

Project Proposal

PPOL670 – Introduction to Data Science Spring 2020

Subject: “Skill Development in India – Necessity and challenges”

India has more than 62% of its 1.3 billion population in the working-age group (15-59 years). Over 54% of India's total population is below 25 years of age. The average age of the population in India is 29 years as against 40 years in the USA, 46 years in Europe and 47 years in Japan. In fact, during the next 20 years, the labor force in the industrialized world is expected to decline by 4%, while in India the labor force is expected to increase by 32%. However, India faces a shortage of well-trained, skilled workers. Less than 5% of India's workforce has undergone formal skill training as compared to 68% in the UK, 75% in Germany, 52% in the USA, 80% in Japan and 96% in South Korea.ⁱ This poses a formidable challenge and a huge opportunity. To reap this demographic dividend which is expected to last for the next 25 years, the Government of India started the Ministry of Skill Development and Entrepreneurship in the year 2014 to equip India's young workforce with employable skills and knowledge so that they can contribute substantively to the economic growth of the country and the world.

This project will aim to understand the importance of vocational training and skill development in India and further analyze the effectiveness of skill development programs running through the Ministry of Skill Development and Entrepreneurship.

Importance of vocational training and skill development in India: This would be a comparison of the skilled workforce in India vis-à-vis other countries and the opportunity for the Indian community to contribute to the global workforce to shape products of the future and for global development. I will also make a chart of top countries which attract and require skilled workers. The variables would include measuring skilled workforce as a percentage of population in different countries such as India, the USA, South Korea, Japan, etc., Similarly I will identify the top 10 countries that are in need of skilled workforce to explore the opportunities.

Effectiveness of skill development programs in India: I intend to map the training, certification, and placement in each of the Indian State and Union Territory in different job sectors. The idea is to map the skill requirement with measuring the success of Government programs to date and extrapolate it to analyzing the sectors and states where the skill training has been successful and regions where additional attention is required. The variables would include Sector-wise data (Automobiles, Domestic help, Construction sector, etc.,) and the outcomes (Training, Assessed, Certified, and Placement parameters).

The data is mostly collected from the Ministry of Skill Development and Entrepreneurship website, Annual Reports, National Skill Development Corporation (NSDC), National Skill Development Report, Indian Parliament (Lok Sabha / Rajya Sabha) along with data from KPMG and Confederation of Indian Industry (CII). I will also refer to a few other data sources such as World Bank, OECD, Visual Capitalist among others to provide further evidence.

I will be using web scraping using loop components to extract table information from the websites. In case if the pdf report cannot be copied or extracted, I intend to reproduce the information in an excel file and import the data using R studio. Data wrangling will be a major part of the project to organize the information onto the table using dplyr, and tidyverse packages. I will be using ggplot extensively to provide a pictorial representation of our analysis. For example: Comparison of skilled workforce in some of the major countries, using a `geom_bar()` to provide a comparison of Skill training, assessment, certification and placements of candidates in every Indian state in various sectors. The statistical learning component would be to analyze the Indian state and the sector which is performing well in terms of training and providing placements to the candidates.

Overall, the goal of the project would be to provide a comprehensive analysis of the necessity and magnitude of challenges India is facing in terms of providing vocational training and skill development, the progress made so far and the way forward. The success of the project will be when investors understand the importance and realize the demographic dividend of the youngest nation in the world (in terms of population) to invest more in infrastructure and resources which in turn will lead to employment opportunities and thereby augmenting global development.

¹ National Policy for Skill Development and Entrepreneurship 2015
<https://msde.gov.in/National-Policy-2015.html>