National Skill Gap Study for High Growth

Questionnaire 1: Agri-tech Firms

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The Ministry of Skill Development and Entrepreneurship (MSDE) is undertaking the 'National Skill Gap Study for High Growth Sectors', and NCAER is the implementing agency for the study. The overall objective of this work is to develop a Labour Market Information System. The specific objective of this questionnaire is to understand the present and future demand for job roles/occupations and associated skills. This study is sponsored by the Ministry of Skill Development and Entrepreneurship.

Your identity would be held confidential while discussing your suggestions and views on the subject.

1. Respondent's Name....................................
2. Respondent's Firm Name.............................
3. Respondent's Designation............................
4. Respondent's Phone ....
5. Respondent's Email ....
6. Website of your firm..............................

FIRM PROFILE

7. What is the firm's ownership type? *(Please select one)*
   ☐ Public Sector   ☐ Public Limited   ☐ Private Limited
   ☐ Partnership/Individual ☐ Multinational   ☐ Limited Liability
     Ownership   Company   Partnership
   ☐ Cooperative   ☐ Others, please specify: _____

8. What was the annual turnover range in FY 2023-24? *(Please select one)*
   ☐ ≤ Rs 5 crore (Micro)   ☐ > Rs 5 crore & ≤ Rs 50 crore (Small)
   ☐ > Rs 50 crore & ≤ Rs 250 crore (Medium) ☐ > Rs 250 crore (Large)

9. What was the investment in plant and machinery in FY 2023-24? *(Please select one)*
   ☐ ≤ Rs 1 crore   ☐ > Rs 1 crore & ≤ Rs 10 crore
   ☐ > Rs 10 crore & ≤ Rs 50 crore ☐ > Rs 50 crore
   ☐ No investment

10. What are the main activities carried out by the firm? *(Multiple selection is possible)*
    ☐ Technical guidance and accessibility to a wide range of high-quality inputs to farmers
    ☐ Access to financial services, and market linkages
    ☐ Provides a network of agri retailers
    ☐ Providing real-time data and insights.
    ☐ Predict weather patterns and build early warning systems
    ☐ Storage services and facilitates affordable financial solutions
    ☐ AI and image recognition tools to perform grading and quality checks of agri products.
    ☐ Directly purchases from farmers and sells through online platform
    ☐ Range of tech solutions such as crop advisory, grading, packaging, logistics and sales support.
    ☐ Sourcing raw materials to warehousing.
    ☐ Any other, please specify_____

11. Agri tech encompasses a wide range of technologies to improve efficiency, increase yields, reduce costs, and boost sustainability. Which technologies does the firm use? *(multiple selections possible)*

- ☐ Precision Monitoring
- ☐ Monitoring and Data Analysis
- ☐ Automated irrigation systems, automated Tractors, Combine harvester
- ☐ Satellite and drone imagery
- ☐ Robotics
- ☐ Any other, Please Specify_____

- ☐ Block Chain Technology
- ☐ Big data analysis and Machine Learning
- ☐ KissanGPT, ChatGPT
- ☐ Internet of Things (IoT) sensors
- ☐ Smart greenhouses (Vertical farming)

12. Overall, what is the percentage of female employees in the firm? *(Please select one)*

- ☐ 0%
- ☐ ≤20%
- ☐ >20% & ≤40%
- ☐ >40% & ≤60%
- ☐ >60% & ≤80%
- ☐ >80%

UNDERSTANDING HIRING, SKILLING, GENDER-BASED ROLES, AND SKILL SHORTAGES

13. What are the mediums used for hiring employees? *(multiple selections possible)*

- ☐ Employment agency
- ☐ Own website advertisements
- ☐ Vocational training institutes
- ☐ Newspaper advertisements
- ☐ Networks and referrals

- ☐ Online job sites/advertisements; Please specify:
- ☐ Campus recruitment; Please mention institutions:
- ☐ Sector Skill Council/Sector Skill Council affiliated institutes
- ☐ Internships/apprenticeships
- ☐ Others, specify: _____

14. Do you provide on-the-job training within the firm, either before or after deployment?
Yes / No: _____
If 'Yes', what is your policy? _____
Should this training rather be provided by India's education and skilling system? ____

15. Does the firm run its own skilling institution, or have any tie-up / informal association with another institution / ASCI for skilling purposes?
Yes / No: _____; Is it owned by the firm? Yes / No: _____
If 'Yes', please mention which institutions: _____

16. What kind of association(s) does the firm have with the skilling institution(s) identified in Q.15? *(multiple selections possible)*

- ☐ We offer apprenticeships/internships for trainee students
- ☐ We offer inputs to the course curriculum
- ☐ We sponsor fresh skilling programmes to absorb the students later
- ☐ No associations

- ☐ We send our staff to take visiting classes or other classes
- ☐ We sponsor lab facilities in TVET or other institutions
- ☐ We sponsor re-skilling/upskilling programs for our employees
- ☐ Other; please specify: _____

We have collated a list of occupations from the National Classification of Occupations (NCOs) and job roles from the Agriculture Skills Council of India (ASCI), associated with the agriculture value chain in Annexure (see Annexure 4.5 for the list of job roles; this was attached to the questionnaire).

17. For all types of activities that the firm is involved in (Q.10), do the job roles (*Annexure 4.5*) cover the relevant activities undertaken by the firm?
Yes / No: _____
What other occupations/job roles should be included? Please specify: _____

18. As regards gender ratio, which job roles:
Employ majority women (>50% of all workers in the job role): _____
Employ some women (20% to 50% of all workers in the job role): _____
Employ no women (0% of all workers in the job role): _____

19. How easy or difficult was it to fill the job roles (including the number of positions) advertised by the firm in the last three years (FY 2021-22 onwards)? (Add rows if necessary. If the firm advertised many job roles, you can specify job roles at two extremes: those which were easiest to fill, and those very difficult/un-filled).

S. No.	Job Roles advertised	Please Specify the Level: Entry level/intermediate or mid-level/senior level/ managerial level/director level /executive level	Difficulty of filling jobs (rank) 1. Very easy; 2. Easy; 3. Average; 4. Difficult; 5. Very difficult; 6. Not filled at all
1			
2			
3			
4			
5			

20. In Q.19, for the job roles with rank 3-6 on 'difficulty of filling jobs', can you please detail the skills, knowledge and education sought by the firm, in the form of a detailed job description? (Please refer to *Table Q1.1*. Request you to provide the details for each of the relevant job roles within the format of *Table Q1.1*).
    We are seeking the following information:

Job Role	Stage of Value Chain	Tasks	Educational Qualifications sought by the firm	Knowledge (technical and theoretical knowledge relating to the job role)	Technical Skills (Computer applications and software)	Years of Experience	Skills (refer to Table Q1.2)	Geographical areas/spatial clusters (existing or emerging) where it is most difficult to fill the role (mention States and Districts)

21. Who is presently providing education and skilling for these 'hard to fill' job roles in Q.20, if any? Nobody / formal education system / vocational education system? Please specify: _____
    Is the formal/vocational education system run by the government / private parties / NGOs? Please specify: _____
    Please list the formal and vocational training institutions for these job-roles:_____

22. For the Agritech firm involved in (Q.10 and Q.11), what are the upcoming technological developments? Please specify: _____

23. Does the firm have its own R&D and design division, or plan to develop one?
    Have R&D unit/Plan to set up R&D unit / no R&D and no plan: _____

24. In view of the developments (Q.22 and Q.23), which job roles will be in-demand in the next three years by the firm? (Please refer to *Table Q1.1*. Request you to provide the details, for each of the relevant job roles, within the format of *Table Q1.1*). We are seeking the following information:

Job Role	Stage of Value Chain	Tasks	Education	Knowledge	Technical Skills	Years of Experience	Skills (refer to Table Q1.2)	Geographical areas/spatial clusters where needs are highest (mention States and Districts)	Difficulty of finding workers 1. Not at all difficult 2. Somewhat difficult 3. Difficult 4. Very Difficult 5. Extremely difficult

GENDER DIVERSITY AND CARRER PATH AT WORKPLACE

25. In the next three years, do you perceive a demand for women in particular job roles, either among the existing job-roles or those which will be in-demand in future?
Yes / No: _____
If 'Yes', please specify which ones: _____

26. Does the firm have hiring policies to encourage female employment, especially in non-traditional job roles?
Yes / No: _____
If 'Yes', please explain the policy in detail: _____
Does the firm have a creche on its premises? Yes / No: _____

27. Has the firm defined sexual harassment policies, prevention systems, procedures and service rules for its employees (Prevention of Sexual Harassment at Workplace Act 2013)?
Yes / No: _____

28. Does the firm offer a career-path to all its employees? (for instance, has anyone at the firm risen from being at a 'technician level position' to a 'managerial level position')?
Yes / No: _____
Does the firm fund the employee's education/upskilling/re-skilling, as may be required for higher-level job roles? Yes / No: _____

EMPLOYMENT BACKGROUND

29. How many people are employed at the firm?

S. No.	Particulars	Number of people employed	
		Managerial Staff (No.)	Workers (No.)
Total Employees (in numbers)			

30. With reference to the total employees identified in Q.29, what is the educational background of the employees (as percentage (%) of total employees)?

Below Class X (%)	Above Class X and Below Class XII (%)	Class XII pass (%)	Vocationally Educated (ITI, PMKVY, RPL etc.) (%)	Bachelor's degree and above (%)

Table Q1.1: Details of Identified Job Roles in Q.20 and Q.24 of the Questionnaire

(Request you to provide the details, for each of the relevant job roles, in the format as given below)

S. No.: _____
Job Role: _____

Table 1: Job Descriptors

Descriptors		Firm's Answer
Alternative job titles in the industry		
Stage of the value chain: 1. Pre-production 2. Production 3. Post Production		
Is this job role: 1. 'Difficult to fill' at present (Q.20), or 2. Will be in-demand in next 3 years by the firm (Q.24)		
How many do you need to hire at the 'present moment'/now, or you will need to hire 3 years from now?		
Tasks to be performed in the job role (please include specific systems / components / technologies / personnel required to be dealt or interacted with, if any)		
Education: School (up to what level?) / ITI/ Short-term vocational training programme/ Bachelors/ Masters)		
Knowledge	General? What knowledge?	
	Specialised (Sector, Occupational, and Trade)	
Technical Skills: Software languages required, or maybe required in the near future		
Years of Experience, if any		
Skills required and level of competence (refer to framework of skills in **Table Q1.2** below)		
Difficulty of finding workers in the job role, with the above requirements and the skills as detailed below: 1. Not at all difficult 2. Somewhat difficult 3. Difficult 4. Very Difficult 5. Extremely difficult		
Geographical areas/spatial clusters (existing or emerging) where it is most difficult to fill the role** (mention States and Districts)		

*** Please explain the reasons behind skill shortage in the specified states and districts: Are there <u>demand side factors</u> (such as low salary, demanding work conditions, absence of platforms to advertise jobs, non-acceptability of workers from conventional labour markets, competition from other sectors to hire the same candidate, etc) and/or <u>supply side factors</u> (such as course not offered by Indian institutions, specialised skilled people not available, absence of and/or proximity to training centres, poor quality of skilling and training programs, lack of programs for re-skilling/upskilling workers from traditional sectors, high salary expectations, non-aspirational job role, availability of other work avenues, etc)?*

Table Q1.2: List of Skills

Please think whether the person in the above job profile would need the following skills to do their job. (Please choose the relevant skills and indicate the level of competence required for those skills)		
Skills Required	If required, what is the degree of competence needed in the employee? 1. Beginner 2. Intermediate 3. Competent 4. Advanced 5. Very Advanced	Comments
Reading Literacy: Would they need to read and understanding written sentences and paragraphs in work related documents?		
Writing: Would they need to communicate effectively in writing as per their audience for their job?		
Speaking: Do they need to talk to others to convey information effectively?		
Communication: Would they need to provide information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person?		
Language Skills 1: Is knowledge of the structure and content of the language including the meaning and spelling of words, rules of composition, and grammar required for the job?		
Language Skills 2: Any specific language requirement for the job? If Yes, which one?		
Numeracy/Mathematics: Would they need to work with numbers for their job?		
ICT Literacy to Skills: Would they need to use mobile phones/tabs/computers etc. to do their job? For example, Arts & Graphics, Desktop Publishing, Presentation, Spreadsheet, Word Processing, Programming, Client Server/Networking/Hardware, Operating Systems, Database/Statistics, Engineering Software and Web Page Design etc.		
Self-learning to Active (Independent) Learning: Would they need to understand new information for both current and future problem-solving and decision-making at their job? Are they expected to do on their own for the job or self-learn, if the material is provided to them?		
Active Listening: Do they need to listen for their job, like taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times?		
Science: Do they need to use scientific rules and methods to solve problems at work?		
Problem Solving: Do they need to identify problems and review related information to develop and evaluate options and implement solutions?		
Learning Strategies: Do they need to select and use training/instructional methods and procedures appropriate for the situation when learning or teaching new things?		

Please think whether the person in the above job profile would need the following skills to do their job. (Please choose the relevant skills and indicate the level of competence required for those skills)		
Skills Required	If required, what is the degree of competence needed in the employee? 1. Beginner 2. Intermediate 3. Competent 4. Advanced 5. Very Advanced	Comments
Critical Thinking: Would the worker need to use logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems?		
Creativity: Do the workers need to develop, design, or create new applications, ideas, relationships, systems, or products, including artistic contributions?		
Independent research: Would the worker need to conduct literature review, undertake data collection, cleaning etc., develop research plan?		
Judgement and Decision-making: Would the worker need to consider the relative costs and benefits of potential actions to choose the most appropriate one?		
Systems Analysis: Would the worker need to determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes?		
Systems Evaluation: Would workers need to identify measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system?		
Financial Resources: Would the worker need to determine how money will be spent to get the work done, and accounting for these expenditures?		
Material Resources: Would the worker need to obtain and see to the appropriate use of equipment, facilities, and materials needed to do certain work?		
Personnel Resources: Would the worker need to motivate, develop, and direct people as they work, identifying the best people for the job?		
Time Management: Managing one's own time and the time of others		
Seek and Value Diversity: Do workers need to work with people (as colleagues/clients etc.) from other cultures/States/socio-economic backgrounds etc? Is it important for their job performance? Is it likely to be important for their job performance?		
Gender Diversity: Do workers need to work with female colleagues/clients etc.? Is it important for their job performance? Is it likely to be important for their job performance?		
Conscientiousness (including attitude towards work): Will the worker need to be organised, responsible, and hardworking or have any one of the following traits- Competence (efficient), organised, dutiful (not careless), ambitious, self-discipline (not lazy), and not impulsive?		

Please think whether the person in the above job profile would need the following skills to do their job. *(Please choose the relevant skills and indicate the level of competence required for those skills)*		
Skills Required	If required, what is the degree of competence needed in the employee? 1. Beginner 2. Intermediate 3. Competent 4. Advanced 5. Very Advanced	Comments
Openness to Experiences: Will the worker need to be open to new aesthetic, cultural, or intellectual experiences or have any one of the following traits- Imaginative, artistic, excitable, wide interests, curious and unconventional?		
Extraversion: Will the worker need to show the following traits- warmth (friendly), sociable, self-confident, energetic, excitement seeking (adventurous), and enthusiastic?		
Agreeableness: Will the worker need to work in a team in a cooperative, unselfish manner?		
Neuroticism/Emotional stability: Will the worker need to show emotional stability i.e. predictability and consistency in emotional reactions, with absence of rapid mood changes?		
Does the worker need social skills at work?		
Instructing: Does the worker need to teach others how to do something?		
Negotiation: Does the worker need to bring others together and try to reconcile differences?		
Persuasion: Do workers need to persuade others to change their minds or behaviour?		
Occupation-specific skills		
Physical skills, including job-specific complex psychomotor skills		
Global Competence: Globally competent workers		
Any other? Please specify:		

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Questionnaire 2: Questionnaire for Farmer Producer Organisations (FPOs)

National Council of Applied Economic Research
Parisila Bhawan, 11, Indraprastha Estate,
New Delhi -110002, India

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Your identity would be held confidential while discussing your suggestions and views on the subject.

1   Name of the FPO.....................
2   Date of Registration of FPO...............................
3   Respondent's Name..................................
4   Respondent's Designation...................................
5   Respondent's Phone ....
6   Respondent's Email: ....
7   Is there any website for the FPO? If yes, please provide the address..............................

FPO PROFILE
1   Membership restricted to?
     Number of villages
     Number of GPs
     Number of Blocks

2   Board of Directors Constitution
     Number of Male Directors
     Number of Female Directors

3   Shareholders Constitutions
      Number of Male Shareholders
      Number of Female Shareholders

4   Engagement of members with FPO
     Active Member (%)
     Number of non-members taken support from FPO Number)

5   What Services provided by FPO to its members

Inputs	Seeds	
	Pesticides	
	Fertiliser	
	Other	
Trading License	Seeds	
	Pesticides	
	Fertiliser	
	Other	
Market Linkages	Through e-Nam	
	Through Local Vendors	
	Other	
Aggregation	Commodity Name	
Storage	Commodity Name	
Sorting/Grading/ Cleaning	Commodity Name	
Processing	Commodity Name	
Branding	Commodity Name	

6   Staff Composition of FPO

Number of Full-time staff				
Number of Part-time staff				
Number of Female Staff				
Education qualification of Full-time staff	Illiterate	Under 10th	Matriculation Pass	Graduation
Education qualification of Part-time staff	Illiterate	Under 10th	Matriculation Pass	Graduation
Education qualification of female staff	Illiterate	Under 10th	Matriculation Pass	Graduation

7   What type of Job roles are at FPO?

S.No	Job Roles	Full-time/ Part-time	Education Qualification	Specific Skills required	Difficulty in finding persons (rank) 1. Very easy; 2. Easy; 3. Average; 4. Difficult; 5. Very difficult; 6. Not find at all

8   Are you using any mediums for hiring employees? *(multiple selections possible)*

Employment agency	Online job sites/advertisements; Please specify:
Own website advertisements	Sector Skill Council / Sector Skill Council affiliated institutes
Vocational training institutes	Internships/apprenticeships
Newspaper advertisements	Others, specify_____
Networks and referrals	

9   Do you provide any training to your employees?
     Yes / No: _____
     If 'Yes', what is your policy? _____

10   Does the FPO run its skilling centre, or have any tie-up / informal association with another institution / ASCI for skilling purposes?
     Yes / No: _____; Is it owned by the firm? Yes / No: _____
     If 'Yes', please mention which institutions: _____

11   As regards gender ratio, which job roles:
     Employ majority women (>50% of all workers in the job role): _____
     Employ some women (20% to 50% of all workers in the job role): _____
     Employ no women (0% of all workers in the job role): _____

12   Are you using any technologies to improve efficiency, increase yields, reduce costs, and boost sustainability? If Yes, Which technologies does the FPO use? *(multiple selections possible)*

Precision Monitoring	Chain Technology
Monitoring and Data Analysis	Big Data Analysis and Machine Learning
Automated irrigation systems, automated Tractors, Combine harvester	KissanGPT, ChatGPT
Satellite and drone imagery	Internet of Things (IoT) sensors
Robotics	Smart greenhouses (Vertical farming)
Any other, Please Specify	

13 In view of the new technologies, which job roles will be in-demand in the next three years by the FPO?

Job Role	Stage of Value Chain	Tasks	Education	Knowledge	Technical Skills	Years of Experience	Non-technical Skills	Geographical areas/spatial clusters where needs are highest (mention States and Districts)	Difficulty of finding workers 1. Not at all difficult 2. Somewhat difficult 3. Difficult 4. Very Difficult 5. Extremely difficult

Note: For list of job roles, questionnaires about job roles facing shortage and skills required to do those jobs are the same as in previous questionnaire.