

The Firm Adoption of Technology (FAT) Survey, 2021-2023

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Identification

SURVEY ID NUMBER
IND_2021-2023_FAT_v01_M

TITLE
The Firm Adoption of Technology (FAT) Survey, 2021-2023

ABBREVIATION OR ACRONYM
FAT 2021-2023

COUNTRY

Name	Country code
India	IND

STUDY TYPE
Enterprise Survey [en/oth]

SERIES INFORMATION

The Firm Adoption of Technology (FAT) Survey is a nationally representative firm-level survey for agriculture, manufacturing, and services, conducted and managed by the World Bank. The survey applies a standardized sampling methodology and survey questionnaire to generate data that are comparable across countries. Particularly, the FAT survey measures more than 300 granular levels of technologies across over 60 business functions. It also collects information about the firm and owner/manager characteristics, subjective perceptions of firms regarding to the adoption of technology, and detailed financial information.

ABSTRACT

The Firm Adoption of Technology (FAT) Survey is a nationally representative firm-level survey for agriculture, manufacturing, and services. The survey covers a broad range of topics related to business, with a granular measures of technologies across business functions.

KIND OF DATA
Sample survey data [ssd]

UNIT OF ANALYSIS
Establishment

Version

VERSION DATE
2026-02-05

VERSION NOTES
Edited, anonymised datasets for public distribution

Coverage

GEOGRAPHIC COVERAGE
Gujarat, Maharashtra, Tamil Nadu, and Uttar Pradesh

Producers and sponsors

PRIMARY INVESTIGATORS

Name	Affiliation
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Xavier Cirera	The World Bank
Diego Comin	Dartmouth College
Marcio Cruz	IFC

PRODUCERS

Name
World Bank Group

FUNDING AGENCY/SPONSOR

Name	Abbreviation	Role
Korea-World Bank Group Partnership Facility	KWPF	Financial Support
Whole of the Economy Trust Funds		Financial Support

Sampling

SAMPLING PROCEDURE

The Firm-level Adoption of Technology (FAT) survey employs a stratified random sampling design to ensure a nationally representative sample of formal private sector establishments. The universe of study was restricted to formal establishments with five or more employees across the stratified sectors. Micro-firms with fewer than five employees were excluded to ensure consistency in the sampling frame and to mitigate the complexities associated with surveying informal entities in developing economies. To achieve statistical precision across key economic dimensions, the population was stratified by geography, firm size, and sector of activity. Details about the stratifications are provided in the FAT Methodology note.

As geographic stratification, we use four states including Gujarat, Maharashtra, Tamil Nadu, and Uttar Pradesh. For firm size stratification, we use three strata: small firms (5-19 employees), medium firms (20-99 employees), and large firms (100 or more employees). Regarding sector stratification, in Tamil Nadu and Uttar Pradesh the survey was stratified in eleven sectors: food processing (ISIC 10), wearing apparel (ISIC 14), leather (ISIC 15), Pharmaceutical (ISIC 21), motor vehicles (ISIC 29), "other manufacturing", retail and wholesale (ISIC 46 and 47), land transport (ISIC 49), finance (ISIC 64), health (ISIC 86), and "other services".

DEVIATIONS FROM THE SAMPLE DESIGN

See methodology notes for sector and regional stratification or section 2 and Appendix A of Cirera, X., Comin, D., & Cruz, M. (2026) provide detailed information about the sample design.

RESPONSE RATE

The response rate was 39%

WEIGHTING

Sampling weights are constructed in two steps. Design weights reflect selection probabilities under stratified random sampling by industry, size, and region, representing how many establishments each sampled unit stands for. These weights are then adjusted for non-response using response rates within strata. The final weights align the weighted respondent sample with the distribution of establishments in the sampling frame. Details about how the FAT sampling weights are calculated are given in the FAT Methodology note.

Data collection

DATES OF DATA COLLECTION

Start	End
2021	2023

DATA COLLECTION MODE

Computer-Assisted Personal Interview (CAPI)

SUPERVISION

Survey supervision was implemented by Xavier Cirera, Marcio Cruz and Kyung Min Lee.

DATA COLLECTION NOTES

The mode of data collection was primarily face-to-face before the pandemic and mostly via telephone and online during the pandemic.

questionnaires

QUESTIONNAIRES

The standard FAT questionnaire provides a comprehensive assessment of technology adoption and firm performance through five integrated modules. These modules cover general firm characteristics (including ownership and management demographics), the use of general business function technologies common to all firms, and deep dives into sector-specific technologies for twelve distinct sub-sectors. Additionally, the questionnaire evaluates the primary drivers and barriers to technology adoption—such as regulatory constraints and human capital—alongside detailed information on labor composition, balance sheets, and overall firm performance. By measuring more than 300 granular technologies across 60 business functions, the survey captures the extensive margin of adoption, the intensive margin of use, and the duration of advanced technology implementation.

data appraisal

DATA APPRAISAL

Section 2 of Cirera, X., Comin, D., & Cruz, M. (2026) provides detailed information on several quality checks to validate the survey and the data, including comparability with official business statistics from external sources.

Access policy

CONTACTS

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CONFIDENTIALITY

CITATION REQUIREMENTS

Use of the dataset must be acknowledged using a citation which would include:

- the Identification of the Primary Investigator
- the title of the survey (including country, acronym and year of implementation)
- the survey reference number
- the source and date of download

In addition to the dataset citation, users must also cite the journal publication for methodology and approach as follows: Cirera, X., Comin, D., and Cruz, M. (2026). Technology Sophistication Across Establishments. The Quarterly Journal of Economics.

ACCESS AUTHORITY

Name	Affiliation
Marcio Cruz	DECPM
Xavier Cirera	WKPTC
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DISCLAIMER

The user of the data acknowledges that the original collector of the data, the authorized distributor of the data, and the relevant funding agency bear no responsibility for use of the data or for interpretations or inferences based upon such uses.

Metadata production

DDI DOCUMENT ID

DDI_IND_2021-2023_FAT_v01_M_WB

PRODUCERS

Name	Abbreviation	Affiliation	Role
Development Data Group	DECDG	World Bank	Documentation of the study

DATE OF METADATA PRODUCTION

2026-03-05

DDI DOCUMENT VERSION

Version 01 (2026-03-05)

data_dictionary

Data file	Cases	variables
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study_resources