

c. MSME Landscape²¹

- Approximately 18.15 lakh MSMEs operating in Haryana
- Male-owned MSMEs: 8.3 lakhs; Female-owned: 0.98 lakhs

FUTURES TRIANGLE (*Refer to page number 28 for an in-depth overview of the Futures Triangle.)

The Futures Triangle analysis reveals the complex interplay of forces shaping Haryana's educational and employment landscape. The "Weights of the Past" include both foundational policies like the Right to Education Act and persistent challenges such as centralised management and insufficient skill development. "Pushes of the Present" highlights current drivers, including digital connectivity, vocational education initiatives, and emerging technological disruptions that are causing skills-job mismatches. "Pulls of the Future" encompass forward-looking forces such as the implementation of the NEP, green job opportunities, and AI-driven education platforms, alongside concerns about automation-related job displacement. This analysis provides a framework for understanding Haryana's trajectory in education, skilling, and employment sectors.

Pushes of the Present

Positive

Haryana's **NIPUN Mission** demonstrates the state's capacity to implement scalable, data-driven educational reforms that achieve international recognition and measurable improvements in foundational learning outcomes.

Negative

Rapid **technological advancements** are increasing the skills and job mismatch, posing challenges for the workforce.

Positive

New vocational courses, including tourism, have been introduced in 1,400 schools to align skill development with industry demands.

Focus on **quality infrastructure** in government schools to enhance the learning environment and educational outcomes.

Leveraging Haryana's formidable **sporting culture and achievements** to foster holistic youth development, instil discipline, and create diverse career pathways.

Schemes like **Make in India, Startup India and Stand-up India** encourage youth entrepreneurship and generate employment opportunities.

Availability, accessibility, and affordability of **smartphones** and the internet facilitate **digital literacy and connectivity**.

Promotion of **overseas employment** opportunities by the government, widening global prospects.

A new educational framework has been implemented to promote 21st century skills and personalised learning through initiatives like e-Adhigam, a tablet-based learning programme, along with new clubs and the SACH accreditation framework for quality assurance.

A new MIS [Enterprise Resource Planning System (ERP system)] has been implemented to streamline administrative tasks through online workflows, including a paperless portal for private school permissions and automated teacher benefits.

There is a strong focus on continuous professional development to help teachers adopt competency-based learning methods.

Negative

Prevailing **gender norms** discourage women from participating as gig workers, limiting their economic opportunities.

Income inequality persists, even among those with similar skill sets, undermining social cohesion and economic stability.

Lack of a competency-based learning mindset among key stakeholders, as mentioned in NEP 2020.

Reluctance towards entrepreneurship and private sector jobs, with a strong preference for public sector employment, limits risk-taking and stifles private enterprise growth.

Quantitative research output is limited to premier institutes and universities of the country and research funding and industry collaboration is very limited.

Positive

Initiatives were expanded to provide free coaching for competitive exams, including the Super-100 scheme for IIT-JEE/NEET aspirants, Mission Buniyaad for National Talent Search Examination (NTSE) and Kishore Vaigyanik Protsahan Yojana (KVPY) coaching, and a new programme for NDA aspirants.

Student welfare programmes have been introduced, including the Chhatra Parivahan Suraksha Yojana for safe transport, and the SEHAT programme, which provides healthcare and milk-protein bars, along with free sanitary napkins for girl students.

Pulls of the Future

Positive

Effective NEP implementation requires strong political will to emphasise competency- and outcome-based quality education and skill development.

Technological **advancements in e-learning platforms** and AI-driven education enhance the accessibility and effectiveness of learning.

Adoption of **green technology and infrastructure** promotes eco-friendly practices and create new employment opportunities.

Emerging **opportunities in green jobs** and environmental courses directly align with global sustainability trends.

Focus on social redesigning and process redesigning of MSMEs for adapting new technologies fosters innovation and competitiveness.

Adoption of education system which focuses on **critical thinking, problem solving, and application-based learning** to encourage creativity, curiosity and collaboration.

Negative

Concerns regarding AI and automation reducing employment opportunities necessitate re-skilling and up-skilling efforts

Market competitiveness and access to green markets may pose challenges for **smaller businesses** and startups.

Climate-induced migration from traditional occupations to gig economy roles may exacerbate social and economic disparities.

Resistance to the adaptation of new technologies and processes may hinder progress and innovation in various sectors.

The curriculum and pedagogy currently lack alignment with the needs of 21st century learners and the latest technological disruptions.

Weights of the Past

Positive

Implementation of RTE in 2009 ensures access to education for all children.

Efforts to **improve infrastructure in schools**, such as building toilets and drinking water facilities, enhance the learning environment.

The Online Teacher Transfer Policy circumvents the procedural delays and brings in transparency.

The introduction of the **dual system of training** (Industrial Training Institutes - ITIs) provides vocational education opportunities.

Negative

Less emphasis on teacher recruitment, incentive-linked promotion, and training and skill development, affecting the quality of education imparted.

Centralisation of power in the management of government schools leads to programmatic hurdles and inefficiencies.

Limited access to disadvantaged groups in education and employment opportunities perpetuates social inequalities.

Insufficient emphasis on skill development leads to a gap between industry demands and available skills.

Achieving last-mile delivery for schemes requires enhancing accountability mechanisms throughout the governance structure.

Optimising the time commitments of government officials from judicial disputes is essential for accelerating programme implementation.

Traditional exam-oriented and theory-focused rote learning

WHERE DO WE WANT TO GO?

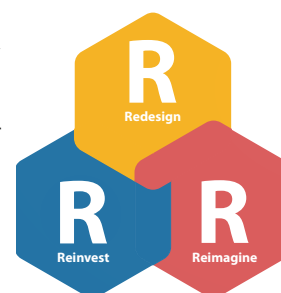
VISION 2047

By 2047, toward achieving a GSDP of trillion dollar plus, Haryana will reorient the current education and employment landscape to prepare the state with Future-Focused Education and Skills, ensuring youth, women, and gig workers enjoy dignified and secure work. Haryana will position itself as a globally competitive knowledge and green economy hub by redesigning the existing models to seamlessly integrate quality education with industry needs, fostering innovation and entrepreneurship.

- **Educational Excellence without Boundaries:** Ensure every Haryanvi citizen accesses world-class education regardless of geography, gender, or socioeconomic status, unleashing human potential at an unprecedented scale.
- **Redefined Learning Facilitation:** Revolutionise teaching from knowledge transmission to inspirational facilitation, nurturing critical thinkers, creators and digital pioneers who shape tomorrow's world.
- **Education-Industry Synergy:** Pioneer a seamless ecosystem where education and industry converge, equipping youth with cutting-edge skills for emerging technologies and green economy leadership.
- **Entrepreneurial Renaissance:** Create India's most vibrant entrepreneurial landscape where innovation thrives through streamlined regulations, accessible financing, and targeted mentorship.
- **MSME Global Leadership:** Transform MSMEs into globally competitive, technology-driven, sustainable enterprises that define new standards of excellence and environmental stewardship.
- **Dignified Work for All:** Pioneer comprehensive social security frameworks ensuring every worker—including those in emerging models—enjoy financial protection, healthcare access, and retirement dignity.
- **Achieve Higher Education Excellence through Targeted Ranking Success:** Set a clear goal for Haryana universities to significantly improve their standing, specifically targeting a minimum of three institutions in the top ranks of the National Institutional Ranking Framework (NIRF) and securing recognition for multiple institutions in prestigious global evaluations like the QS World University Rankings.

STRATEGIC MISSION*: Future-Focused Education and Skills - The RRR Approach

Haryana's transformation into a knowledge economy requires a comprehensive education and workforce strategy built on three foundational pillars: **Redesign, Reimagine, and Reinvest (RRR)**. This framework will accelerate human capital development while addressing critical gaps to position Haryana as a global exemplar in education-industry integration by 2047.



1. REDESIGN: Cultivating Critical Thinking and Practical Skills

The **Redesign** pillar emphasises developing next-generation capabilities through transformed pedagogical approaches and experiential learning methods.

2. REIMAGINE: Transforming Access and Quality for the Future Workforce

The **Reimagine** pillar aligns education with future job markets through technology integration and industry-led training models. By implementing specialised green skill programmes across all secondary schools statewide and expanding the network of sector-specific Centres of Excellence, Haryana will significantly boost Pradhan Mantri Kaushal Vikas Yojana (PMKVY) placement rates within this decade, creating a globally competitive workforce prepared for emerging technological and environmental challenges.

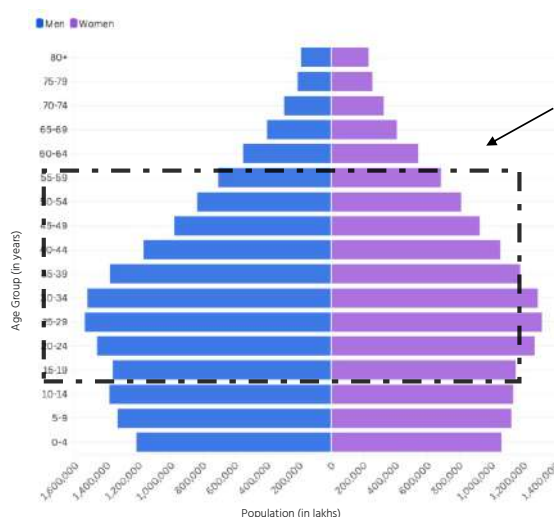
3. REINVEST: Building Infrastructure for Inclusive Growth

The **Reinvest** pillar prioritises strategic investment in educational infrastructure to ensure equitable access across

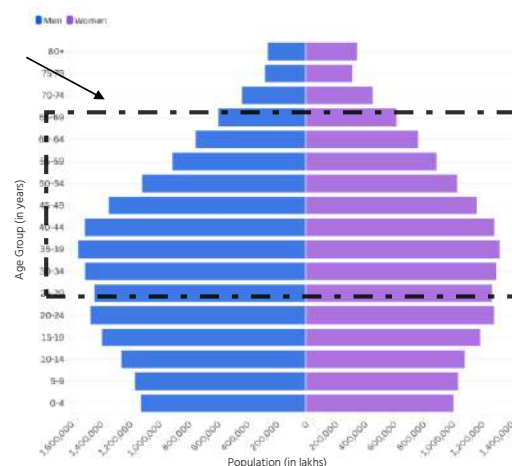
*Aligned Departments: Primary, Secondary, Higher and Technical Education, Skill Development, MSME, Industries, Science and Technology, Employment, Labour, Welfare of SCs/BCs, Social Justice & Empowerment

all demographics and regions. By achieving 100% digital connectivity in schools by 2047, implementing a hub and spoke model at a 1:4 ratio (1 hub school connected to 4 satellite schools), and ensuring complete accessibility for CwSN, Haryana will bridge the rural-urban education divide (current rural literacy: 71.42% vs. urban: 83.14%) and create inclusive learning environments that maximise human potential development throughout the state.²²

STRATEGIC GROWTH ACCELERATORS : Working age population



Graph 10: Haryana Population Projection 2026
(Source: Census of India 2011)



Graph 11: Haryana Population Projection 2036
(Source: Census of India 2011)

GOALS

Indicator	Baseline	Baseline Source	Target 2030	Target 2036	Target 2047	Benchmarks
Percentage of students in grades 3, 5 and 8 achieving at least minimum proficiency in learning outcomes	Reading Proficiency (Grade 2 level): Class 3 - 32.1% Class 5 - 53.9% Class 8 - 76.6% Arithmetic Class 3 - 33.1% (Subtraction) Class 5 - 29.4% (Division) Class 8 - 43.1% (Division)	ASER 2024	> 90%	> 91%	> 95%	SDG 4.1: Universal quality education with relevant outcomes by 2030

Indicator	Baseline	Baseline Source	Target 2030	Target 2036	Target 2047	Benchmarks
Student Teacher Ratio	22:1	U-DISE+ 2024-25	18:1	15:1	12:1	OECD average (15:1); Finland's best practice (10 12:1)
Female Literacy Rate	65.94 (2011)	(2011 Census of India)	80%	87%	100%	SDG Target 4.6; Kerala's model (96% literacy)
Digital Literacy Rate	38.2%	Ministry of Electronics and IT (MeitY)	80%	86%	98%	National Digital Literacy Mission; Estonia's benchmark (96%)
Female Labour Force Participation (15 years and above)	24.2	PLFS 2023-24	32%	37%	45%	Based on Haryana's priority sectors growth [National Skill Development Corporation (NSDC Report)]
Employability Rate	68%	India Skills Report 2025	80%	85%	95%	Based on Haryana's priority sectors growth (NSDC Report)
Youth Unemployment Rate (15-29 years)	10.7%	PLFS 2023-24, Ministry of Statistics and Programme Implementation	7%	6%	4%	Haryana Skill Development Mission targets
Industry-Academia Active Partnerships (Per 1,00,000 Students)	12	NSDC Haryana Skill Gap Report baseline metrics	25	34	50	NASSCOM's doubling recommendation; benchmarked against Germany, South Korea, Switzerland

Indicator	Baseline	Baseline Source	Target 2030	Target 2036	Target 2047	Benchmarks
Industry-Institution Collaboration Index	31.2	NITI Aayog Skill Development Index	60	69	85	NITI Aayog Vision aligned with South Korea's industry-academy model
Gross Enrollment Ratio in higher education	33.3 (2021-22)	All India Survey on Higher Education (AISHE) 2021-22 Report, Ministry of Education	38.6	42.6	> 50	Benchmarked against higher education GER of leading states
Total number of patents granted in State	168	-	2,000	3,500	5,000	Tamil Nadu and Maharashtra are the leading states in terms of filing for patents in India
Percentage of Universities' patents transferred for commercialisation	0	-	≥ 2%	≥ 5%	≥ 7%	Benchmarked against the need to establish an aspirational growth trajectory for a localised programme to align with the national vision
Percentage of medium and large firms collaborating with universities or research institutions	0	-	5.2%	10.42%	≥ 20%	Benchmarked against leading states such as Karnataka, Maharashtra, Telangana and Tamil Nadu

Indicator	Baseline	Baseline Source	Target 2030	Target 2036	Target 2047	Benchmarks
No. of higher educational institutions (overall) in top 150 NIRF ranking	0	NIRF Ranking, Government of India	6	8	10	Tamil Nadu is home to 18 of NIRF 2024's top 100 institutions, the most of any Indian state
QS World University Rankings 2026	0	QS World University Rankings 2026	1	3	5	Maharashtra has a total of 10 universities listed in the QS World University Rankings 2026
No. of foreign students enrolled in higher education	2,415	Department of Higher Education, Government of Haryana	2,925	5,422	10,000	Benchmarked against Karnataka with highest number of foreign students enrolled in higher education as per the AISHE 2021–22 Report, with a total of 6,004 international students enrolled during that academic year
Model Sanskriti College: Autonomous Institution as per NEP 2020	-	-	20	50	100	

POSSIBLE FUTURE SCENARIOS

BUSINESS AS USUAL FUTURE

- Centralised educational governance structures delay the implementation of critical reforms, hindering progress.
- Existing educational disparities further deepen socioeconomic divides, particularly in underdeveloped regions.
- The widening skills-industry gap continues to stifle innovation and economic growth across sectors.
- Haryana continues its current trajectory with persistent gender inequalities limiting women's economic participation.
- Lack of accountability will inhibit the reach of educational outcomes to the last mile.

NEGATIVE DISRUPTIVE FUTURE (RISKS)

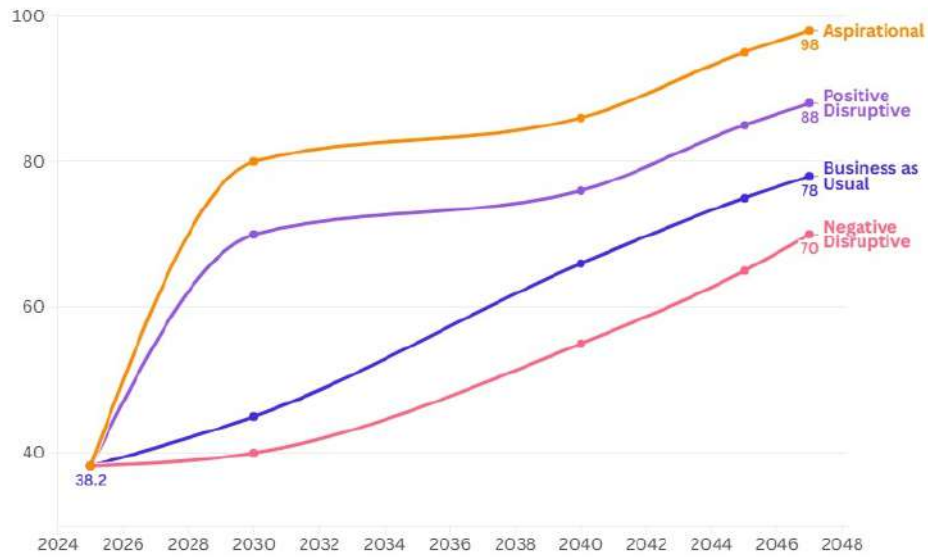
- Continued inadequate teacher accountability and development systems would fundamentally undermine educational quality and outcomes.
- Increasing automation could significantly widen employment gaps, potentially causing economic instability.
- Rapid AI adoption might displace significant portions of the workforce without adequate transition pathways.
- Small businesses could face growing exclusion from environmentally-conscious markets without adaptation support.
- Resistance to technological adoption would severely limit modernisation efforts across educational institutions.

POSITIVE DISRUPTIVE FUTURE (OPPORTUNITIES)

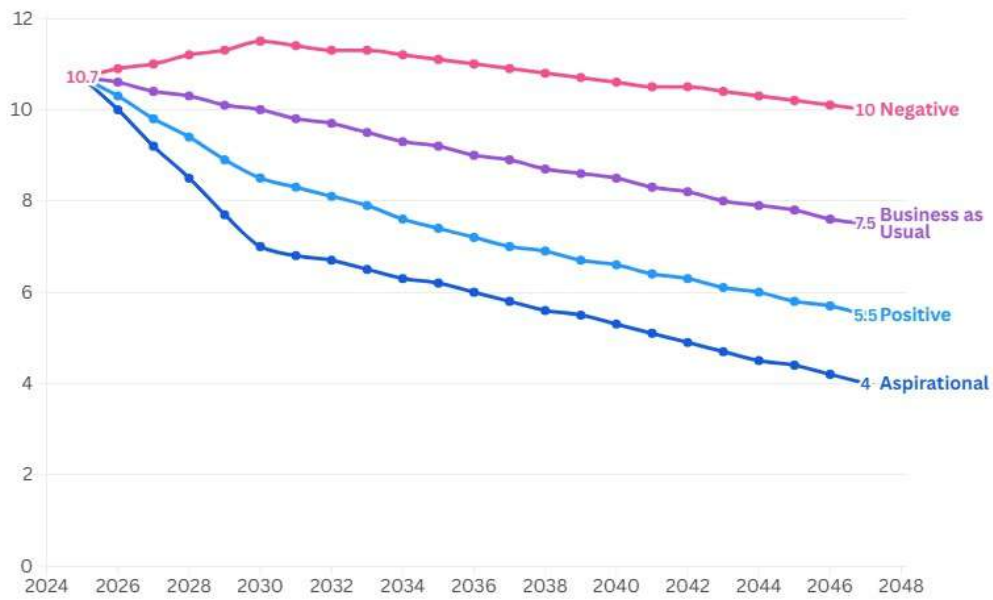
- Haryana will significantly enhance learning outcomes and educational effectiveness.
- By grade 3, 100% of students are able to read grade-appropriate text in alignment with National Curriculum Framework - Foundational Stage (NCF-FS) guidelines
- Comprehensive, inclusive development policies would create substantial educational equity across all regions of the state.
- Haryana would embrace transformative digital literacy initiatives that revolutionise educational access across rural areas.
- Strategic focus on industry-aligned vocational training would effectively bridge employment gaps and enhance workforce readiness.

ASPIRATIONAL FUTURE

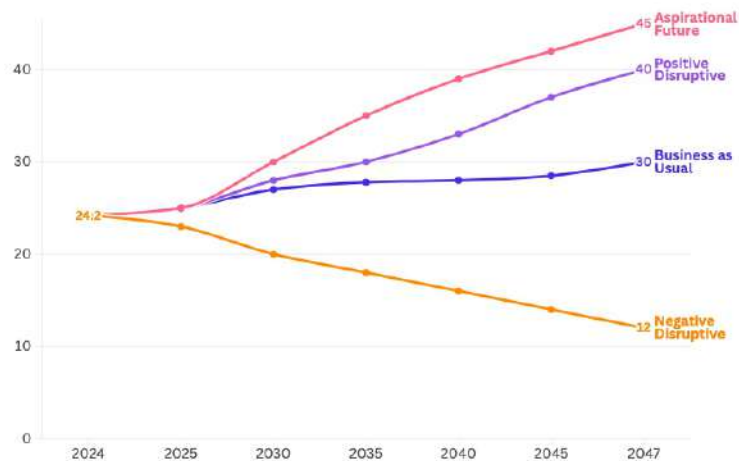
- Universal quality education would power inclusive prosperity, with Haryana becoming a model for educational excellence in India.
- In alignment with NEP-2020, Haryana will serve as a model to inculcate skill-based education to school students that makes them future-ready by the establishment of centres of excellence catering to local traditional expertise.
- Looking to the future, Haryana aspires to implement forward-thinking innovation policies that create sustainable job markets.
- The state envisions a green economy that generates diverse employment opportunities across traditional and emerging sectors.
- Haryana aims to foster technology-enabled MSMEs that drive competitive growth and contribute to economic resilience.
- Universal quality education would power inclusive prosperity, with Haryana becoming a model for educational excellence in India.



Graph 12 (a): Digital Literacy Rate (%)



Graph 12 (b): Youth Unemployment Rate (15-29 years) (%)



Graph 12 (c): Female Labour Force Participation Rate (%)

HOW WILL WE REACH THERE?

To realise our future vision, we must confront significant challenges that could impede our progress. Failure to address these issues could undermine our efforts to establish Haryana as a leading hub for skilled workforce development and economic prosperity. Overcoming hurdles related to skills and job alignment, fostering entrepreneurship, and ensuring educational equality is paramount. Moreover, facilitating MSMEs' transition to new technologies, redefining the role of educators, and enhancing social security for gig workers are essential endeavours.

An equally important step is synergising the efforts of stakeholders by mapping clusters of like-minded entrepreneurial groups across villages, developing new cooperatives, polishing skill sets, infusing business knowledge, and inviting companies to partner with these young Self-Help Groups (SHGs) and cooperatives. This coordinated, multi-departmental effort will help scale these initiatives and nurture self-reliance at the grassroots level.

By addressing these challenges head-on, we can lay the foundation for a vibrant, inclusive, and sustainable future for all residents of Haryana.

Issues

- 🔍 Uniformity of Quality Education
- 🔍 Changing Role of Teachers and Skill Providers
- 🔍 Skills and Jobs Mismatch
- 🔍 Challenges in Entrepreneurship and Employment
- 🔍 Adapting MSMEs to New Technologies, Global Standards, and Green Economy to create more employment opportunities.
- 🔍 Social Security for Gig and Unorganised Workers

ISSUE 1: UNIFORMITY OF QUALITY EDUCATION

Haryana has established a substantial educational infrastructure comprising 23,494 schools serving over 5.3 million students²³. The state maintains a favourable pupil-teacher ratio of 22:1, reflecting its commitment²⁴ to creating effective learning environments across all educational stages. While these encouraging statistics confirm strong progress, they also highlight valuable opportunities to address disparities and work toward achieving uniform quality education across the state.

While Haryana has achieved commendable GER Foundational (Pre-Primary to Class II) - 45.4, Preparatory (Class III to Class V) - 96.5, Middle (Class VI to Class VIII) - 102.5, Secondary (Class IX to XII) - 81, indicating significant student attrition in the transition to secondary education. The dropout rate of 4.9% at the secondary level in 2024-25 underscores persistent challenges in student retention.²⁵ According to the Annual Status of Education Report (ASER) 2023-24, learning outcomes in Haryana show substantial variation across districts, with rural students consistently underperforming compared to their urban counterparts, particularly in mathematics and reading comprehension.

The state has initiated promising interventions, including the introduction of vocational courses aligned with industry demands in 1,293 government secondary and higher secondary schools.²⁶ However, research by the National Council of Educational Research and Training (NCERT) indicates that implementation quality varies significantly, with better-resourced schools showing more effective integration of vocational components. Rural-urban educational divides persist, with rural literacy at 71.42% compared to 83.14% in urban areas. This disparity is more pronounced among females, with rural female literacy at just 76.7% compared to 90.6% for rural males.²⁷

The state of Haryana has made significant strides in implementing NEP-2020 within school education, highlighted by initiatives such as the NIPUN Haryana Mission extending up to Grade 5 to promote competency-based learning, the establishment of Balvatika-III classrooms across all government schools, the creation of Model Sanskriti Schools within a 10 km radius, and the launch of entrepreneurship awards for school students. However, the state continues to face substantial challenges in areas including teacher recruitment, outcome-based incentive structures, teacher professional development policies, administrative accountability, and the establishment of systematic, structured review mechanisms.

Current Status

✔ Collaborative Learning Approaches²⁸

- Primary schools with peer learning programmes: 71.3%
- Upper primary schools with peer learning programmes: 67.1%
- Secondary schools with peer learning programmes: 64.9%
- Higher secondary schools with peer learning programmes: 63.9%

✔ Academic Enrichment²⁹

- Primary schools undertaking academic enrichment activities: 89.66%
- Upper primary schools undertaking academic enrichment activities: 86.85%
- Secondary schools undertaking academic enrichment activities: 81.10%
- Higher secondary schools undertaking academic enrichment activities: 83.14%

✔ Inclusive Infrastructure³⁰

- Schools with functional CwSN friendly toilets (All Management): 51.6%
- Schools with ramps for CwSN: 75.2%
- Schools with ramps having handrails for CwSN: 49.2%

✔ Digital Infrastructure³¹

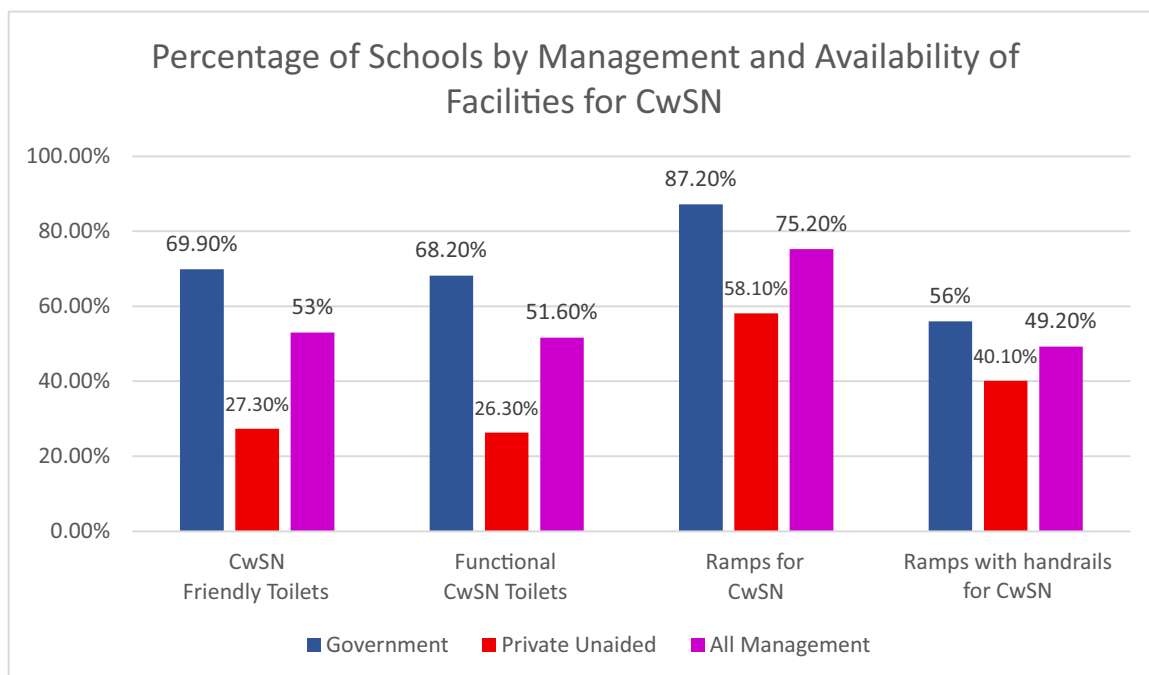
- Schools with internet facilities: 69.3% government schools, 94.5% private schools
- Tablet distribution to students of government schools (Class 10, 11, and 12) to boost e-learning opportunities

✔ Student Progression Metrics³²

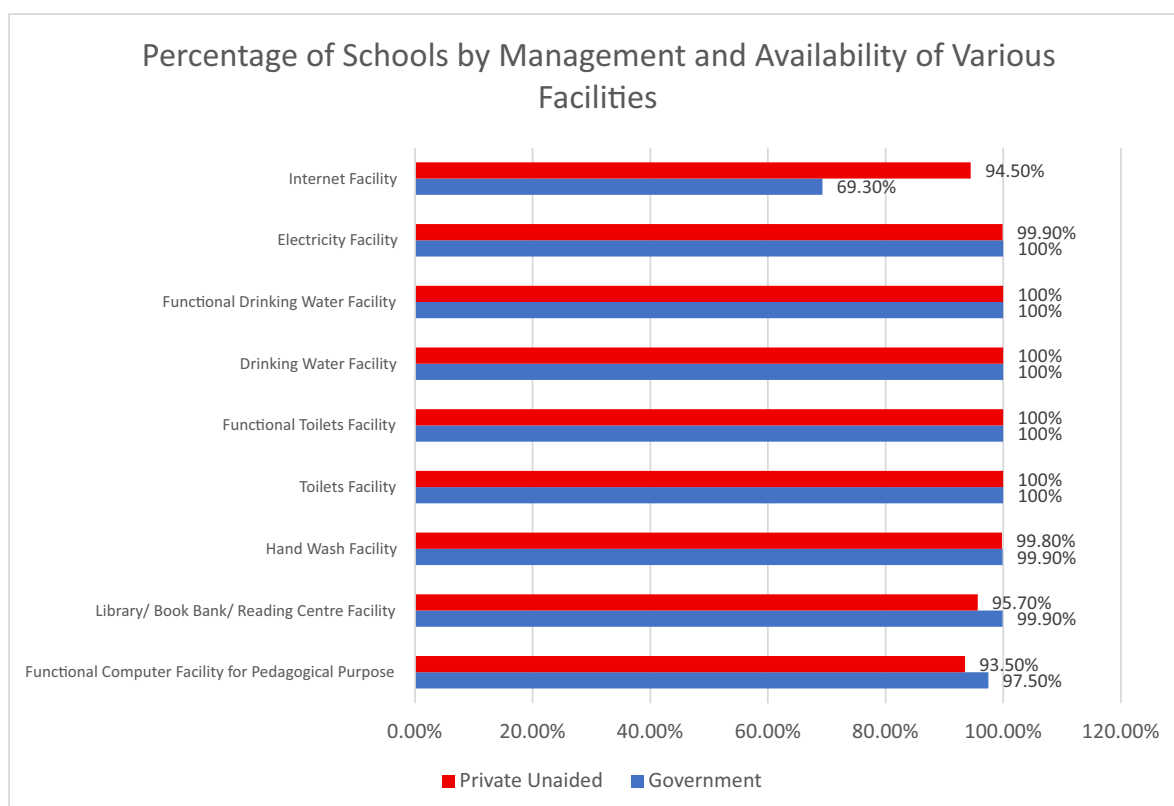
- Dropout rate in secondary schools: 4.9%
- Promotion rates: Primary (100%), Upper primary (99%), Secondary (93%)
- Retention Rate - Foundational (100%), Preparatory (100%), Middle (100%), Secondary (100%)

✔ Vocational Education³³

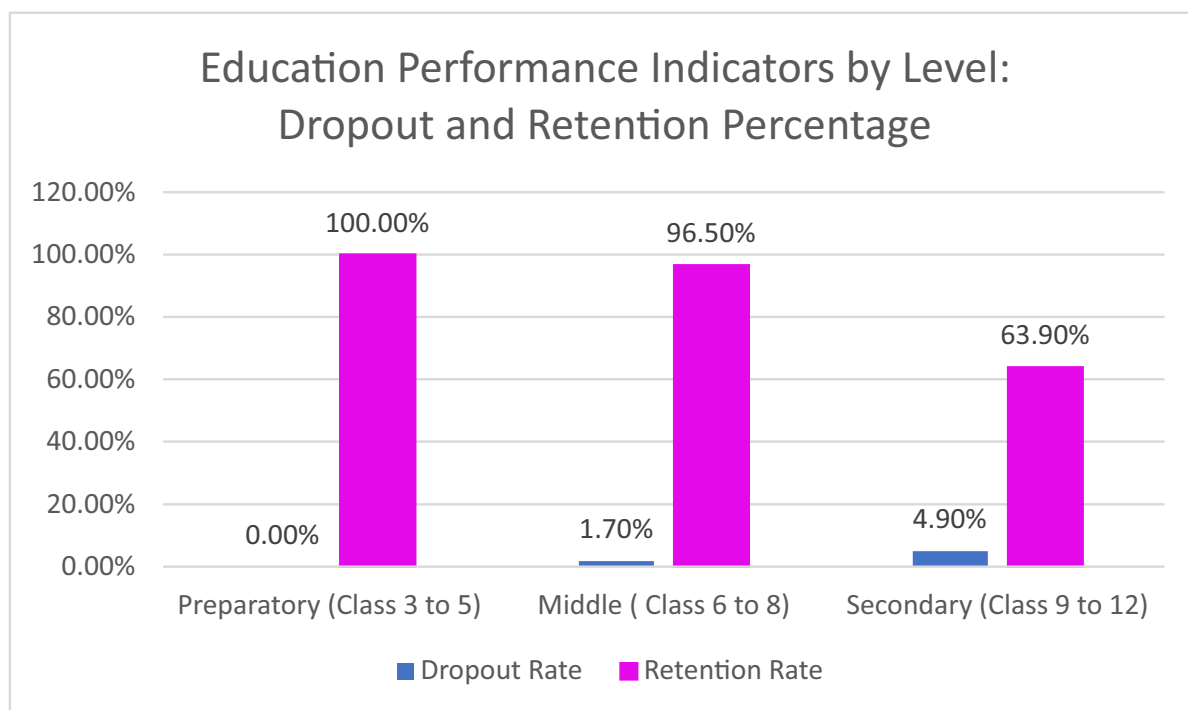
- Haryana has become a leader in National Skills Qualifications Framework (NSQF) implementation, with 1,400 secondary and higher secondary schools now offering 15 vocational courses, including tourism, to integrate skill development from Class 6 onward.



Graph 13: Percentage of Schools by Management and Availability of Facilities for CwSN
(Source: UDISE+ Report 2024-25, Department of School Education & Literacy, Ministry of Education)



Graph 14: Percentage of Schools by Management and Availability of Various Facilities
(Source: UDISE+ Report 2024-25, Department of School Education & Literacy, Ministry of Education)



Graph 15: Education Performance Indicators by Level: Dropout and Retention Rates
(Source: UDISE+ Report 2024-25, Department of School Education & Literacy, Ministry of Education)

While statistics reveal strong infrastructure and promising foundations, critical gaps persist in secondary school retention and the implementation of outcome-based assessment. The substantial investment in physical assets necessitates a pivot from focusing solely on infrastructure availability to ensuring its high-quality and targeted use. This strategic shift will help retain students through secondary school and foster the development of higher-quality graduates for the future.

Factors Influencing the Issue

Multiple interconnected factors contribute to the challenges in achieving uniform quality education in Haryana:

Teacher Quality and Distribution: ASER has consistently highlighted that student learning outcomes in rural Haryana schools with early-career teachers are significantly lower in both mathematics and reading assessment.

Assessment Practices: The ASER 2024 report shows strong foundational gains—with Grade 3 reading (Grade 2 text) jumping from 21.2% to 32.1% and subtraction from 26.1% to 33.1%, and Grade 5 (Grade 2 text) reading at 53.9% and division at 29.4% from 2022 to 2024. The data shows disparities and wide gaps in outcome-based assessment remain.³⁴

Addressing these factors requires a coordinated approach that combines targeted resource allocation, comprehensive teacher development, strengthened implementation support, and community engagement strategies—all focused on equitable access to quality learning opportunities.

Impacts of the Issue

Direct Impact

- Uneven student learning outcomes across regions, school types, and socioeconomic groups, limiting human capital development
- Limited digital literacy and 21st century skills development in schools lacking modern infrastructure and qualified teachers
- Higher dropout rates (4.9% at secondary level) in underresourced schools, particularly affecting marginalised communities³⁵

Indirect Impact

- Perpetuation of social and economic inequalities as educational disparities translates into employment and earning differentials
- Reduced workforce competitiveness in the global knowledge economy, hindering Haryana's economic transformation
- Diminished social mobility and civic engagement, undermining social cohesion and democratic participation

Global Learnings

Global Best Practice

Global education systems are shifting toward competency-based learning, with Finland and Singapore leading through broad frameworks. Estonia and South Korea use formative assessments in 85–90% of schools³⁶. Top systems invest 15-20 days annually in teacher development. Haryana's NIPUN Mission, with its structured approach to foundational literacy and numeracy that has gained recognition from 22 international universities, demonstrates how localised, data-driven educational initiatives can achieve measurable improvements in learning outcomes comparable to global best practices. Effective digital integration emphasises pedagogy over infrastructure. Inclusive models improve outcomes, while quality early education yields 7–10% ROI. Strong school leadership boosts learning by 0.2–0.3 standard deviations, underscoring holistic, data-driven reforms. (Implementations Under the NIPUN Haryana Mission)

Disruptive Technologies - Empowering Education: Customised AI Mentorship

Innovations in AI are revolutionising education by offering personalised mentorship to students, fostering critical thinking, and providing proactive assistance tailored to individual academic journeys. The advent of AI mentors presents a liberating alternative to traditional tutoring, free from the constraints of time. This accessibility empowers teachers with new avenues to enrich student learning, seamlessly integrating academic instruction with personalised support.

Moreover, AI mentorship not only enhances learning but also makes it more captivating and accessible to a diverse range of scholars. By tailoring guidance to each student's unique needs and learning pace, AI mentors ensure that education becomes engaging and inclusive, reaching a wider audience and maximising the potential for academic success.³⁷

Possible Pathways

Short-Term Pathway (2030)

Set Accessibility Standards for Schools

- Develop a rating framework to assess school accessibility, including for CwSN for both availability and quality
- Use ratings to drive infrastructure improvements and policy decisions

Enhancing Faculty Proficiency in Technical and Vocational Education

- Reform recruitment and service rules to attract and retain high-quality faculty
- Implement biannual upskilling programmes focused on pedagogy and domain knowledge
- Establish zonal-level training institutes [on the lines of District Institutes of Educational Training (DIETs)] for continuous professional development of faculty in Technical and Industrial Training Departments
- Address the high vacancy rate of ITI instructors (currently at 50%) by ensuring timely recruitment and promoting effective training delivery
- Train instructors under the Craft Instructor Training Scheme (CITS) to strengthen vocational instruction quality

Strengthen School-to-College Vocational Pathways

- Introduce best practices such as Tamil Nadu's Naan Mudhalvan and Kerala's KASE to improve vocational transition and career readiness
- Promote career counselling programmes in government schools and colleges to guide students in higher education and vocational choices
- Implement the National Credit Framework (NCrF) to enable horizontal and vertical mobility, multiple entry-exit options, and academic equivalence

Expand Super 100 Scheme

- Include students from the Humanities and Commerce streams

Long-Term Pathway (2047)

Align Curriculum with Global Standards

- Upgrade the curriculum to meet international benchmarks
- Focus on science, technology, languages, AI, robotics, financial literacy, socio-emotional learning, analytical skills, etc
- Focus on developing foundational literacy and numeracy skills for primary students

Strengthen Vocational Training Infrastructure

- Include infrastructure development and a phased plan for upgrading ITIs across the state
- Facilitate MoUs with industries to promote demand-based training, drawing from examples like the Tata Steel Foundation's PPP-mode ITI in Jharkhand focused on trades like CNC, E-Vehicle Mechanics, Fitter, and Welder
- Equip ITIs with state-of-the-art infrastructure and practical training models to enhance placement readiness and regional employability, thereby boosting PMKVY placement rates

Make Skilling Aspirational

- Launch initiatives inspired by Odisha's Nutana Unnata Abhiyan (NUA), World Skill Centre, and the Chief Minister Skill Development Fellowship to enhance the skill development ecosystem and elevate its perception among youth

Foster International Collaborations

- Partner with global educational bodies to adopt best pedagogical practices
- Implement proven international strategies to improve learning outcomes

Launch AI-Based Personalised Learning

- Use AI to tailor the curriculum and track individual student progress
- Leverage digital tools for customised, capacity-based learning

Short-Term Pathway (2030)

- Ensure equal access to advanced learning opportunities across disciplines

Upgrade School Infrastructure

- Prioritise facilities in rural schools
- Ensure access to the internet, science labs, and digital tools
- Integrate mobile digital learning vans for rural areas to bridge the digital divide

Strengthen Teacher Training & Mentorship

- Implement a structured teacher recruitment and promotion policy that is linked to academic outcomes
- Pair experienced teachers with new ones for guided mentorship
- Implement regular assessments and track professional development
- Incorporate experiential learning methods into teacher training

Promote Peer Learning Models

- Pilot peer learning programmes based on proven models
- Monitor impact and scale effective practices

Improve Monitoring & Data Systems

- Track school performance, dropout rates, and learning outcomes
- Use data insights to identify and support underperforming schools

Improve Accountability at Multiple Levels

- Create regular, structured review cadence at the state, district and block levels with state and district officials
- Focus on online and offline monitoring of schools

Long-Term Pathway (2047)

Break Social Barriers to Education

- Provide scholarships and incentives to address gender, caste, and location-based disparities
- Promote inclusive education through targeted support programmes

Develop International Knowledge Hubs

- Accelerate Sonapat and nearby areas into a thriving ecosystem of higher education, fostering academic excellence, innovation, and global collaboration, leading to across-state development. Further promote the well-planned integration of educational infrastructure, research facilities, student amenities, and industry connections to create a world-class academic environment

ISSUE 2: CHANGING ROLE OF TEACHERS AND SKILL PROVIDERS

The educational landscape in Haryana is undergoing a profound transformation that fundamentally redefines the role of teachers and skill providers. This evolution transcends traditional knowledge transmission models toward a dynamic ecosystem of learning facilitation, mentorship, and skill development. The NEP 2020 serves as a catalyst for this paradigm shift, emphasising competency-based education that develops critical thinking, creativity, and practical skills alongside academic knowledge.³⁸

Teachers in Haryana are increasingly transitioning from content deliverers to learning architects who design personalised educational experiences responsive to diverse student needs and learning pathways. This transition encompasses several critical dimensions: integration of digital technologies, implementation of multidisciplinary approaches, development of 21st century skills, and provision of inclusive learning environments. Skill providers face parallel evolution demands, with increasing emphasis on industry-education partnerships, practical application, and continuous skill updating responsive to rapidly changing workplace requirements. This necessitates innovative teaching methodologies, authentic assessment approaches, and flexible learning pathways that accommodate diverse learner needs and aspirations. The World Economic Forum's Future of Jobs Report identifies this transformation as essential, with effective educators needing to develop skills in adaptive learning design, technological integration, and collaborative learning facilitation.³⁹

However, Haryana faces significant challenges in enabling this role transformation, including infrastructure limitations, professional development gaps, and institutional resistance to change. Addressing these barriers requires systematic interventions across policy, infrastructure, and capacity development dimensions to empower educators as agents of educational transformation.

Current Status

Haryana's education system demonstrates both strengths and areas requiring development in supporting teacher and skill provider evolution:

- ✔ **System Scale and Structure:** 23,494⁴⁰ schools serving 57.69 lakh students, creating a substantial ecosystem for educational innovation and transformation⁴¹
- ✔ **Teacher Workforce:** 2,63,942 teachers working across the system, with varying levels of preparation for emerging educational approaches⁴²
- ✔ **Student-Teacher Relationship:** Average Pupil-Teacher Ratio (PTR) of 22:1, providing reasonable conditions for personalised learning approaches⁴³
- ✔ **Early Childhood Education Preparation:** 53.4% of male and 40.2% of female teachers at the pre-primary level report adequate training, highlighting foundational stage preparation⁴⁴
- ✔ **Digital Infrastructure:** 98.7% of government schools have functional computer facilities, but only 69.3% have internet access, creating uneven conditions for technology integration⁴⁵
- ✔ **Professional Development:** 56% of teachers participated in structured professional development programmes focused on new pedagogical approaches in the past year⁴⁶
- ✔ **Assessment Capabilities:** 38% of teachers report confidence in implementing competency-based assessment approaches aligned with NEP 2020 objectives⁴⁷
- ✔ **Inclusion Preparation:** 41% of teachers report receiving specialised training for supporting CwSN, despite increasing enrolment of these students across educational levels⁴⁸
- ✔ **Financial Competency Gap:** The evolving educational landscape requires teachers to impart practical financial literacy alongside traditional subjects, yet most educators lack formal training in personal finance concepts, limiting their ability to equip students with essential money management skills critical for future economic self-sufficiency.

These statistics reveal substantial infrastructure and capacity development needs to support teachers and skill providers in effectively fulfilling their evolving roles within Haryana's education system.

Factors Influencing the Issue

- **Digital Transformation:** While 98.7% of government schools have computer facilities, disparities exist in internet connectivity (69.3% government schools vs 94.5% private schools), creating uneven conditions for technology integration and digital pedagogy development⁴⁹
- **Professional Preparation Gaps:** Teacher education programmes demonstrate limited alignment with emerging pedagogical approaches, with 43% of teacher educators reporting high confidence in preparing teachers for competency-based education⁵⁰
- **Assessment System Evolution:** Traditional examination-oriented assessment systems persist despite policy emphasis on holistic evaluation, with 62% of teachers reporting tension between learning outcome objectives and examination preparation pressures⁵¹
- **Pedagogical Preparation Gaps:** Inadequate standardisation of teachers' training courses, particularly at the foundational level, coupled with the absence of a premier Teachers' Training Institute in the state, has created inconsistencies in pedagogical quality and preparedness across Haryana's educational workforce.
- **School Leadership Capacity:** With 39% of school leaders receiving specialised preparation for instructional leadership roles, there is a promising opportunity to expand this training and further strengthen their capacity to support teacher transformation⁵²
- **Continuous Professional Development:** Professional development opportunities remain fragmented and episodic, with 67% of teachers reporting a disconnect between training content and classroom implementation challenges⁵³
- **Incentive Alignment:** Career advancement and recognition systems demonstrate limited alignment with innovative teaching practices, with 71% of teachers perceiving minimal career benefits from pedagogical innovation⁵⁴

Impacts of the Issue

Direct Impact

- Enhancing teaching methodologies and digital competencies among educators can significantly improve the effectiveness of educational delivery.
- Aligning classroom instruction more closely with real-world skill requirements offers great potential to increase educational relevance and boost student engagement.
- Consistent implementation of NEP 2020 principles across all schools presents an opportunity to ensure equitable educational quality and outcomes.

Indirect Impact

- Enhancing graduates' critical thinking, problem-solving, and collaborative skills can better prepare them for success in an evolving economy.
- Strengthening innovation capacity and fostering an entrepreneurial mindset among students can unlock greater potential for economic transformation.
- Advancing educational innovation can help Haryana's workforce remain competitive on a global scale as other regions continue to progress.

Global Learnings

Global Best Practice

International best practices highlight key enablers for teacher and skill provider transformation. Finland's AI-supported adaptive learning boosted personalised instruction among 72% of teachers, improving engagement by 31%. Singapore's peer-led model raised innovation rates by 43%, while Australia's micro-credentialing advanced specialised skills by 58%. Estonia (81%) leads in learning analytics use, Japan shows 29% higher success via co-teaching, and Germany and Denmark exemplify strong industry ties and design thinking in pedagogy.

Estonia's Digital Accelerator Programme: Empowering Teachers for the Digital Age⁵⁵

Estonia's Digital Accelerator Programme redefines teaching by equipping educators with advanced digital skills and peer-led mentorship to foster tech-integrated, personalised learning. Teachers are empowered as digital facilitators and mentors, enhancing student readiness for the digital era. This model positions Estonia at the forefront of transforming education for the 21st century.

Disruptive Technologies - Harnessing Recommender Systems In Education

Innovative uses of recommender systems are transforming various aspects of education, with one notable application involving recommending instructional practices post-assessment, guiding students along tailored learning paths. This becomes particularly significant given the limited practical utility of many end-of-year state exams. Additionally, predictive systems, commonly referred to as early warning systems, play a pivotal role in tracking students at risk of academic underperformance. Leveraging various performance data, including attendance records, these systems predict student success and empower counsellors and faculty to intervene proactively, ultimately fostering student achievement and retention.⁵⁶

Possible Pathways

Short-Term Pathway (2030)

Teacher Training & Upskilling

- Launch programmes aligned with NEP and evolving skill demands
- Focus on emerging technologies, vocational education, and pedagogical trends
- Develop next-generation capabilities through experiential learning

Strengthening Educator Capacity and Industry Linkages

- To enhance the practical relevance of technical education, it is recommended that each University, ITI, and Polytechnic institute host "Industry Chair Professors" seconded directly from the relevant sectors
- Establish a Haryana Teacher University to create master trainers and promote global pedagogy

Short-Term Pathway (2030)

Inclusive Workforce Development

- Ensure gender-balanced hiring in teaching roles
- Conduct dedicated recruitment drives for special educators for CwSN

Data-Driven Skill Development

- Use performance data to identify underperforming districts
- Tailor teacher training interventions based on student performance indicators
- Give digital tools to teachers to track the learning levels of each child and provide customised support that caters to the learning level of each student
- Revamp the B.Ed colleges' curriculum in alignment with NEP-2020
- Increase learning outcome-based assessment implementation

Establish Consistent State and District Review Committees

- Create a structured review mechanism for teachers at the block, district and state levels to hold them accountable for outcome

Industry-Integrated Skill Development

- Establish Industry-Led Curriculum Boards (or Advisory Councils) at all technical institutes and universities for annual curriculum revision, and launch Skill Apprenticeship Councils where industries jointly fund and design specialised courses to address immediate labour shortages
- Introduce "Skill Credits Haryana"—vouchers for workers—to promote continuous up-skilling in high-demand future technologies like AI, EV maintenance, and Agri-tech, based on successful international models
- Mandate a "Green Skills Certification" for all ITI, Polytechnic, and University graduates, focusing training on immediately applicable sustainable practices (e.g., solar, EV repair, water management) while formally linking internships and apprenticeships to the NCrF for full academic recognition
- Accelerate the creation of "Haryana Innovation Corridors" by institutionally linking key knowledge centres (like IIT Delhi–Sonipat extension and AIIMS Jhajjar) with specialised industry parks (IT, biotech, EV) to foster joint research, patents, and start-up creation

Long-Term Pathway (2047)

Strengthen Teacher Autonomy & Innovation

- Involve teachers in curriculum development processes
- Recognise and reward innovative teaching practices through awards and peer-learning platforms
- Develop an incentive-based teacher recruitment and promotion policy

- Partner with Agricultural Universities and Krishi Vigyan Kendras (KVKs) for teacher exposure visits and content co-development on rural livelihoods and agri-innovation

Continuing Education Framework

- Integrate school education with adult skill development to promote lifelong learning and boost employability

Long-Term Pathway (2047)

Sensitivity & Inclusion Training

- Conduct periodic training sessions for educators to foster a diverse, inclusive, and empathetic learning environment

Advanced Training Infrastructure

- Partner with universities to set up Centres of Excellence focused on innovative pedagogy and research
- Establish innovation labs for future-oriented educational methods

ISSUE 3: SKILLS AND JOBS MISMATCH

Haryana has demonstrated strong employability performance, with 68% of its talent pool deemed employable according to the India Skills Report 2025.⁵⁷ While this positions the state firmly among India's top performers in employability, it also highlights an opportunity for Haryana to enhance its standing further and reclaim its leadership in future assessments.

Despite significant investments in skilling initiatives such as the PMKVY, SURYA, and Saksham Yuva Scheme, Haryana faces a growing challenge in aligning its workforce capabilities with rapidly evolving industry requirements. The state demonstrates notable strengths in fundamental skills, including English proficiency (58.25%), numeracy (66.66%), and critical thinking.⁵⁸ However, the employment landscape is increasingly demanding advanced capabilities in analytical thinking, creative problem-solving, and technological proficiency—particularly in emerging fields like AI and big data analytics. This widening gap between existing skills and industry needs threatens to create inefficiencies in Haryana's labour market, potentially constraining economic growth and limiting career advancement opportunities for the state's youth. As industries project a structural transformation in the job market over the next decade, Haryana must address this misalignment to maintain its competitive edge and continue attracting investment.

Current Status⁵⁹

Haryana demonstrates several strengths in its current skilling ecosystem:

- ✔ 86.67% of postgraduates demonstrate exceptional management proficiency
- ✔ 93% of MCA postgraduates excel, highlighting top-tier technical expertise
- ✔ Strong numerical aptitude with 66.66% proficiency, ranking among India's top states
- ✔ Solid English language skills at 58.25%, supporting service sector employability
- ✔ Consistent employability for men at 38.24%, indicating reliable labour market participation
- ✔ High internship engagement with 92.06% of students pursuing professional development opportunities

The state maintains strong appeal as a work destination, especially among male job seekers drawn to its robust industrial base. This positions Haryana favourably compared to other competitive states like Gujarat, Maharashtra, and Andhra Pradesh. The state has an opportunity to enhance its appeal among female workers by strengthening workplace inclusion initiatives, drawing inspiration from states like Andhra Pradesh, Kerala, Delhi, and Tamil Nadu, which have made notable strides in fostering supportive, gender-friendly work environments.

Factors Influencing the Issue

Multiple interconnected factors contribute to Haryana's skills-jobs mismatch:

- **Educational Mis-alignment:** Disconnects between academic curricula and industry requirements limit graduates' job-readiness despite formal qualifications
- **Technological Disruption:** Rapid digital transformation across industries is outpacing the adaptation of training programmes, creating gaps in emerging technical competencies
- **Infrastructure Limitations:** Uneven distribution of quality training facilities across urban and rural areas restricts access to cutting-edge skill development opportunities
- **Awareness Gaps:** Limited understanding among youth about emerging career pathways and corresponding skill requirements affects educational and career choices
- **Gender Disparities:** Lower female workforce participation reflects both social barriers and limited industry inclusion initiatives compared to more gender-progressive states
- **Industry-Academia Collaboration Gap:** Insufficient partnerships between educational institutions and employers for curriculum development, internships, and training delivery

Addressing these factors requires a coordinated approach that aligns Haryana's considerable educational strengths with evolving industry needs while expanding opportunity access across demographic and geographic boundaries.

Impacts of the Issue

Direct Impact

- Enhancing the workforce's technical skills can reduce unemployment and boost industry competitiveness.
- Building appropriate skill sets will improve operational efficiencies, enabling industries to implement new technologies effectively.
- Strengthening talent availability for R&D and process improvement will enhance businesses' innovation capacity.

Indirect Impact

- Investor confidence in Haryana as a business destination could face challenges, which may impact economic growth and capital formation.
- Widening income inequality may arise if skill premiums increase for a limited pool of qualified workers, highlighting the need to broaden opportunities for all.
- Migration of talent and businesses to other regions could pose a potential risk to sustained economic growth.

Global Learnings

Global Best Practice⁶⁰

Global Apprenticeship Network (GAN): GAN is a global coalition advancing youth employability by promoting apprenticeships and work-based learning. Bridging the

Disruptive Technologies - Revolutionising Talent Acquisition with AI-skills Match Engine

The latest advancement in talent acquisition technology comes with the introduction of the AI-skills Match Engine, a groundbreaking feature designed to enhance candidate-job requisition

education-employment gap by aligning practical skills with industry demands, GAN fosters strong business education partnerships, effectively addressing skills mismatches and youth unemployment. The global labour market is rapidly transforming due to technological advances, shifting economies, and evolving work models. Over 85% of organisations now prioritise digital transformation, with big data, cloud computing, and AI projected for adoption by over 75% within five years. Employers foresee a 23% structural job churn by 2027, emphasising skills like analytical thinking, creativity, and AI proficiency. Soft skills—leadership (40%), adaptability (32%), and lifelong learning (30%)—are also gaining importance. Notably, two-thirds of firms expect returns on skill investments within a year. However, these advances coexist with widening employability gaps, affecting less-educated workers and women in developing economies, while wage growth remains constrained amid inflation.

alignment. This innovative tool, seamlessly integrated into the Talent Acquisition suite, aggregates and refines external talent, delivering highly accurate matches between candidates and job requirements. By incorporating the organisation's job architecture using AI, this feature ensures precise alignment. Furthermore, its seamless integration with SAP (Systems, Applications, and Processes) SuccessFactors and other ATSs (Applicant Tracking Systems) enables HR leaders to streamline the process by gathering all job applications in one place, assessing candidates against primary and secondary skill requirements, and validating their skills with AI-driven accuracy.⁶¹

Possible Pathways

Short-Term Pathway (2030)

Establish Multi-Stakeholder Task Forces

- Form state and district-level bodies under Haryana Skill Development Mission (HSDM)
- Include government, industry, and academic experts
- Ensure dynamic policy monitoring & market alignment
- Track job trends, automation impact, and skill needs via the HSDM dashboard
- Identify skill gaps through job market data

Long-Term Pathway (2047)

Ensure Dynamic Policy Monitoring & Market Alignment

- Mandate regular workforce data reporting from industries and MSMEs
- Set up sectoral advisory committees in key industries for policy inputs

Short-Term Pathway (2030)

- **Industry-Led Skill Training Centres (CSR Initiative)**

- Encourage on-site training using industry-grade infrastructure and the latest techniques
- Offer government incentives such as one-time financial support and annual grants for training operations

- **Modernise Training Infrastructure**

- Audit ITIs, polytechnics, and skill centres
- Upgrade curriculum, tools, and faculty
- Ensure alignment with industry standards
- Incorporate transport and accommodation facilities within skill training centres, particularly to improve participation of female students and reduce dropouts. The Tamil Nadu Worker Accommodation model can serve as a reference for designing inclusive, supportive infrastructure

- **Build Strong Industry Linkages**

- Set up sector-specific industry committees
- Engage employers to define real-time skill needs
- Co-develop certified, job-ready training programmes
- Include courses on AI, Fintech, data analysis, green engineering right from secondary schools
- Leverage the model of Vishwakarma University established by the Government of Haryana to align higher education and skill development with evolving industry demands and future job markets
- Inclusion of specialised green skill programmes

- **Ensure Inclusive Skill Development**

- Focus on women, rural youth, and marginalised groups
- Partner with non-government organisations (NGOs), SHGs, and PRIs
- Offer skills in high-growth sectors like digital literacy, healthcare, finance and micro-entrepreneurship

Long-Term Pathway (2047)

- **Develop Specialised Courses and Workforce Readiness Programmes**

- Incorporate dedicated provisions in the New Industrial Policy 2025 for developing specialised courses in coordination with industries, employee workforce readiness programmes, apprenticeship programmes, and entrepreneurship development to address skill gaps. Special focus will be placed on providing additional benefits for women employees, SC/ST/OBC, Agniveer, and Divyang employees of the State

- **Establish "Women in Engineering, Science, and Technology (WEST)" Centre of Excellence in Heavy Engineering**

- Launch a specialised centre for women in engineering
- Collaborate with IITs, NITs, AICTE, and NSDC for curriculum design
- Build a campus with industry-grade labs and workshops
- Develop colleges at par with world universities in humanities, arts, public governance, policy, etc

- **Launch Specialised Skill Hubs & Innovation Centres**

- Offer certification programmes in AI, automation, EVs, green energy, etc
- Host regular expos and industry networking events
- Mainstream Inclusive Skilling across Education & Training

- **Co-develop Inclusive Curricula with National and International bodies**

- Ensure accessible infrastructure (ramps, Braille signs, elevators)
- Use mobile centres, flexible schedules, and free programmes to boost access
- Conduct community outreach and sensitisation drives

Short-Term Pathway (2030)

- Promote training in non-traditional livelihoods to improve employability among women and marginalised populations. Encourage skilling of girls in technology-related and emerging areas to improve outcomes and break occupational stereotypes

Strengthen Labour Market Intelligence

- Deploy a dedicated team to track evolving job trends by utilising employment data, surveys, and industry feedback
- Publish regular reports on emerging skill demands

Deploy Skilled Trainers for Programme Delivery

- Recruit experienced professionals and subject experts and train them in modern pedagogy
- Continuously improve content using trainee and industry feedback
- Establish skill-specific centres for the skills that will be in high demand as per the latest Future of Jobs Report-2025 by the World Economic Forum, skills that include driving, construction, counselling, food processing, etc

Use Data & AI for Workforce Planning

- Design a centralized, AI-powered platform to integrate multiple data sources for real-time analysis and share actionable insights with stakeholders

Offer Capacity Building Incentives

- Provide reimbursement to logistics and warehousing units for technical training costs of workers (operational, frontline, supervisory roles), with a focus on Haryana domiciled workers, as outlined in the Haryana Logistics, Warehousing & Retail Policy 2019

Institutionalising Industry–Academia Collaboration through Performance Scorecards

- Introduction of Industry-Institution Collaboration Scorecard—link university funding to patents, apprenticeships, internship and joint research. (already initiated)

Long-Term Pathway (2047)

Promote Green Jobs through Industry Incentives

- Launch Green Industry Certification and support eco-friendly practices
- Provide tax incentives and subsidies for green investments
- Partner with institutions for climate-focused training and R&D
- Organise green job fairs and support green industrial parks

ISSUE 4: CHALLENGES IN ENTREPRENEURSHIP AND EMPLOYMENT

Haryana's entrepreneurship and employment landscape presents a mixed picture of progress and persisting challenges. Despite the state's industrial advancement and policy initiatives, fundamental labour market indicators reveal areas needing targeted intervention. According to PLFS 2023-24, Haryana's LFPR stands at 49.5%, lower than India's LFPR of 60.1%.⁶² The gender-wise distribution latest data reveals a stark gap, with LFPR for males at 72.7% and for females at 24.2%, both below the national averages.⁶³ This stark disparity in female labour force participation is among the most pronounced nationally, underscoring a significant untapped economic potential and highlighting the need for focused strategies to enhance women's inclusion in the workforce.

Unemployment remains an area for improvement, with the overall rate at 3.4% across all age groups.⁶⁴ The youth unemployment rate (ages 15-29), at 10.7%.⁶⁵ highlights a significant opportunity to harness Haryana's demographic dividend by addressing labour market challenges faced by the younger population.

Haryana has established a strong foundation for entrepreneurship through policies such as the Entrepreneur and Startup Policy (2017) and the Haryana Enterprises and Employment Policy (2020). The state actively supports entrepreneurs with crucial financial options and resources, including schemes under the Haryana Enterprises & Employment Policy 2020 (Interest Subsidy, Investment Subsidy, Haryana Gramin Udyogik Vikas Yojna, and Collateral-Free Credit Guarantee Scheme) and dovetails Centrally Sponsored Schemes like Pradhan Mantri Formalization of Micro Food Processing Enterprises (PMFME), Prime Minister's Employment Guarantee Programme (PMEGP), and Credit Guarantee Fund Trust for Micro, Small and Medium Enterprises (CGTMSE).

Further demonstrating commitment, the comprehensive Haryana Startup Policy 2022 (revised July 2022) and a dedicated Startup Portal enhance the ecosystem, yielding promising outcomes. The state's innovative initiatives, such as the 'Kushal Business Challenge', inspire youth entrepreneurship by providing seed money and mentorship.

However, structural challenges such as limited access to finance, insufficient mentorship, and implementation gaps persist, especially for women and rural entrepreneurs, highlighting the need for continued focus to ensure inclusive and equitable opportunities and further improve performance metrics. To specifically empower rural women and promote grassroots entrepreneurship, the Deen Dayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM) mobilises SHGs to provide access to credit, skill development, and market linkages for diversified farm and non-farm livelihoods.

Current Status

Labour Force & Employment

- LFPR stands at 49.5% (PLFS 2023-24)⁶⁶
- Unemployment rate across all age groups is 3.4%, rising to 10.7% among youth aged 15-29⁶⁷

✔ **Business Environment & Ease of Doing Business**

- Classified among "Top Achievers" in implementing the Business Reforms Action Plan⁶⁸
- Ranked 5th in the Export Preparedness Index 2022⁶⁹
- Recognised as an "Achiever" among landlocked states in Logistics Ease (LEADS 2024)⁷⁰
- Haryana's share in India's total industrial investment proposal was 1.2% in 2019⁷¹

✔ **Startup Ecosystem**

- Positioned in the "Aspiring Leaders" category in States' Startup Ranking 2022, placing it behind the "Best Performers," "Top Performers," and "Leaders" categories⁷²
- The report states that more than 100 startups received incubation support in 2023-24, with 20 being women-led ventures⁷³
- Approximately 50 startups benefited from formal mentorship programmes⁷⁴
- Haryana is home to over 8,800+ Department for Promotion of Industry and Internal Trade (DPIIT)-recognised startups, ranking Haryana as the 7th largest startup ecosystem in India⁷⁵
- The state nurtures 19 out of India's 117 unicorns⁷⁶
- 45% of the startups in the state are women-led, showcasing a strong commitment to gender equality and inclusive entrepreneurship⁷⁷

✔ **MSME Sector**

- The sector comprises over 1 million (1,069,951) enterprises, contributing significantly to the state's economy⁷⁸
- It generates substantial employment, creating over 6.25 million (6,256,610) jobs⁷⁹
- It accounts for a total turnover of approximately INR 6.48 trillion and total investment of approximately INR 2.58 trillion⁸⁰

✔ **Large Industries**

- 332 large enterprises have generated 188,209 jobs⁸¹

✔ **DAY-NRLM⁸²**

- 59,528 SHGs formed, covering 5,93,212 households
- Revolving Fund (RF) of INR 65.24 Crore provided to 51,891 SHGs
- Community Investment Fund (CIF) of INR 393.93 Crore provided to 32,347 SHGs

The state has established several institutional mechanisms to support entrepreneurship, including the Haryana State Industrial and Infrastructure Development Corporation (HSIIDC) and specialised incentives for MSMEs. The introduction of a dedicated Startup Portal and the comprehensive Haryana Startup Policy 2022, revised in July 2022, specifically signals a commitment to encourage, facilitate, and support the emergence of at least 5,000 new startups in the state during its policy period. These efforts have laid a strong foundation, with promising outcomes. The 'Kushal Business Challenge' scheme – launched under Skill Competition to ignite entrepreneurial spirit in Haryana's youth – represents another innovative initiative in this direction. The winning participants were offered seed money along with coveted mentorship opportunities with leading industry experts.

Looking ahead, the proposed New Industrial Policy 2025 aims to further enhance this ecosystem by incorporating dedicated provisions for developing specialised courses in coordination with industries, conducting employee workforce readiness and apprenticeship programmes, and fostering entrepreneurship development to address

skill shortfalls and mismatches, with a special focus on providing additional benefits for women employees, SC/ST/OBC, Agniveer, and Divyang employees. These clear opportunities exist to further improve ranking and performance metrics to match those of leading Indian states.

Factors Influencing the Issue

Multiple interconnected factors contribute to Haryana's entrepreneurship and employment challenges:

- **Digital Divide:** Uneven digital infrastructure and literacy limit access to emerging opportunities, particularly in rural and semi-urban areas
- **Skill-Industry Alignment:** Haryana demonstrates significant potential in workforce readiness with the highest employable youth concentration nationwide, boasting 76.47% of test-takers scoring above the employability benchmark on assessment tests. Despite this impressive performance in the India Skills Report findings, the state faces challenges in bridging the critical gap between education outcomes and industry requirements, particularly in the emerging technology sector⁸³
- **Regional Disparities:** Development is concentrated in districts adjacent to Delhi-NCR, creating uneven entrepreneurship opportunities across the state
- **Financial Ecosystem Limitations:** Despite policy provisions, the Haryana Centre for Entrepreneurship Development (CED) reports that only 31% of eligible entrepreneurs successfully access institutional finance⁸⁴
- **Gender-Based Constraints:** Cultural and structural barriers contribute to the female LFPR of just 24.2%, significantly constraining the potential entrepreneur pool⁸⁵
- **Policy Implementation Challenges:** Gaps between announced policies and ground-level implementation, with entrepreneurs reporting procedural delays and administrative obstacles
- **Market Linkage Inadequacies:** Limited mechanisms connecting small entrepreneurs to larger value chains and markets beyond local boundaries

Addressing these challenges requires coordinated interventions across policy, education, infrastructure, and social dimensions to create an enabling ecosystem for entrepreneurship and employment growth.

Impacts of the Issue

Direct Impact	Indirect Impact
<ul style="list-style-type: none"> • Reduced job creation and economic diversification due to barriers faced by aspiring entrepreneurs and new businesses • Persistent high youth unemployment (10.7%) leading to underutilisation of human capital and productivity loss • Limited innovation ecosystem development hampering technological advancement and industry modernisation 	<ul style="list-style-type: none"> • Decreased regional competitiveness and diminished ability to attract and retain talent and investment capital • Social instability and increased migration of skilled youth to other states or urban centres exacerbate regional development imbalances • Reduced economic resilience with overreliance on traditional sectors and increased vulnerability to market disruptions

Global Learnings

Global Best Practice⁸⁶

Denmark's Holistic Support Model for Entrepreneurship: Denmark's holistic support model fosters entrepreneurship through an integrated ecosystem of training, mentorship, finance, and simplified regulations. By supporting social enterprises like Specialisterne, it promotes inclusive employment while lowering entry barriers. The model tackles access, skill, and regulatory challenges, positioning Denmark as a global benchmark for resilient, inclusive entrepreneurial ecosystems.

Globally, entrepreneurship and employment strategies are shifting toward integrated, inclusive, and innovation-driven models. Entrepreneurial learning is now embedded in school curricula, with UNESCO advocating its introduction from the secondary level. Effective ecosystems rely on robust government-academia-industry partnerships and promote higher female entrepreneurship rates (35-40%). Countries like Singapore and Estonia showcase how digital platforms can expand mentorship and market access. Globally, sustainable enterprise models, localised innovation hubs, and youth-focused entrepreneurship programmes are reducing unemployment. Additionally, microcredit and community lending have proven effective in overcoming financial barriers. These trends highlight the need for a structured, inclusive approach that blends education, infrastructure, and tailored support for marginalised entrepreneurs.

Disruptive Technologies - Unleashing Innovation: The Role of AI in Business Ideation

The question of whether AI can capture or simulate the elusive 'X' factor in business idea creation, that innovative spark, is one that has intrigued many. Can AI truly boost creativity, innovation, and entrepreneurship in unprecedented ways? According to a recent survey of startup founders and creative professionals, it seems AI is indeed becoming a powerful tool in taking business concepts to new heights.

The survey, which encompassed 150 founders and 486 creatives, revealed that a significant 80% of founders have integrated AI into their creative processes. While a majority of them (55%) still prefer human creativity over AI in their startups, technology undeniably plays a crucial role in their growth strategies. Key applications of AI cited by respondents include data analysis to inform creative decisions (42%) and product development to identify and prioritise features or services (25%).⁸⁷

Possible Pathways

Short-Term Pathway (2030)

Digitise Business Registration & Licensing

- Enable complete online registration and licensing for businesses
- Launch a portal with step-by-step guidance on legal, subsidy, and compliance processes

Enhance Digital Literacy

- Improve digital literacy across both rural and urban areas, with a stronger emphasis on rural populations to enable equitable entrepreneurial participation

Identify Key Sectors for Entrepreneurship

- Conduct expert-led studies on high-potential sectors, focusing on trends like AI, IoT, blockchain, and renewable energy, while factoring in regional, environmental, and cultural strengths
- Haryana's GSDP reflects a shift from agriculture to industry and services, but a significant portion of the workforce remains in agriculture. Clear strategies needed to support workforce transition and diversification, such as:
 - Expanding skill training in industrial and service sector clusters.
 - Promoting agro-processing, food-tech, and agri-based enterprises.
 - Enabling rural-urban MSME linkages to absorb surplus farm labour.
 - Introducing vocational education in secondary schools focused on services, digital skills, and emerging technologies.
- Incorporate Strategic Sector Focus (Addressing NITI Aayog Feedback): Leverage Haryana's comprehensive analysis of geographical advantages, skilled workforce, available resources, and manufacturing capabilities to target key industrial sectors for development under the Haryana Enterprises and Employment Policy (HEEP) 2020. These strategic sectors include:

Long-Term Pathway (2047)

Strengthen Industrial Growth for Job Creation

- Create Industrial Employment Zones with incentives for companies to hire locally
- Expand Haryana's Special Economic Zones (SEZs) and business incubators in emerging sectors.
- Boost manufacturing and agro-processing industries to absorb the local workforce
- Strategic Sector Development: Focus growth on identified key sectors such as automotive, IT, agriculture, textiles and apparels, petrochemicals, electric vehicles, ESDM, pharmaceuticals, chemicals, defence, aerospace, and toys to maximise job creation and economic impact

Promote Flexible Work Models

- Establish co-working spaces in smaller towns and rural areas, inspired by Andhra Pradesh's Work at Home Towns (W@HT) and Kerala's Work Near Home schemes

Position Haryana as an Export Hub

- Strengthen Haryana's competitiveness in textiles, processed foods, and engineering goods
- Leverage the Textile and Apparel sector, a key contributor to GSVA and employment, recognised under HEEP 2020
- Maximise fiscal incentives, infrastructure support, and strategic interventions to boost exports

Expand Rural Employment

- Promote food processing parks, dairy cooperatives, and farm-to-market linkages
- Accelerate construction-led job creation through large-scale infrastructure projects in transport, housing, and industry
- Foster climate-resilient agriculture and agro-processing industries
- Develop rural industrial parks to reduce urban migration and support local livelihoods

Short-Term Pathway (2030)

- Auto, Auto components, and Light Engineering (leveraging the State's position as the largest automobile hub)
- Electric Vehicles, Charging Infrastructure, and EV/Hydrogen/Charging Infrastructure Component Manufacturing
- Electronics System Design & Manufacturing (ESDM)
- Information Technology (IT) and Information Technology Enabled Services (ITeS)
- General Manufacturing
- Pharmaceutical and Medical Devices
- Chemical and Petrochemicals
- Agro-based, Food Processing, and Allied Industry
- Defense and Aerospace Manufacturing
- Toys manufacturing

Strengthen Incubators & Mentorship

- Invest in and expand incubators, especially in rural areas
- Launch state-supported mentorship via successful entrepreneurs
- Create a “हरियाणा के नव साहसी” network to guide emerging startups
- Expand financial incentives for women-led and marginalised startups
- Enhance existing schemes to provide targeted benefits and handholding
- Create community-driven platforms to raise awareness on financial literacy and investments
- Strengthen rural and urban SHGs and cooperative business models. Provide dedicated training and capacity-building support to women entrepreneurs
- Adopt best practices from Maharashtra (Tejaswini), Karnataka (Udyogini), and Gujarat (Mission Mangalam) to promote women-led enterprises and improve socio-economic outcomes

Long-Term Pathway (2047)

Transform Education & Employment Ecosystem

- Institutionalise continuous re-skilling and upskilling programmes across industries

Promote Gender-Inclusive Labour Markets

- Implement Social and Behaviour Change Communication campaigns in collaboration with media, NGOs, and educational institutions to challenge restrictive gender norms
- Integrate gender sensitisation curricula in schools and conduct awareness drives across urban and rural areas
- Strengthen SHGs through ‘Rozgar Sakhi’ roles, empowering women to advocate for workplace inclusion and access to economic opportunities
- Support these initiatives through community engagement programmes, skill-building workshops, and legal aid services to foster a more equitable labour market

Build District Innovation Zones

- Set up sector-specific innovation zones in every district
- Align focus areas with local strengths and existing incubators

Drive Inclusive Economic Empowerment

- Establish venture funds for marginalised entrepreneurs with patient capital
- Form village-level collectives for support services and skilling

Develop Digital Workforce:

- Invest in specialised training programmes for AI, blockchain, and cybersecurity, create industry-academia partnerships for curriculum development, and establish continuing education frameworks for rapidly evolving technologies
- Set up a Government Media & Content Academy to train youth in digital storytelling, podcasting, video journalism and create a skilled Public Relations (PR) workforce for the future

Short-Term Pathway (2030)

- Expand the care economy by increasing childcare infrastructure, taking inspiration from Haryana's partnership with NGO Mobile Crèches
- Implement gender-neutral and inclusive workplace policies, including flexible working hours, to support workers with caregiving responsibilities and boost women's labour force participation

Accelerate Skill Development

- Identify 100 high-potential rural areas for specialised skill centres and develop targeted training programmes in digital services, agri-tech, and green energy, aiming for high employment placement
- Establish Haryana Global Skill Centres (HGSCs) in collaboration with Haryana Kaushal Rozgar Nigam (HKRN), National Skill Development Corporation - I (NSDC-I), and international agencies to train and place skilled youth in global markets
- Haryana "Vikas Ambassadors" initiative to train local youth, teachers, students, SHGs, and artists as digital influencers so that they amplify accurate, positive narratives of progress and citizen rights

Create Digital Marketplaces

- Launch a comprehensive State-level MSME Marketplace Portal with seamless logistics and payment integration, alongside digital literacy training for MSMEs

Develop Human Capital

- Embed entrepreneurship modules in vocational training programmes and establish partnerships with private sector entities for hands-on training, ensuring equitable access to entrepreneurial development opportunities

Build Workforce Capacity

- Develop training programmes on energy-saving techniques, partner with transport unions and logistics companies, and implement certification programmes to standardise best practices

Long-Term Pathway (2047)

Enhance Ease of Doing Business

- Digitise business registration and permit processes
- Ensure transparency through integrated digital platforms
- Facilitate Global Trade: Launch the "Haryana Global Gateway" Initiative to host roadshows and global investment summits, and operationalise a Single Window for Inbound Investor Facilitation

Transform Policy Ecosystem

- Formulate comprehensive state-level innovation policies aligned with industry needs, integrate entrepreneurship education into school curricula, and establish long-term investment funds for high-risk innovation projects

Strategic Industrial Policy Alignment

- Ensure state policies, including the upcoming New Industrial Policy 2025, are strategically aligned with the identified key growth sectors (e.g., automotive, IT, EVs, agro-processing, etc.) to drive investment, foster innovation, and create sustainable employment opportunities

Integrate Global Knowledge

- Strengthen international partnerships through exchange programmes, develop specialised industry clusters, and create incentive structures for cross-sector partnerships

Develop Infrastructure Ecosystem

- Build 10 new Industrial Cities like IMT Kharkhoda (creating 50,000 jobs per city), develop 143 new industrial clusters of MSMEs (one in each block), develop smart city infrastructure, build specialised industrial zones, and ensure affordable access to advanced infrastructure for startups
- Implement a hub-and-spoke model for digital connectivity

Long-Term Pathway (2047)

Promote Sustainable Workforce Development

- Establish specialised training and certification courses in sustainable construction, create university partnerships for research in sustainable construction, and develop career pathways in green infrastructure

Enhance Skills for Industry Adaptation

- Conduct comprehensive workforce skills assessments, implement structured upskilling programmes focused on sustainability and digital technologies, and establish certification standards for green skills and advanced technology competencies

ISSUE 5: ADAPTING MSMEs TO NEW TECHNOLOGIES, GLOBAL STANDARDS, AND GREEN ECONOMY TO CREATE MORE EMPLOYMENT OPPORTUNITIES

MSMEs in Haryana are not just engines of economic productivity—they are potential powerhouses of employment generation, innovation, and inclusive growth. With around 18.15 lakh MSMEs, this sector holds immense promise for creating dignified and decentralised employment opportunities, particularly for youth, women, and workers transitioning from traditional sectors.⁸⁸

As global markets evolve through technological innovation, environmental standards, and digital integration, Haryana's MSMEs face the dual challenge of adaptation and employment expansion. Limited access to formal finance—reaching just 5% of enterprises—severely constrains investment in job-generating technologies and sustainable production models⁸⁹. This restricts their ability to grow, hire, and integrate with emerging sectors such as green energy, digital services, and advanced manufacturing.

Moreover, the lack of awareness about global quality standards and emerging technologies impedes both employment creation and business scaling. The imperative of digital transformation—while unlocking new business models and employment avenues such as e-commerce, online services, and gig-based production—requires targeted investments in both capital and workforce capacity. Similarly, the shift to green and circular economies, if supported strategically, could open up entirely new classes of employment—from eco-design and renewable energy services to waste management and carbon trading.

As Haryana positions itself for sustainable economic growth, the state recognises that future job markets will be increasingly based on green skills, requiring strategic investments in environmental education and training programmes that prepare workers for emerging opportunities in renewable energy, sustainable manufacturing, and eco-friendly industries. However, without ecosystem support, Haryana's MSMEs may struggle to create these future jobs and risk stagnation in an increasingly competitive and sustainability-conscious economy. Enabling MSMEs to adapt is no longer just a matter of economic modernisation—it is a foundational step toward shaping the future of work in Haryana. Strategic investments, skilling partnerships with universities, and innovation-linked support mechanisms are critical to unlocking this potential and ensuring that MSMEs become vibrant platforms of employment in the coming decades.

Current Status

Haryana's MSME landscape—comprising over 18.15 lakh enterprises—presents a compelling opportunity to generate widespread employment, especially for first-generation entrepreneurs, rural youth, women, and the semi-skilled workforce⁹⁰. However, to realise this potential, systemic gaps must be addressed through a future-of-work lens.

- ✔ **Predominance of Micro-Enterprises:** The sector comprises 12.69 lakh micro-enterprises and only 22,854 small enterprises, revealing a structural limitation in employment scalability⁹¹. Most micro units operate with a limited formal workforce or informal labour, lacking the capacity to expand or upskill. Facilitating graduation from micro to small and medium levels could significantly multiply employment intensity and formal job creation.
- ✔ **Digital Transaction Uptake (72%):**⁹² Highlights an evolving entrepreneurial base ready for digitally-enabled employment models—ranging from e-commerce logistics to fintech services. Yet, uneven adoption across enterprise sizes limits the digital gig workforce's potential, particularly in rural belts.
- ✔ **Finance Deficits vs. Job Creation Needs:** With credit disbursements at INR 37.29 trillion in FY22 and only 5% of MSMEs accessing formal finance, a vast pool of employment-generating enterprises remains capital-starved⁹³. Expanding access to finance for growth-stage MSMEs could unlock lakhs of new jobs in emerging value chains.
- ✔ **Projected Growth, Untapped Labour Demand:** Nationally, MSMEs are expected to grow from 6.3 crore to 7.5 crore by 2030. If properly supported, this expansion could accommodate a major share of India's workforce entering the labour market—yet only 2.5 crore MSMEs are expected to access formal finance, risking sub-optimal employment outcomes.⁹⁴
- ✔ **Macro-Economic Significance, Micro Employment Scope:** MSMEs contribute 29% to GDP and 49% to exports, yet many remain underutilised as engines of localised, inclusive employment—especially in Tier II/III towns and rural clusters where job demand is high.⁹⁵
- ✔ **Gender Entrepreneurship Gap:** Just 10.5% of MSMEs in Haryana are women-owned, suggesting a missed opportunity to expand job creation through women-led enterprises and gender-inclusive supply chains.⁹⁶
- ✔ **Technological Gaps Stalling Job Innovation:** Fewer than 22% of MSMEs use modern production technologies.⁹⁷ This limits their capacity to create future-oriented jobs in digital manufacturing, green tech, and Industry 4.0 services—sectors that can absorb and upskill young professionals if proper support ecosystems exist.

These statistics reveal significant untapped potential within Haryana's MSME sector, particularly regarding technological modernisation, sustainability transition, and inclusive growth across enterprise size categories and ownership demographics.

Haryana's MSMEs stand at a crossroads. If oriented toward employment-intensive growth—with digital, financial, and skills support—they can evolve from small economic units into pivotal job creators for the 2047 economy. Without this shift, their demographic and developmental potential may remain unrealised.

Factors Influencing the Issue

Haryana's MSMEs have the potential to become high-impact employment engines—especially for youth, women, and semi-skilled labour. However, several systemic barriers inhibit their ability to scale, modernise, and generate meaningful work opportunities in a transforming economy:

- **Knowledge and Skills Deficits:** The dual gap—insufficient understanding of international standards (68%) and lack of skilled workforce (72%)—hinders both enterprise competitiveness and job readiness⁹⁸. Without parallel investments in capacity-building, MSMEs are unable to hire, train, or retain skilled labour, particularly in emerging fields such as automation, compliance, or green manufacturing. This disconnect also weakens potential partnerships with universities and vocational institutions.
- **Financial Ecosystem Limitations:** Access to capital remains a foundational constraint, not just for enterprise growth, but for employment expansion. With 61% of MSMEs citing difficulties in accessing funds for technology adoption and 73% lacking green finance options, enterprises are unable to invest in job-generating technologies or expand operations that could absorb local talent.⁹⁹ This particularly limits youth employment in tech-enabled and sustainability-driven sectors.
- **Infrastructure Inadequacies:** Poor digital infrastructure, especially in rural areas (only 58% of rural MSMEs report reliable internet), undermines the growth of digital entrepreneurship and remote-work microjobs—two rapidly expanding employment models globally.¹⁰⁰ The rural-urban divide in infrastructure risks creating geographic inequity in access to MSME-led employment.
- **Market Access Challenges:** Limited access to domestic and international green markets, due to certification costs and information gaps (64% affected), not only restricts MSME growth but also stifles value chain employment in marketing, logistics, certification services, and product innovation.¹⁰¹ Market-linked support can unlock thousands of auxiliary jobs within MSME ecosystems.
- **Policy Implementation Gaps:** Although schemes exist, 57% of MSMEs struggle to navigate fragmented support systems, leading to low uptake of government employment-linked incentives.¹⁰² A simplified, one-stop digital platform could facilitate better access to hiring subsidies, skilling programmes, and youth apprenticeship schemes tied to MSME expansion.
- **Technology Ecosystem Limitations:** Limited access to appropriate technology solutions for small and medium enterprises stifles localized innovation and simultaneously reduces the demand for digitally skilled workers.¹⁰³
- **Scale-Related Constraints:** Micro-enterprises, which make up 97% of Haryana's MSMEs, face disproportionately high compliance and operational costs¹⁰⁴. This severely limits their ability to grow and

formalise jobs, resulting in persistently informal or insecure work arrangements. Targeted scale-transition support can help these units evolve into small businesses with stable employment capacities.

Addressing these barriers is essential not just for MSME resilience but to unlock their full potential as anchors of employment, innovation, and inclusive economic mobility across Haryana.

Impacts of the Issue

Direct Impact

- Outdated technologies reduce operational efficiency and limit demand for skilled labour within MSMEs
- Inability to meet environmental standards prevents MSMEs from entering green sectors, stalling the creation of green jobs
- High production costs and inefficiencies limit the capacity to expand hiring or invest in worker upskilling

Indirect Impact

- Business contraction or closure due to declining competitiveness leads to job losses, especially in export-linked and informal segments
- Missed opportunities in emerging green markets reduce long-term job potential in climate-aligned value chains
- Difficulty attracting skilled professionals, investors, or academic partnerships weakens the employment ecosystem around MSMEs

Global Learnings

Global Best Practice¹⁰⁵

Global practices show that MSME modernisation aligned with workforce development drives sustainable employment. The EU's €10 billion green finance push created jobs in clean-tech and recycling, while South Korea's Smart Factory model boosted SME productivity by 73% alongside skilling. Malaysia linked standards compliance with export jobs; Italy's SME clusters fostered job specialisation. Singapore's SkillsFuture tied tech adoption to upskilling, the Netherlands advanced circular economy jobs, and Sweden's procurement reforms spurred innovation hiring. Haryana can localise these models to unlock inclusive, job-rich growth.

Disruptive Technologies - Optimising Operations - Predictive Maintenance

Predictive maintenance leverages sensor data from machinery to forecast failures in advance, enabling machine owners to minimise maintenance costs and downtime. A Brazilian company specialises in supplying these sensors, which, when affixed to machines, provide a wealth of performance information. This allows machine owners to assess machinery states with minimal investment and receive rapid results. Embracing smart devices that generate data on equipment degradation, the company facilitates proactive maintenance strategies, empowering businesses to preemptively address issues and optimise operational efficiency.¹⁰⁶

WIPO GREEN – Global Marketplace for Sustainable Technology: WIPO GREEN is a global platform by WIPO that connects technology providers with seekers to accelerate green innovation diffusion. With over 1,20,000 listings, it empowers MSMEs to access and adopt sustainable technologies, supporting eco-friendly operations and international compliance. It fosters global collaboration on green technology transfer and sustainability solutions.

Possible Pathways

Short-Term Pathway (2030)

Identify Standards Gaps in MSMEs

- Conduct audits to assess current certifications and compliance gaps
- Align MSMEs with global standards to open up jobs in quality assurance, auditing, and export facilitation

Establish Green Technology Adoption Fund

- Offer subsidised loans for energy-efficient and clean technologies
- Enable MSMEs to create new green jobs in clean manufacturing, installation, and environmental monitoring

Promote Carbon Credit Awareness

- Develop easy-to-understand guides and run MSME-level pilot projects
- Create employment for climate consultants, carbon accountants, and verification agents

Build Sector-Specific Green Capacity

- Provide targeted training on energy efficiency, waste reduction, and sustainable processes
- Foster upskilling of existing workers and engagement of youth in high-demand green occupations

Long-Term Pathway (2047)

Standards Compliance Reward Programme

- Incentivise MSMEs to meet global quality and environmental norms
- Encourage growth of compliance-related service sectors—testing labs, training institutes, certification agencies—boosting skilled employment

Enable Carbon-Neutral MSME Supply Chains

- Introduce product and process certification for low-emission manufacturing
- Support employment in green logistics, sustainable sourcing, and environmental R&D
- Develop Sustainable MSME Infrastructure
- Establish eco-industrial parks and green clusters with shared utilities
- Generate direct jobs in infrastructure development, as well as ongoing employment in facility management, renewable energy operations, and waste services

Global Trade Facilitation

- Launch the “Haryana Global Gateway” Initiative – a platform to host biannual roadshows, global

Short-Term Pathway (2030)

- Leverage partnerships with universities and ITIs to promote industry-certified green skill programmes

Inclusive Entrepreneurship Promotion

- Create a Women & Minority Entrepreneurship Fund. Develop rural incubation hubs with mentorship support. Implement procurement policies with quotas for under-represented groups

Export Strategy Formulation

- The Global Information & Market Facilitation Team (GIFT) cell will formulate a dedicated state export policy, digital export modules, targeted market intelligence support, etc

Long-Term Pathway (2047)

- investment summits, and Government-to-Business (G2B) engagement in high-potential regions (Africa, ASEAN, Middle East, EU).
- Operationalise a Single Window for Inbound Investor Facilitation.

ISSUE 6: SOCIAL SECURITY FOR GIG AND UNORGANISED WORKERS

Haryana's labour landscape is experiencing a profound transformation with the expansion of the gig economy, characterised by flexible, temporary, and platform-mediated work arrangements. This evolution represents both significant opportunities and substantial challenges for worker welfare and economic development. While platform-based work offers unprecedented flexibility and income opportunities, particularly for workers facing barriers to traditional employment, it simultaneously creates new vulnerabilities through unpredictable earnings, limited benefits, and ambiguous employment status.

The gig economy in Haryana operates within India's broader informal labour context, where approximately 53 lakh unorganised workers from the state have registered on the e-Shram portal.¹⁰⁷ These workers span diverse sectors, including transportation, food delivery, personal services, and professional tasks facilitated through digital platforms. NITI Aayog projections indicate that India's gig workforce could reach 2.35 crore by 2030, potentially facilitating transactions exceeding USD 250 billion and contributing approximately 1.25% to the national GDP.¹⁰⁸

However, the fundamental challenge lies in the classification dilemma, where platform companies categorise workers as independent contractors rather than employees. This classification allows platforms to optimise operational flexibility while simultaneously excluding workers from traditional employment protections and benefits. The resulting precarity is particularly concerning in a state like Haryana, where social security coverage for informal workers remains limited, with significant gaps in health protection, income security, and retirement benefits.

The development of comprehensive social security mechanisms for gig and platform workers thus emerges as a critical policy priority for Haryana. Such frameworks must balance the inherently flexible nature of gig work with the fundamental need for worker protection, creating portable benefit systems that provide essential coverage while preserving the innovation and efficiency that characterise the platform economy.

Current Status

Haryana's gig and unorganised worker landscape demonstrates significant scale and complexity:

- ✔ **Worker Registration:** 53.87 lakh unorganised workers from Haryana registered on the e-Shram portal as of April 2025, representing approximately 7.5% of the state's working-age population¹⁰⁹
- ✔ **Sectoral Distribution:** Platform-based work spans diverse sectors including mobility (28%), delivery services (22%), home services (14%), professional services (11%), and other categories (25%)¹¹⁰
- ✔ **Worker Preferences:** Boston Consulting Group's research indicates that twice as many gig workers prefer independent platform work over traditional employment, citing schedule flexibility (87%), supplemental income opportunities (69%), and work variety (58%) as primary motivations¹¹¹
- ✔ **Market Potential:** Approximately 24 million jobs across India could migrate to technology-based gig platforms in the near-medium term, with an estimated 90 million roles potentially "gigable" based on task characteristics¹¹²
- ✔ **Economic Impact:** India's gig economy is projected to transact over USD 250 billion of work annually by 2030, contributing approximately 1.25% to India's GDP¹¹³
- ✔ **Digital Penetration:** 64% of Haryana's working-age population has smartphone access, but only 38% report comfort with platform-based work applications, indicating digital barriers to gig economy participation¹¹⁴

These statistics reveal both the substantial growth potential and significant protection gaps characterising Haryana's gig economy, underscoring the need for innovative social security approaches that align with the sector's unique characteristics.

Factors Influencing the Issue

- **Data Visibility Limitations:** Inadequate data systems for tracking distributed work patterns across multiple platforms create challenges in determining contribution requirements and benefit eligibility, with just 34% of platform workers' earnings comprehensively documented¹¹⁵
- **Digital and Financial Inclusion Barriers:** Digital literacy limitations (affecting 47% of potential workers) and financial inclusion gaps (38% lacking formal banking access) constrain both participation in the platform economy and access to digital benefit systems¹¹⁶
- **Platform Economic Models:** Platform commission structures averaging 20-30% of transaction value limit worker earnings potential, while algorithmic management systems prioritising customer experience can create earnings unpredictability for workers¹¹⁷
- **Policy Implementation Challenges:** Despite the Code on Social Security 2020's provisions for gig workers, implementation mechanisms remain underdeveloped, with funding sources, administrative structures, and delivery systems still evolving¹¹⁸
- **Heterogeneity of Work Arrangements:** The diversity of platform work—ranging from full-time engagement to occasional supplemental earnings—creates challenges in designing universally appropriate benefit structures¹¹⁹
- **Skilling and Career Development:** Limited pathways for skill development and career progression constrain long-term economic security, with only 23% of platform workers reporting access to structured upskilling opportunities¹²⁰

Addressing these multidimensional challenges requires coordinated interventions across policy, technology, and market dimensions to create a comprehensive social protection ecosystem for gig and platform workers.

Impacts of the Issue

Direct Impact

- Financial vulnerability of gig workers due to income volatility, lack of healthcare coverage, and absence of retirement benefits
- Limited ability of platform workers to invest in skills development and education due to financial constraints and a lack of structured career pathways
- Health and safety risks for workers in hazardous occupations without adequate protections or insurance coverage

Indirect Impact

- Reduced consumer spending and economic participation due to financial insecurity, creating demand constraints in local economies
- Diminished workforce adaptability and skills progression, limiting Haryana's ability to meet evolving industry needs
- Increased burden on public healthcare systems and social welfare programmes to address preventable health issues

Global Learnings

Global Best Practice¹²¹

Global models for gig worker protection balance flexibility with social security through innovative frameworks. California's portable benefits allocate 5–6% of earnings across platforms, while France mandates platform contributions to social funds. Spain's hybrid "Riders Law" boosted coverage by 40%. Cooperative models like New York's "Up & Go" return 95% revenue to workers. Sweden ensures minimum earnings via sectoral bargaining, Finland's basic income improved well-being (78%), and Singapore's SkillsFuture supports upskilling.

European Union's Directive on Platform Work:¹²²

The EU's 2024 Directive on Platform Work secures labour rights for gig workers by establishing clear criteria for employment status and mandating benefits like minimum wage, paid leave, and pensions when platforms exert control. It also requires human oversight of algorithms, enabling workers to challenge automated decisions. This directive marks a major step toward balancing flexibility with robust worker protections.

Disruptive Technologies - Empowering Gig Workers: Innovations in Retirement Planning

The evolution of retirement planning is increasingly addressing the unique challenges encountered by gig workers in securing their financial futures. Recognising the importance of proactive retirement savings, investment strategies, and long-term financial planning, this trend highlights the necessity for gig workers to take control of their retirement plans. Startups are spearheading solutions aimed at providing gig workers with employer-provided retirement benefits and consistent income streams. Innovations such as retirement apps, pension planning services, robo-advisors, and online retirement calculators are empowering gig workers to navigate their financial journeys with confidence. By leveraging these tools, gig workers can proactively build a solid financial foundation for retirement, ensuring greater financial security and peace of mind for the future.¹²³

Possible Pathways

Short-Term Pathway (2030)

Legislative Action and Scheme-Based Delivery

- Prioritise the timely enactment of the bills for the social security and welfare of gig and platform workers currently being drafted by the Government of Haryana
- Adopt a parallel scheme-based implementation approach to ensure timely access to welfare benefits. Reference best practices from Telangana, Karnataka, Tamil Nadu, and West Bengal to design targeted social protection programmes for gig and informal workers

Policy Alignment and Worker Protections

- Integrate paid sick leave into gig and platform work arrangements, aligned with the Code on Social Security, 2020, as recommended in the NITI Aayog Report
- Improve worker safety and mobility by:
 - Providing road safety training
 - Accident insurance coverage and grievance redressal mechanisms
 - Enhancing urban mobility infrastructure for safer transit for workers operating in city environments

Financial Inclusion and Credit Access

- Facilitate informal workers' access to a broad range of financial services, including microfinance, savings accounts, insurance products, and digital payment systems. These measures will help workers manage their finances, invest in their livelihoods, and reduce risk exposure
- Expand Access to Government Credit Programmes for Urban informal workers, and gig and platform workers. These workers should be actively linked to existing credit schemes under various state government programmes, and their inclusion should be prioritised

Social Security Benefits

- Roll out targeted schemes (insurance, pension, aid) for gig/unorganised workers
- Launch pilot programmes to test the impact and refine the design
- Secure both short-term risk protection and long-term security

Digital Registration and Monitoring

- Launch a dedicated portal to onboard and track workers
- Assess platform impact on livelihoods before roll out to ensure the system is user-centric and beneficial
- Reduce entry barriers by supporting access to essential assets such as mobile phones, vehicles, and digital tools through subsidies, financial assistance, or leasing programmes
- Launch initiatives to promote digital literacy and market access, enabling workers to effectively engage with both small and large platforms and contribute to inclusive, sustainable sectoral growth
- Emphasise the potential for increasing women's participation in the gig and platform economy, as highlighted in the NITI Aayog report
- Implement real-time dashboards for benefit delivery and scheme usage
- Integrate fast, transparent grievance redressal tools

Innovation and Enterprise Support

- Promote innovation and entrepreneurship to strengthen Haryana's informal economy. Support social enterprises, emerging technologies, and alternative business models. Facilitate enterprise development through structured training, mentorship, access to finance, and incubation services

Short-Term Pathway (2030)

Outreach and Awareness

- Design clear, regional-language IEC materials (Hindi, Haryanvi, etc.)
- Drive multi-platform awareness campaigns (digital, social, local media)
- Mobilise outreach through gig platforms, unions, and local bodies
- Leverage existing Employment Exchanges and Model Career Centres to provide assistance and advocacy, addressing workplace concerns and promoting fair labour practices

Skill Development & Capacity Building

- Prioritise capacity building and social infrastructure development for gig and unorganised workers. The state should invest in training related to financial and digital literacy, entrepreneurship, occupational safety, and legal rights

- Prioritise skilling initiatives for gig and platform workers through partnerships with leading digital platforms like Ola, Uber, Amazon, and Urban Company. Develop a structured, industry-aligned upskilling framework to support both horizontal and vertical mobility, enabling workers to diversify their skills and access better earning opportunities
- Invest in education and training programmes to improve the skills and earning potential of gig and unorganised workers
- Prepare a globally competitive workforce for emerging technological challenges

Long-Term Pathway (2047)

Integrating Social Security into Labour Laws

- Mandate platform and employer contributions to social schemes for gig workers, ensuring alignment with existing labour laws
- Use digital tools to monitor compliance

Exploring Universal Basic Income (UBI)

- Set up an expert group for a feasibility study
- Do a fiscal and cost-benefit analysis
- Conduct surveys and focus groups
- Learn from UBI pilots in India

Strengthening Administrative Capacity

- Audit department resources and gaps
- Train staff on digital delivery and grievance redressal

- Leverage AI/ML for tracking and analysis, and deploy multilingual AI chatbots to strengthen administrative capacity for gig worker social security
- Technology-Enabled Service Delivery to achieve 100% digital connectivity for service delivery
- Form an expert tech task force
- Integrate blockchain with social systems
- Enable digital IDs for gig/unorganised workers

Fostering Social Cohesion and Inclusion

- Host state-level forums and consultations
- Ensure benefits for women, migrants, Persons with Disabilities (PwDs)
- Organise annual worker events for solidarity

BIG ACTIONS

1. Teach-to-Transform 2.0

A new age teacher development initiative merging advanced digital pedagogy and hands-on vocational training in every classroom, complemented by a state-backed cluster of solar-powered education hubs in rural areas. This synergy ensures interactive, inclusive learning for all ages—complete with blended instruction, career counselling, and skill workshops—empowering Haryana's youth to excel in a rapidly changing global landscape.

2. Future Skills Programme

Haryana will integrate coding, robotics, and green technology into every school and college curriculum (in partnership with industry), ensuring youth are prepared for high-tech and sustainable jobs of the future. An immersive learning ecosystem will be developed that uses AI-driven adaptive lessons, virtual reality simulations, and real-time collaborations with local industry.

3. Project Infinity

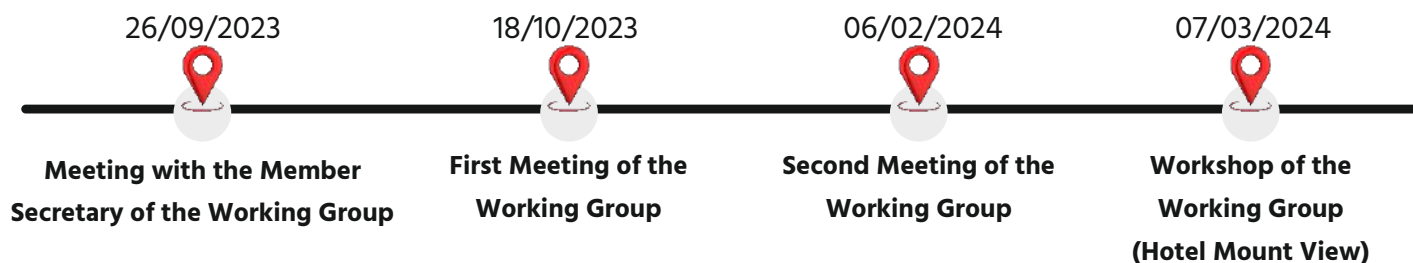
A bold new endeavour that establishes specialised centres for cutting-edge research in AI, biotech, and quantum technologies—pioneering breakthroughs by uniting academia, startups, and public agencies under one collaborative framework. Through these advanced laboratories and innovation clusters, Haryana aims to become a global centre of discovery, nurturing the next generation of scientists and entrepreneurs.

WORKING GROUP - 2

Departments

- | | | | |
|--|--|--|-------------------------|
| 1. Elementary Education | 2. Secondary Education | 3. Higher Education | 4. Technical Education |
| 5. Skill Development and Industrial Training | 6. Department of Industries and Commerce | 7. Directorate of Micro, Small, & Medium Enterprises | 8. Science & Technology |
| 9. Employment | 10. Labour | 11. Social Justice, Empowerment, Welfare of Scheduled Caste & Backward Classes, and Antyodaya (SEWA) | |

Timeline



REFERENCES

¹Department of School Education & Literacy, Ministry of Education, Government of India. "UDISE+ 2024-25", Ministry of Education, Government of India.

^{2a}Agniveers will get 20 pc reservation in state police recruitment: Haryana CM Nayab Singh Saini." The Economic Times, 6 April 2025, <https://economictimes.indiatimes.com/news/India/agniveers-will-get-20-pc-reservation-in-state-police-recruitment-haryana-cm-nayab-singh-saini/articleshow/120039024.cms?from=mdr>. Accessed 30 June 2025

³Department of School Education, Government of Haryana

⁴Ibid

⁵Department of School Education & Literacy, Ministry of Education, Government of India. "UDISE+ 2023-24", Ministry of Education, Government of India.

⁶Department of Higher Education, Haryana

⁷Ibid

⁸AISHE Report 2012-13

⁹AISHE Report 2021-22

¹⁰Department of School Education & Literacy, Ministry of Education, Government of India. "UDISE+ 2024-25", Ministry of Education, Government of India.

¹¹Ibid

¹²Annual Report Periodic Labour Force Survey (PLFS) July 2023-June 2024

¹³Gol, Ministry of Health & Family Welfare. "National Family Health Survey (NHFS-5) 2019-21." September 2021

¹⁴Ibid

¹⁵Ibid

¹⁶Ibid

^{17a}"India Skills Report 2025." Wheebox, 2025 https://wheebox.com/assets/pdf/ISR_Report_2025.pdf

¹⁸Press Release:Press Information Bureau." Press Release:Press Information Bureau, 3 January 2025, <https://pib.gov.in/PressReleasePage.aspx?PRID=2090056>.

¹⁹"1 STATES' STARTUP RANKING 2022 | NATIONAL REPORT." Startup India, 15 January 2024, https://www.startupindia.gov.in/srf/images/SRF_2022_Result_page/National_Report_14_01_2024.pdf

²⁰UDYAM Portal as on 1st November 2025 https://dashboard.msme.gov.in/Udyam_Statewise.aspx

²¹Haryana Population 2025 | Sex Ratio & Literacy rate 2025." Population Census 2011, <https://www.census2011.co.in/census/state/haryana.html>

²²Department of School Education & Literacy, Ministry of Education, Government of India. "UDISE+ 2023-24", Ministry of Education, Government of India.

²³Ibid

²⁴Ibid

²⁵Ibid

²⁶Census 2011

²⁷Department of School Education & Literacy, Ministry of Education, Government of India. "UDISE+ 2021-22", Ministry of Education, Government of India.

²⁸Ibid

²⁹Department of School Education & Literacy, Ministry of Education, Government of India. "UDISE+ 2024-25", Ministry of Education, Government of India.

³⁰Ibid

³¹Ibid

³²Department of School Education & Literacy, Government of Haryana

³³ASER 2022

³⁴ASER 2024

³⁵Department of School Education & Literacy, Ministry of Education, Government of India. "UDISE+ 2024-25", Ministry of Education, Government of India.67-Government of India, "Annual Report, PLFS, 2023-24". 2024

³⁶<https://www.educationfinland.fi/edudev/digitalization>

³⁷"Four Ways AI Could Revolutionize Education Technology." Forbes, 2025. <https://www.forbes.com/sites/forbestechcouncil/2024/04/18/four-ways-ai-could-revolutionize-education-technology/?sh=71f786cf374a>

³⁸Ministry of Education, "National Education Policy 2020," Government of India, 2020, p.14-16, NEP_Final_English_0.pdf

³⁹World Economic Forum, "Future of Jobs Report 2023," 2023, p.42-45, [WEF_Future_of_Jobs_2023.pdf](#)

⁴⁰ Department of School Education & Literacy, Ministry of Education, Government of India. "UDISE+ 2024-25", Ministry of Education, Government of India.

⁴¹Department of School Education, Government of Haryana

⁴²Department of School Education & Literacy, Ministry of Education, Government of India. "UDISE+ 2024-24", Ministry of Education, Government of India.

⁴³Ibid

⁴⁴Ibid

⁴⁵Ibid

⁴⁶National Council of Educational Research and Training, "National Achievement Survey: Teacher Questionnaire Analysis," 2023, p.43

⁴⁷National Council of Educational Research and Training, "NEP 2020 Implementation Monitoring: Assessment Practices," 2024, p.28.

⁴⁸Department of School Education & Literacy, Ministry of Education, Government of India. "UDISE+ 2023-24", Ministry of Education, Government of India.

⁴⁹Ibid

⁵⁰National Council of Educational Research and Training, "Teacher Educator Survey," 2023, p.32.

⁵¹National Council of Educational Research and Training, "Assessment Reforms Implementation Study," 2023, p.41.

⁵²National Centre for School Leadership, "School Leadership Development Monitoring Report," 2023, p.28

⁵³National Council of Educational Research and Training, "Teacher Professional Development Effectiveness Study," 2023, p.53.

⁵⁴Ministry of Education, "Teacher Career Pathways Study," Government of India, 2023, p.39

⁵⁵<https://www.educationestonia.org/teachers-improve-digital-competence/>

⁵⁶Modaffari, Jamil, and Akilah Alleyne. "Future of Testing in Education: Artificial Intelligence." Center for American Progress, 16 September 2021, <https://www.americanprogress.org/article/future-testing-education-artificial-intelligence/>.

⁵⁷"India Skills Report 2025." Wheebox, 2025 https://wheebox.com/assets/pdf/ISR_Report_2025.pdf

⁵⁸Ibid

⁵⁹Ibid

⁶⁰<https://www.gan-global.org/>

⁶¹"iMocha introduces an advanced AI-Skills Match Engine to simplify Talent Acquisition." PR Newswire, 22 January 2024, <http://www.prnewswire.com/news->

⁶²PLFS Annual Report Periodic Labour Force Survey (PLFS) July 2023-June 2024

⁶³IBID

⁶⁴IBID

⁶⁵IBID

⁶⁶IBID

⁶⁷Government of India, "Annual Report, PLFS, 2023-24". 2024

⁶⁸"Press Information Bureau." Press Information Bureau, 30 June 2022, <https://pib.gov.in/PressReleasePage.aspx?PRID=1838178> Press Release:Press Information Bureau

⁶⁹"Shri Piyush Goyal unveils 'Logistics Ease Across Different States (LEADS) 2024' Report." Press Release:Press Information Bureau, 3 January 2025, <https://pib.gov.in/PressReleasePage.aspx?PRID=2090056>. Accessed 2 May 2025.

⁷⁰Ibid

⁷¹"Perspectives of Entrepreneurship in Haryana- Challenges and Opportunities." Journal of Emerging Technologies and Innovative Research, <https://www.jetir.org/papers/JETIR2103085.pdf>.

⁷²https://www.startupindia.gov.in/srf/images/SRF_2022_Result_page/National_Report_14_01_2024.pdf

⁷³https://www.startupindia.gov.in/srf-2022/SRF_2022_Result_page/Haryana_Layout.pdf?

⁷⁴https://www.startupindia.gov.in/srf-2022/SRF_2022_Result_page/Haryana_Layout.pdf?

⁷⁵Industries & Commerce Department, Haryana

⁷⁶Ibid

⁷⁷Ibid

⁷⁸Udhyan Registration Portal as on 31st March 2025

⁷⁹Ibid

⁸⁰Ibid

⁸¹Industries & Commerce Department, Haryana

⁸²India Skills Report 2025, wheebox.com/assets/pdf/ISR_Report_2025.pdf

⁸³(Haryana Rural Development Department)

⁸⁴<https://hipaco.in/public/en/ced>

⁸⁵PLFS Annual Report Periodic Labour Force Survey (PLFS) July 2023-June 2024

⁸⁶https://www.oecd.org/content/dam/oecd/en/publications/reports/2022/05/promoting-start-ups-and-scale-ups-in-denmark-s-sector-strongholds-and-emerging-industries_cc919df3/8f9bd7b0-en.pdf

⁸⁷AI's Latest Job: Capture The 'X' Factor In Business Innovation." Forbes, 2023, <https://www.forbes.com/sites/joemckendrick/2023/11/15/ais-latest-job-capture-the-x-factor-in-business-innovation/?sh=42f81c5d3ba3>.

⁸⁸UDYAM Portal as on 1st November 2025 https://dashboard.msme.gov.in/Udyam_Statewise.aspx

⁸⁹"MSME Industry in India – Market Share, Reports, Growth & Scope." IBEF, <https://www.ibef.org/industry/msme>.

⁹⁰UDYAM Portal as on 1st November 2025 https://dashboard.msme.gov.in/Udyam_Statewise.aspx

⁹¹Ibid

⁹²"MSME Industry in India – Market Share, Reports, Growth & Scope." IBEF, <https://www.ibef.org/industry/msme>.

⁹³Ibid

⁹⁴Ibid

⁹⁵India Brand Equity Foundation, "MSME Industry in India," 2023

⁹⁶Directorate of Industries, Chandigarh, Haryana, "Gender Distribution in MSME Sector," 2023

⁹⁷Haryana State Industrial Survey, "Technology Adoption in Manufacturing MSMEs," 2023.

⁹⁸Quality Council of India, "Standards and Skills in MSME Sector," 2023

⁹⁹MSME Ministry and GIZ, "Survey on Green Finance for MSMEs,"

¹⁰⁰Ministry of Electronics and Information Technology, "Digital Infrastructure Assessment Report," 2023

¹⁰¹UN Environment Programme & DBS, "Mobilizing Sustainable Finance for Small and Medium-Sized Enterprises," 2020

¹⁰²Observer Research Foundation, "Financing Green Transition in MSMEs," 2022

¹⁰³Faruque, Md Omar & Chowdhury, Saddam & Rabbani, Golam & Nure, Alam. (2024). Technology Adoption and Digital Transformation in Small Businesses: Trends, Challenges, and Opportunities. International Journal For Multidisciplinary Research. 6. 10.36948/ijfmr.2024.v06i05.29207.

¹⁰⁴World Bank, "Cost of Doing Business for Micro Enterprises in India," 2023

¹⁰⁵<https://www3.wipo.int/wipogreen/en/>

¹⁰⁶"Case study on Internet of Things in manufacturing." OECDiLibrary, 5 March 2024, <https://www.oecd-ilibrary.org/sites/c4be2088-en/index.html?itemId=/content/component/c4be2088-en#section-d1e12295-509abcdb0c>.

¹⁰⁷Ministry of Labour & Employment, "e-Shram Portal Registration Statistics," Government of India, April 2025.

¹⁰⁸NITI Aayog, "India's Booming Gig and Platform Economy: Perspectives and Recommendations on the Future of Work," Government of India, June 2022, p.15.

¹⁰⁹Ministry of Labour & Employment, "e-Shram Portal Registration Statistics," Government of India, April 2025.

¹¹⁰NITI Aayog, "India's Booming Gig and Platform Economy: Perspectives and Recommendations on the Future of Work," Government of India, June 2022, p.23

¹¹¹Boston Consulting Group, "Future of Work: Gig Work in India," 2022, p.18.

¹¹²Michael & Susan Dell Foundation, "Unlocking the Potential of the Gig Economy in India," March 2021, p.24.

¹¹³NITI Aayog, "India's Booming Gig and Platform Economy: Perspectives and Recommendations on the Future of Work," Government of India, June 2022, p.32.

¹¹⁴TRAI, "Digital Access and Inclusion Report," 2023, p.42; State IT Department, "Digital Readiness Assessment," Government of Haryana, 2023, p.28.

¹¹⁵NITI Aayog, "India's Booming Gig and Platform Economy: Platform Economy Data Visibility Assessment," 2023

¹¹⁶State IT Department, "Digital Inclusion Report," Government of Haryana, 2023, p.41; RBI, "Financial Inclusion Progress Report," 2023, p.27

¹¹⁷Competition Commission of India, "Platform Economy Market Study," 2023, p.54.

¹¹⁸Ministry of Labour & Employment, "Code on Social Security Implementation Readiness Assessment," Government of India, 2023, p.38.

¹¹⁹NITI Aayog, "India's Booming Gig and Platform Economy: Perspectives and Recommendations on the Future of Work," Government of India, June 2022, p.42.

¹²⁰National Skill Development Corporation, "Platform Worker Skills Assessment," 2023, p.29

¹²¹<https://stripe.com/in/resources/more/obligation-to-contribute-to-social-insurance-in-germany>

¹²²<https://www.ft.com/content/97bda226-c200-4240-bd8e-ba1924d8c613>

¹²³"Explore the Top 10 Gig Economy Trends in 2024." StartUs Insights, <https://www.startus-insights.com/innovators-guide/gig-economy-trends/>.

