

The 2016 India Manufacturing Innovation Capability Survey (the 2016 India ICS)

The 2016 India Manufacturing Innovation Capability Survey (**the 2016 India ICS**) is a collaboration between the Tilburg University and the Enterprise Analysis Unit (DECEA) of the Development Economics Group of the World Bank. This is part of a wider project undertaken by the Tilburg University to study the innovative capability of manufacturing firms in nine countries selected from three regions- Ethiopia, Kenya, Ghana, Uganda and Tanzania from Africa; India and India from South Asia; and Indonesia and Vietnam from East Asia and Pacific.

The 2016 India ICS aims at studying the innovative activities and innovative capabilities of manufacturing firms in India, by collecting firm-level data using a suitably designed questionnaire and following the DECEA's global methodology of survey design. This survey is a follow-up to and complements the 2014 India Innovation Follow-up Survey undertaken by the World Bank Group. The data can be linked to the 2014 India Innovation Follow-up Survey (and the 2014 India Enterprise Survey (ES)) using the "idstd" variable, enabling a richer analysis of the links between innovative capabilities, innovation and the performances of manufacturing firms in the country.

The **main objective** of the project is to collect firm-level data from manufacturing firms in the country to better understand:

- Sources of information and motivation for innovative activities by manufacturing firms;
- Key factors constraining innovative capability of the manufacturing firms;
- The ability of firms to locate, acquire and utilize knowledge for innovation.
- Access to foreign markets and firms' innovative capability.

The **Sampling Strategy** follows the standard ES global methodology of stratified random sampling¹. However, sample is drawn from manufacturing firms covered in the 2014 India Innovation Follow-

¹ Information on DECEA's global survey methodology can be found at the Unit's website (<http://www.enterprisesurveys.org/methodology>).

up Survey (itself a sub-set of manufacturing firms covered in the 2014 India Enterprise Survey (ES))². Therefore, sample is stratified based on firm size and location, unlike the standard ES sampling methodology which includes sector as one of the three stratifying variables. It is important to note that geographic wise this follow up survey covers 17 of the 23 states covered in the 2014 India ES.

The universe consists a total of 2076 manufacturing firms, out of which 1000 firms were randomly selected and interviewed. Firms are selected from all the regions covered in the 2014 India Innovation Follow-up Survey, and distributed across small (5 to 19 employees), medium (20 to 99 employees) and large (100+ employees) firms. Table-1 provides distribution of the realized sample by region and firm size. Overall, the survey response rate is fairly good, with over 62% of the contacted interviews turned into completed interviews.

²Please see the World Bank's Enterprise Survey website (<http://www.enterprisesurveys.org/data/survey-datasets>) for detailed information on the 2014 India Innovation Follow-up survey and the 2014 India ES. In particular, the implementation reports of the respective surveys contain useful information on the design and implementation of the surveys. Access to the raw data and the implementation reports requires having a log-in account.

Table 1: Realized Sample for the 2016 India ICS

State Region	Size			<i>Total</i>
	<i>Small</i>	<i>Medium</i>	<i>Large</i>	
Bihar	20	19	2	41
Chhattisgarh	13	23	17	53
Delhi	19	38	10	67
Goa	4	11	9	24
Gujarat	36	30	3	69
Haryana	7	27	35	69
Jharkhan	8	25	12	45
Karnataka	9	31	28	68
Madhya Pradesh	13	34	20	67
Maharashtra	20	38	7	65
Orissa	10	19	20	49
Punjab	16	31	18	65
Rajastha	8	46	21	75
Tamil Nadu	14	46	7	67
Uttar Pradesh	19	33	15	67
Uttaranchal	7	20	18	45
West Bengal	23	16	25	64
<i>Grand Total</i>	<i>246</i>	<i>487</i>	<i>267</i>	<i>1000</i>

Nielsen Company (India) Limited was hired to implement the fieldwork and data collection. This was the same survey firm that implemented the fieldworks for the India 2014 Enterprise Survey and the 2014 ES Innovation Survey. The fieldwork for the 2016 India Innovation Capability Survey was conducted during the period April 19 to July 22 2016.

The **Sampling weighs** for this survey are calculated from the 2014 India ES weights. More specifically, the 2013 India ES weights are multiplied by a cell-specific factor, which equals the proportion of total completed interview in the cell during the 2013 India ES to the completed interviews in the corresponding cell in the 2016 India ICS. More specifically, sampling weights are computed as follows:

$$ICw_{ic} = ICw_{ic} * \frac{N_{ES}}{N_{IC}}$$

Where ICw_{ic} is sampling weight in the Innovation Capability survey for firm i in cell c^3 ; ICw_{ic} is the corresponding weight for the same firm in the 2014 India Enterprise Survey; N_{ES} is the number of completed interview in the ES for that particular cell; and N_{IC} is the corresponding number in the India Innovation Capability survey. Note that there sampling weights are computed for this survey too corresponding to the three sampling weights in the ES.

³ Cell is a variable created by combining three variables in the ES - sampling sector, location and size.