Does vocational education and training lead to self-employment over wage employment? Evidence from India's non-farm sector

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Abstract

While a few studies exist on education and the labour market in India, little attention has been paid to examining the effect of VET on the employment preferences of the Indian workforce. This study aims to understand the factors that determine the engagement of workers in self-employment vis-à-vis wage employment activities in the non-farm sector in India. The study has used the Periodic Labour Force Survey (PLFS) data collected in 2018-19 which is a nationally representative household survey data, covering includes a sample of over 1,01,579 households (55,812 from rural areas and 45,767 from urban areas) and enumerates more than 420,000 individuals. We address two key questions: (a) Does vocational education and training lead to self-employment over wage employment in India's non-farm sector? (b) How do employment preferences vary for workers with different socioeconomic and demographic characteristics with respect to their vocational education and training status? We find that individuals with vocational training are more likely to prefer self-employment over wage employment, with stark socioeconomic and demographic differences. For instance, vocationally trained women and workers from backward castes are less likely to be self-employed than their counterparts. Moreover, youth with vocational training tend to choose wage employment vis-à-vis self-employment. Thus, the study empirically underscores the socioeconomic complexities in providing vocational training to incentivise the workforce towards self-employment, a recent economic policy objective of the Indian government.

Keywords: vocational training, self-employment, wage employment, non-farm sector, youth, India

1. Introduction

One of the predominant contemporary public policy debates in India focuses on the need to boost self-employment opportunities among the youth. India is currently experiencing a demographic transition, with a substantial rise in the working-age population, which is expected to bring about a dramatic demographic dividend. Recent policy initiatives have aimed to meaningfully engage the working-age population in the labour market. Improving access to vocational training among the youth is considered an important channel for enhancing self-employment opportunities. In fact, India's National Education Policy (NEP) 2020 underlines the urgency of imparting vocational education and training (VET) to at least 50% of learners by 2025 (MHRD 2020). In the education and skill development policy domain, it is argued that the provision of vocational training to Indian youth would help engage a greater fraction of the population in self-employment activities (MoSDE 2015; MHRD 2020; UNESCO 2020), specifically in the present context of jobless growth in conjunction with the predominance of informalisation in employment. Moreover, Target 4.4 of Sustainable Development Goal 4 (SDG 4) emphasised imparting technical and vocational skills to the youth for employment and entrepreneurship (United Nations 2015). The National Statistical Office (NSO) 2020 report that collected information on VET access and its connection with the labour market in India mentioned that vocational education imparts professional knowledge and skills, which improves individuals' employability across a broad range of occupations in various industries and economic sectors (NSO 2020). Furthermore, considering India's demographic advantage of a large population in the productive age group and the subsequent rise in job demand, the contemporary policy focus is on imparting vocational education to reap the demographic dividend.

The relationship between vocational training and labour market is considerably complex worldwide and more so in developing economies. Furthermore, complications arise when the workforce's VET is linked with their occupational pattern, for example, the choice of self-employment or wage employment. Lucas (1978) and Iyigun and Owen (1999) claimed that although education and training help expand individuals' knowledge base and increase exposure to new opportunities, they increase the opportunity cost of being self-employed. Arguably, the returns to education from self-employment are lower than those from wage employment, which may be one of the leading drivers of labourers being insufficiently motivated to preferentially choose self-employment occupations. However, Packham et al. (2010) observed that an entrepreneurship course that Polish business students opted for subsequently enhanced their entrepreneurial intentions or attitudes. Likewise, Van der Zwan, Zuurhout, and Hessels (2013) conducted a multi-country analysis and found a positive relationship between entrepreneurship education and self-employment, which was supported by other studies (Martin, McNally, and Kay 2013; Bae et al. 2014; Brunetti and Corsini 2019). In Uganda, informal VET significantly improves the capability of youth workers, helping them become self-reliant (Blaak, Openjuru, and Zeelen 2013). Comparing labour market outcomes for general and vocational graduates in 11 countries, Hanushek et al. (2017) showed that youth with VET (especially in countries emphasising apprenticeship programmes) are more likely to be employed in the labour market than graduates with general qualifications.

Currently, only approximately 3% of persons in the age group of 15–59 years have received formal vocational or technical training in India. The figure is 10.7% for those who have received vocational training from informal sources, including hereditary sources, self-learning, learning on the job, and others in 2018-19 (NSO 2021). Using 2011-12 National Statistical Office (NSO) data, Agrawal and Agrawal (2017) found that while approximately 11% of the

population in the age group of 15–59 years has undergone VET, only 2% has received formal skill training. These figures are very low compared with several other developed and industrial countries. In the USA, approximately 52% of students have received formal vocational training; this figure is 75% in Germany and as high as 96% in South Korea (MHRD 2020). The NEP 2020 aims to provide exposure to vocational education to at least 50% of learners through the school and higher education system.

How is VET connected with labour market outcomes (employment status and earnings) in India? Among the persons who received either formal or informal vocational or technical training, 61.6% are employed in the labour market (National Statistical Office 2021). In fact, a high proportion of formal trainees in the workforce remains unemployed in India (Agrawal and Agrawal 2017). Interestingly, Agrawal (2012) found a high unemployment rate (11%) for VET holders in the age group of 15–29 years. Studies have also found wage differences between workers with formal and informal vocational training in India (Ahmed and Chattopadhyay 2016; Agrawal and Agrawal 2017; Kumar, Mandava, and Gopanapalli 2019; Bahl, Bhatt, and Sharma 2022). Agrawal and Agrawal (2017) found 18% higher wages for workers with formal VET in 2011–2012. In a recent study, Bahl, Bhatt, and Sharma (2022) found that Indian workers with formal VET earn higher wages than their counterparts with no or informal VET. Moreover, VET does not provide higher wage returns for younger age cohorts compared with later age cohorts. Tamvada, Shrivastava, and Mishra (2022) stated that the likelihood of individuals' choice of self-employment decreases with an increase in higher education over time in India, particularly in the non-farm sector. The study underscored the need for a policy shift towards entrepreneurship education and training to foster self-employment among the Indian youth. Likewise, Bairagya (2018) found that the unemployment rate among the educated is not only higher compared with the uneducated but is also increasing with higher education levels in India. With job constraints in the labour market, educated youth in India seek self-employment opportunities, particularly in the non-farm sector. Mehrotra (2021) argued that to fulfil the Indian youth's aspirations of non-farm sector employment, there is a need to strengthen VET, which would also potentially help realise India's demographic dividend. However, using Australia and Canada as case studies, Wheelahan and Moodie (2017) showed that the poor inter-connections between vocational education and labour market outcomes for improving the links between postsecondary qualifications and occupations is mainly an issue pertaining to the demand for qualifications rather than their supply, that is, it depends more on the labour market structure than on the nature of qualifications.

While a few studies exist on education and the labour market in India, little attention has been paid to examining the effect of VET on the employment preferences of the Indian workforce. In this context, this study aims to understand the factors that determine the engagement of workers in self-employment vis-à-vis wage employment activities in the non-farm sector in India using the Periodic Labour Force Survey (PLFS) data collected in 2018-19. Specifically, we investigate the role of vocational training in individuals' employment preferences and how it varies with the workers' socioeconomic, regional, and demographic profiles. Our focus on the non-farm sector assumes significance as India's policy priority is to shift a sizeable share of the workforce from agriculture to the manufacturing and service sectors. Moreover, we find weak linkages between vocational education and self-employment in India's agriculture sector (Bairagya 2018). The extent to which vocational training, among other factors, serves as an enabling mechanism to generate self-employment in India is ambiguous. Therefore, an empirical investigation of the issue appears well-timed on two main grounds: First, India is currently in the phase of reaping its demographic dividend; for its optimal utilisation, policymakers have targeted education policy, including the recent NEP 2020, to impart

vocational education and skills and create self-employment opportunities for the youth. Second, the Indian economy is facing jobless growth, such that the educated youth cannot find suitable employment; thus, self-employment can be considered as a potential alternative to overcome this unemployment crisis.[1] Our study is an initial foray into examining the role of vocational training on Indian workers' employment preferences, which will certainly generate further discourse on the issue.

The paper proceeds as follows: Section 2 discusses the theoretical underpinnings and examines the related literature on education, skills, and labour market opportunities. Section 3 describes the data and econometric specifications. Section 4 discusses the results, and Section 5 concludes the study and discusses the policy implications.

2. Literature Survey

Several studies have noted that entrepreneurial skills and attributes achieved through VET play a critical role in generating employment opportunities across economies (Chen, Greene, and Crick 1998; Liao and Gartner 2007; Wilson, Kickul, and Marlino 2007; Martin, McNally, and Kay 2013; Bae et al. 2014; Fletcher, Pande, and Moore 2017; Kanjilal-Bhaduri and Pastore 2018). It has been argued that VET motivates students' entrepreneurial behaviour (intentions/attributes) (Ajzen 1991, 2002; Gorman, Hanlon, and King 1997), and this effect is considerable even after controlling for candidates' personal and environmental factors (students' prior entrepreneurial experience and training) (Hansemark 1998; Liao and Gartner 2007; Dickson, Solomon, and Weaver 2008; Martin, Mcnally, and Kay 2013). However, the effect of VET on entrepreneurial intentions varies with individual and socioeconomic attributes, which is explained through the presence of self-efficiency.[2] For instance, it has been observed that women are underrepresented in entrepreneurship, even in many advanced European economies, compared with their counterparts. The underlying reason is that women display less entrepreneurial intentions than men; therefore, entrepreneurial education does not benefit women in undertaking entrepreneurial activities (Westhead and Solesvik 2016). In the context of Spain, Brunet and Rodríguez-Soler (2017) found that the participation of VET graduates in the innovation process in small-and medium-sized enterprises (SMEs) is significantly low and recommended the collaboration between VET centres and companies to minimise this gap.

Lucas (1978) predicted that entrepreneurship is negatively correlated with economic development. With increased income and prospects for receiving higher salaries and wages in future, people invest in higher professional education to work as salaried employees. Along similar lines, Iyigun and Owen (1999) predicted that the returns to salaried employment increase faster than the returns to entrepreneurship, which is why individuals with higher education prefer salaried employment to self-employment. Assuming that entrepreneurship is riskier than engaging in professional services, the authors illustrated that as an economy develops, individuals invest more time in accumulating professional skills through education than in accumulating entrepreneurial human capital. Furthermore, they argued that as per capita income grows and professionals' payoffs increase, individuals are less willing to gamble on entrepreneurial ventures. Another strand of literature has argued that wealth enables self-employment. Wealthier individuals have more of a 'safety net' when embarking on new ventures than their less wealthy counterparts. Wealth, which includes inheritance properties, directly facilitates the financing of self-employment; indirectly, it makes it easier to obtain credit from banks and non-banking sectors.

The other crucial factor that determines graduates' occupational choices is the returns to education. Using a comparable data set of the European Community Household Panel for the period 1994–2000, García-Maina and Montuenga-Gómez (2005) observed that in Spain and Portugal, the returns to education were higher for wage earners than for the self-employed. In both countries, having a secondary education appears to be the best choice for the self-employed rather than being a university graduate, as opposed to that for wage earners and theoretical predictions. However, when measuring education in years of schooling, no difference was found between the self-employed and wage earners in Spain, whereas in Portugal, the returns to education for wage earners were found to be more than three times that of the self-employed. Considering the education of individuals and the average education levels of households engaged in self-employment in rural Peru, Laszlo (2005) observed that an increase in individuals' education significantly reduced the likelihood of their farm wage employment participation, whereas it did not have a significant impact on farm and non-farm self-employment. Moreover, the average formal schooling of households engaged in non-farm self-employment activities had a negative impact on farm wage employment earnings, indicating a shift from farm wage employment towards non-farm self-employment activities, with an increase in household members' education.

Studies examining the role of education and vocational training in the generation of employment opportunities among the Indian workforce are scarce. In a recent study based on the PLFS 2017-18 in India, Bairagya, Bhattacharya, and Tiwari (2021) investigated whether vocational training promotes women's labour force participation, among other demand- and supply-side factors. They established that women's participation in both formal and informal vocational training positively and statistically enhances their labour force participation. They also observed that women's participation in formal vocational training participation is lower than that in informal vocational training and recommended large-scale formal vocational training for women. However, the major limitation of their study was that they ignored the overall self-employment position for both the male and female labour forces and did not distinguish between farm and non-farm sector employment, for which the effects of VET may differ. Using NSSO data for 2011–2012, Chaudhary and Verick (2014) found that vocational training for women has increased the likelihood of their being self-employed. Using the same dataset, Bairagya, Bhattacharya, and Mukherjee (2019) further concluded that the promotion of vocational training for women increases the likelihood of their participation in self-employment as well as in regular and casual wage employment in the state of Karnataka. Fletcher, Pande, and Moore (2017) also pointed out that women across all levels of education and those with vocational training were more likely to be part of the workforce than those without any vocational training.

Additionally, only a few studies have investigated the impact of education and vocational training on self-employment in India. Tamvada (2010) examined the spatiotemporal dynamics of self-employment in India for both agricultural and non-agricultural sectors. The findings showed that in the non-agriculture sector, the likelihood of being self-employed decreases for persons with higher education, whereas the opposite is true in the agriculture sector. People belonging to economically and socially disadvantaged groups have a negative attitude towards self-employment choices in both sectors. Individuals in urban locations are likely to be self-employed in the non-agriculture sector. Using household survey data from India's National Sample Survey Office, Menon and Rodgers (2011) investigated the impact of access to credit (greater financial resources) on the self-employment status of men and women in rural labour households[3] and whether the responses differed along gender lines. Their results indicated that

the access to credit encouraged women's self-employment as own-account workers and employers but discouraged men's self-employment as unpaid family workers.

Given the scant literature connecting skills, vocational training, and job preference, this study focuses on investigating the role of vocational training in self-employment over wage employment in the non-farm sector. In particular, we focus on non-farm sector employmentas, with the gradual emergence of structural changes in the economy, induced by a combination of factors such as globalisation, migration, and technology diffusion, governments are focusing on employment generation in industry and services given the persistence of disguised surplus manpower or over-employment in agriculture. Thus, this study contributes to the growing literature on vocational training and the labour market in India, an important and contemporary policy issue. Furthermore, given the economic characteristics of a developing economy such as India, policymaking is geared towards developing VET programmes to impart skills among the youth to engage them in meaningful employment in the non-agriculture sector, particularly in manufacturing and information technology (IT) services (MoSDE 2015; MHRD 2020). This study also considers the role of various kinds of vocational training (no training, informal training, and formal training) in opting for self-employment vis-à-vis wage and salaried employment in the non-farm sector. Analysing the role of formal and informal vocational training separately, this study offers a better understanding of how the VET imparted to the Indian youth shapes their decisions to engage in two broad occupations, that is, self-employment or wage employment. Given the global policy focus on imparting vocational education to nurture entrepreneurial skills for various employment opportunities and job categories, this study contributes to the current understanding of the role of VET in developing labour market prospects. It bridges the gap in the previous research, which has typically focused on examining the effect of VET on female labour force participation but ignored the socioeconomic and regional dimensions that may have a crucial bearing on occupational selection in India.

3. Data, estimation strategy and descriptive figures

3.1 Data

We used unit-level data from the Periodic Labour Force Survey (PLFS) conducted during July 2018–June 2019. It is a nationally representative household-level sample survey conducted by the NSO of the Government of India. It includes a sample of over 1,01,579 households (55,812 from rural areas and 45,767 from urban areas) and enumerates more than 420,000 individuals (PLFS 2020). A stratified multi-stage sampling design was adopted to select the sample units. The survey information on the selected households was collected through personal interviews of the respondent(s). The fieldwork was carried out by the Field Operations Division (FOD) of the NSO.[4] In addition to the social and demographic characteristics of individuals, the PLFS gathers information on an individual's employment status, occupation, educational achievement, and household characteristics. The PLFS question on the employment status of each household member has 13 different options[5], including having worked in a household (h.h.) enterprise (self-employed) and as a regular salaried/wage employee, the two main groups analysed in this study. The three sub-groups of self-employment are: own-account worker, employer, and worked as a helper in h.h. enterprise (unpaid family worker).

The PLFS provides information on the educational attainment of each individual surveyed and the status of vocational or technical education and training received. In terms of the demographic particulars of household members (for persons aged 12–59 years), the

respondents were asked whether they had received any vocational or technical training. The response options included: yes: received formal vocational or technical training-1; received vocational or technical training other than formal vocational or technical training: hereditary-2, self-learning-3, learning on the job-4, others –5; did not receive any vocational or technical training -6. As per this survey, there are three methods of acquiring vocational or technical training—formal training, non-formal training, and informal training. They are defined as follows in the PLFS report (PLFS 2020: 08).

Formal Training: This includes training acquired through institutions/organisations and recognised by national certifying bodies, leading to diplomas/certificates and qualifications. Formal training is structured according to educational arrangements such as curricula, qualifications, teaching/ learning requirements, and assessments.

Non-formal Training: This training is provided in addition to or as an alternative to formal learning; it is structured but more flexible and is provided through community-based settings, the workplace, or through the activities of civil society organisations or any organisation imparting training. This training mode does not involve a curriculum, syllabus, or accreditation and certification associated with formal learning but is more structured compared with informal learning.

Informal Training: This training occurs in daily life, within the family, at the workplace, in communities, and through the interests and activities of individuals. It is not structured (in terms of learning objectives, learning time, or learning support) and typically does not lead to certification.

Additionally, the survey collects information on the types of industries as per the definitions of National Industry Classification (NIC) – 2008 and types of occupations according to the definitions of National Classification of Occupation (NCO) – 2004. The information collected in the PLFS dataset allows us to examine the linkages between individuals' vocational training and occupational selection in the non-farm sector.

We restricted the sample to working-age individuals, that is, people in the age group 18–65 years and currently employed in the labour market. Furthermore, our analysis excluded the workforce employed in agriculture, as our focus was on the non-farm sector. After imposing these restrictions or allowing for these adjustments to our data structure, the sample size was 93,238 individuals. Of these, 35.1% were self-employed, 41.4% worked as regular salaried/wage employees, and 23.5% were casual wage labour. Of the total self-employed individuals, 82.2% were own-account workers, 7.1% were employers, and 10.7% worked as helpers in household enterprises, that is, unpaid family workers. As this study focused on workers' employment choices between self-employment and regular salaried/wage employment, we did not include casual wage labour in the analysis. Therefore, the employment decision of workers was a binary variable, that is, self-employment or regular salaried/wage employment. The share of women in the sample was 17.7% (rural – 16.1% and urban – 19.4%). Likewise, the total share of men was 82.3% (rural – 83.9% and urban – 80.6%). The caste-wise distribution showed that most of the individuals are from Other Backward Classes (OBC) (approximately 42.6%), followed by 30.8% individuals from the General category, 20.3% from the Schedule Castes (SCs), and only 6.3% from the Schedule Tribes (STs).[6] Furthermore, more than three-fourth of the respondents (79.9%) were Hindus, 14.2% were Muslims, and 5.9% were from other religious groups.

3.2 Estimation strategy

Two key questions were addressed in this study: (a) Does VET lead to a preference for self-employment over wage employment in the non-farm sector in India? (b) How do employment preferences vary for workers of different socioeconomic and demographic characteristics with their VET status? Accordingly, we estimated a logit regression model where the dependent variable was expressed as the probability of being self-employed for individuals within the age group of 18–65 years. The dummy variable took the value '1' for individuals who were self-employed and '0' for those engaged in salaried jobs. The econometric specification used in our study is represented as follows:

$$Y = \alpha + + \beta_1(\text{VET}) + \beta_2(\text{gender}) + \beta_3(\text{caste}) + \beta_4(\text{location}) + \beta_5(\text{eco_status}) + \beta_6\,(\text{age}) + \theta X + \varepsilon\,,$$

where, α is the intercept, while β_i (i ranges from 1 to 7) are the coefficients of the main explanatory variables, $\boldsymbol{\theta}$ is the coefficient vector of the other control variables, and ε is the error term. Y is the dependent variable, which is a dummy for self-employed or wage labourers, and $\boldsymbol{X}$ is the vector of all the explanatory variables.

We used the usual employment status (considering both principal and subsidiary employment status) method for estimating employment and unemployment. This specifically helps in capturing people who were working for long stretches of time over the reference period of 365 days while considering their principal and subsidiary employment status. The explanatory variables used in the logit model were gender, caste, religion, region, household consumption expenditure (as a proxy for the family's economic status), household head's education, family size, and vocational training. Our main focus was to examine the predicted probabilities of being self-employed vis-à-vis taking up salaried jobs by the status of vocational training of individual workers. The vocational training status of the workforce was categorised into three groups—did not receive any vocational or technical training, received formal vocational or technical training, and received vocational or technical training other than formal vocational or technical training[7]. The interaction effect was estimated by considering the interaction of VET status with gender, location, and caste. We hypothesised that individuals belonging to low socioeconomic strata (such as STs and SCs) are less likely to be self-employed in India after controlling for other factors. Usually, socially and economically weaker households in India have limited resource endowments (land and the required finance) to start up their own businesses and enterprises. Moreover, as they lack resources of their own, it is difficult for them to avail mortgage-based loans from banks. Therefore, they are likely to remain unemployed or depend on the extraction of natural resources—such as ocean fishing and forest resources—that are accessible to them. We also assumed that there exists a stark inequality in probability of being self-employed in rural and urban areas, and this gap varies significantly with individuals' vocational or technical training. As this study is specifically for the non-farm sector, avenues for self-employment vary between rural and urban India, which may influence self-employment opportunities among vocational graduates. We expected the push from the formal employment market and the pull towards self-employment avenues in the non-farm sector to differ between rural and urban India.

Multiple logit regression equations were estimated in this study, and the summary statistics of the variables used in the regression are provided in Table 2. Equation 1 considers the simple analysis of the probability of being self-employed by incorporating the explanatory variables in the model, and the corresponding results are provided in Table 3. However, Equations 2 to

6 incorporate an additional interaction term in the model, that is, the interaction effects of individual's vocational and technical training status with gender (Equation 2), location (Equation 3), caste (Equation 4), household's economic status (Equation 5) and age (Equation 6). The rationale behind adding interaction terms in the model is to analyse how the probability of being self-employed varies for individuals of different socioeconomic classes and structures, as the estimated coefficients of the explanatory variables in the logit model help only in identifying the direction of the relationship on the outcome variable. Therefore, after estimating the logit model coefficients, this study also computed the marginal effects *(margins)* of their corresponding predicted probabilities to analyse the interaction effect. To check the robustness, we examined the probability of being self-employed vis-à-vis 'others', which included salaried individuals, casual labourers, and unemployed persons. The dependent variable in this estimation was a dummy variable taking a value of '1' for self-employed individuals in the age group of 18–65 years and '0' otherwise. These results are presented in Table A1 in the appendix. We estimated this to check the rbustness i.e. whether our main results varied from this estimation; no considerable difference existed between these two sets of estimations.

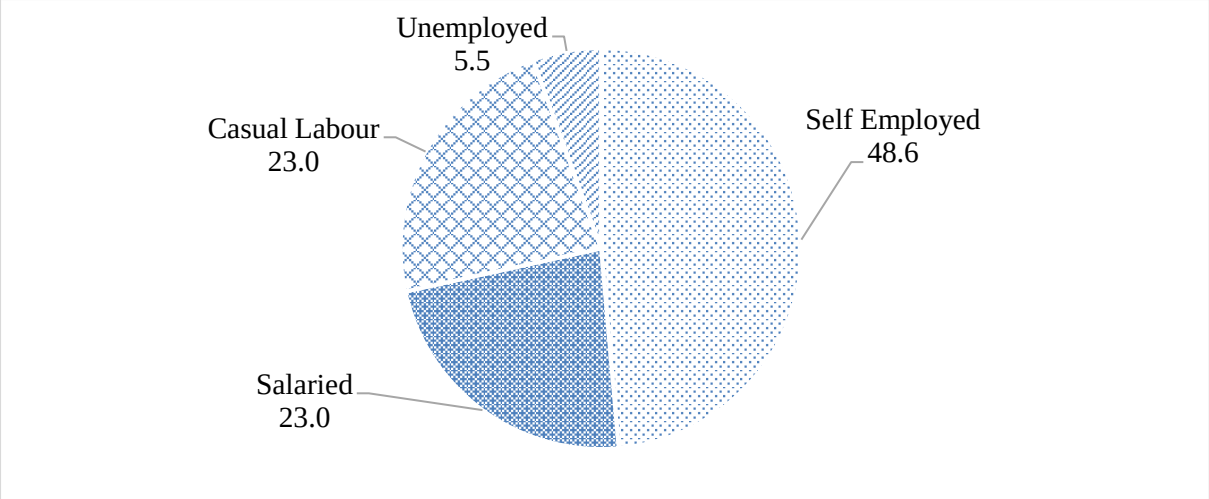
3.3 Descriptive statistics

(a) Socioeconomic and demographic profile of self-employed individuals

About half of the total population (48.6%) in the age group of 18–65 years were self-employed during 2018-19, followed by 23% with salaried jobs, 23% employed as casual labourers, and 5.5% unemployed individuals (see Figure 1). A major concern often highlighted in studies and policy debates includes unequal access to employment opportunities among different socioeconomic groups in the Indian population. This is because an individual's socioeconomic settings play a critical role in their employment decisions. Estimates suggest that, in 2018-19, more than three-fourths of the individuals involved in each type of employment (self-employment, salaried employment, and casual labour) were men, and their proportion was higher in casual labour (88.7%) and self-employment (83.2%) compared with salaried jobs (77.9%) (see Figures 2 and 3). This indicates that women are employed more in salaried jobs compared with other jobs. This may be because of the nature and comfort of work without the presence of risk and entrepreneurial education and skill requirements, along with a tendency towards less risk-taking behaviour and inadequate support from family members for taking up entrepreneurship ventures.

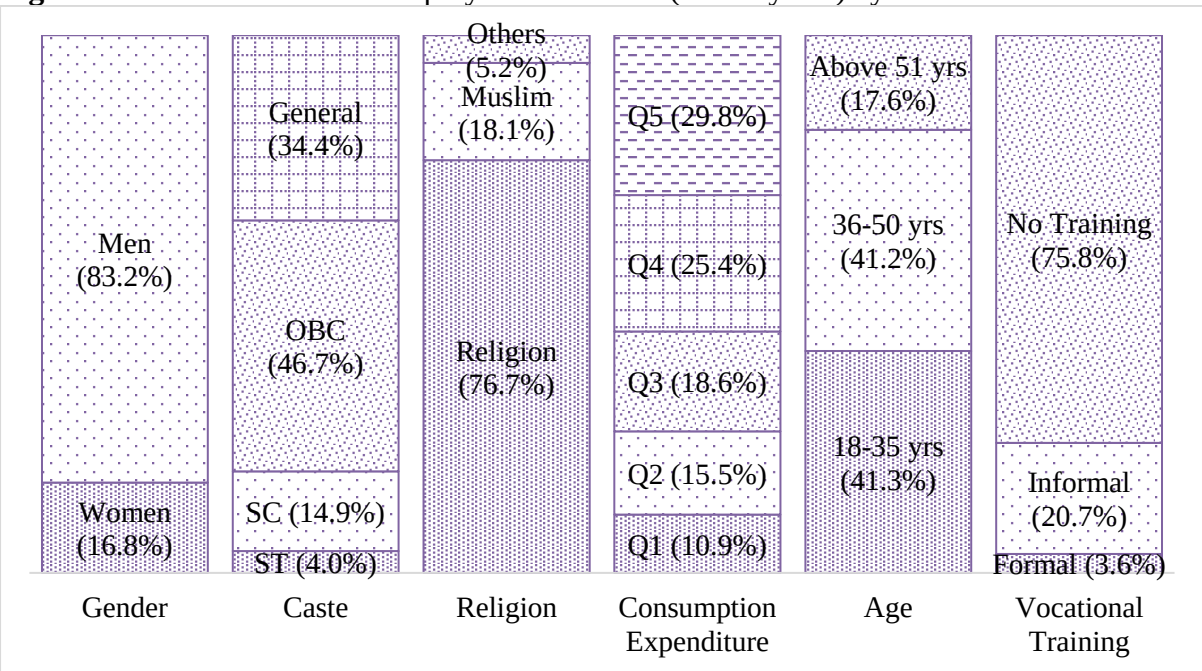
Social inequalities (by caste categories) in employment status present some interesting facts. A clear hierarchy is observed, wherein STs and SCs are least represented in each type of employment—both in rural and urban areas. For instance, of the total self-employed individuals, the shares of STs and SCs are only 4% and 14.9%, respectively, whereas these figures are 34.4% for OBCs and 46.7% for forward caste groups. Thus, belonging to a lower caste puts individuals at a disadvantage compared with those from forward castes in terms of being self-employed. Similarly, more than three-fourths of self-employed persons are Hindus, followed by 18.1% Muslims and 5.2% from other religions, including Christians, Sikhs, Jains, Buddhists, Zoroastrians, and others.

Figure 1. Employment status of individuals in the age group 18–65 years



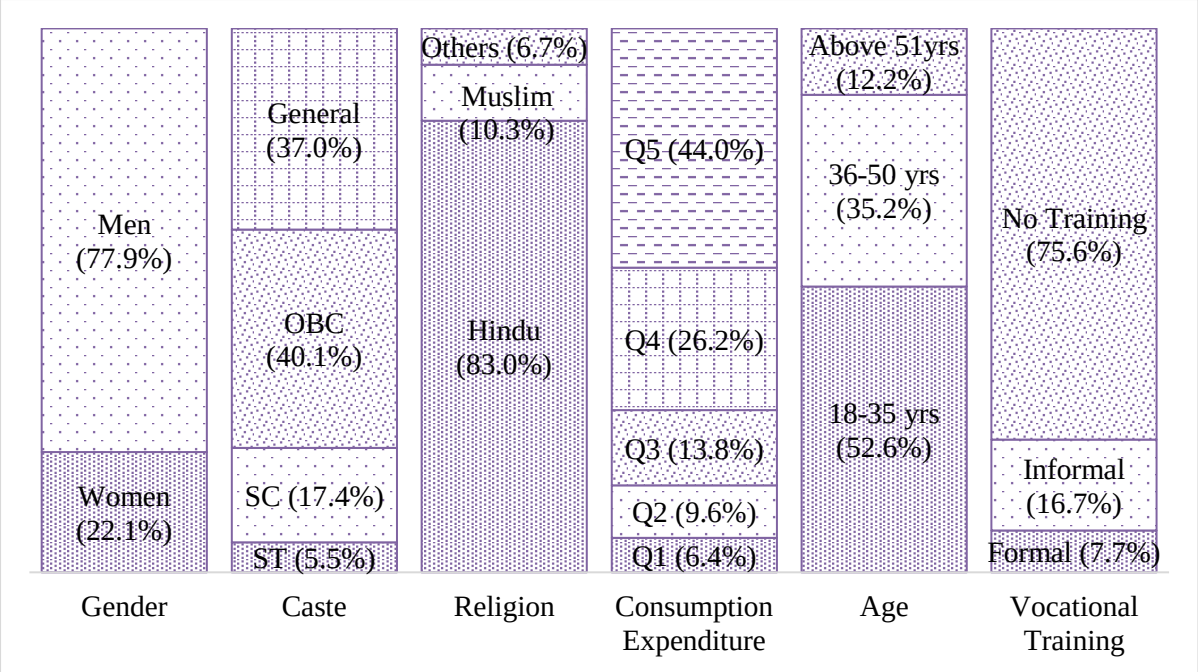
Source: Authors' Estimation from PLFS. 2018–19 unit-level data.

Figure 2. Distribution of self-employed individuals (18–65 years) by socioeconomic factors



Source: Authors' estimation from the unit-level PLFS data (2018-19)

Figure 3. Distribution of salaried individuals (18–65 years) by socioeconomic factors



Source: Authors' estimation from the unit-level PLFS data (2018-19)

An individual's employment status varies widely with households' economic status, which was measured using consumption expenditure as a proxy in the present analysis. Estimates revealed a huge difference between rich and poor individuals in terms of their participation in self-employment, with a strong positive relationship between household consumption expenditure and being self-employed. The share of self-employment increased with each successive consumption level. It ranged from 10.9% for poorest quintile[8] to 29.8% for the richest quintile (see Figure 2). This may be because self-employment requires ample initial investment not only for building up human capital but also for funding infrastructure and business and occupation, which a person from a poor family may find hard to arrange. Furthermore, the gap by households' economic status was starker among salaried individuals. The share of individuals engaged in salaried jobs ranged from 6.4% (Q1) to 44% in Q5 (see Figure 3).

Furthermore, we examined the distribution of self-employed and salaried individuals by status of vocational training, both formal and informal. About three-fourths of all self-employed individuals had no vocational training, followed by 20.7% of individuals with informal training and a meagre 3.6% with formal training. A similar pattern was noted among the salaried individuals, with the majority of them having no vocational training. This indicates that an individual with vocational training does not necessarily end up in a particular type of employment, whether a salaried job or self-employment. To obtain a better picture, we included the status of vocational training as an explanatory variable in the logit regression model.

(b) Where do self-employed individuals work?

For a clearer perspective on self-employed individuals, it is critical to examine the gender and socioeconomic variations in the type of work that they are employed in. The PLFS data capture the self-employment status of each individual across three categories: own-account worker, employer, and helper in a household enterprise (unpaid family worker). Among the self-employed workers, the majority (82.2%) were engaged as own-account workers, approximately 7% were employers, and the rest (10.7%) worked as helpers in household enterprises (Table 1). Approximately 85% of own-account workers, 95% of employers, and

64% of helpers in household enterprises were men. Only about 5% of women were employers, their shares within own-account workers and helpers in household work being 15.2% and 36.3%, respectively. We also found significant variations in the type of self-employment by social group (caste and religion). Around 49% of employers were from the General category and 42% from the OBC category, followed by SCs (1.4%) and STs (8%). Around 77% of Hindus worked as own-account workers, whereas this share was 18.6% among Muslims and 4.9% among other religious groups. Around an equal percentage (76%) of Hindus worked as employers and helpers in household enterprises. Significant variations also existed in the type of work that self-employed individuals are engaged in according to their economic status (measured using household consumption expenditure). For instance, around 65% of self-employed individuals from the richest quartile (Q5) were employers, whereas this share was only 2.5% among the poorest households (Q1). This may be because of the economic capital required by the households for running their own enterprise as an employer. Furthermore, although a greater percentage of workers without VET worked as own-account workers, employers, and helpers, around 20% self-employed individuals with informal vocational training also worked in each of these. Among the self-employed individuals who worked as employers, 7.6% had formal vocational training, while this share was around 3% for the individuals who worked as own-account workers and helpers in household enterprises. It is likely that more privileged groups in the Indian society (who often work as employers within the self-employment category) have better access to formal training. Moreover, the privileged class can access financial resources from commercial banks by mortgaging their resources or borrowing from their relatives. However, such options may not be available to the less privileged classes. These claims need to be examined in-depth.

With respect to industry type, the results showed that self-employed workers were mostly engaged in the service sector (53%), followed by manufacturing and construction (30.8%). Among the 'employers', 43.1% were from manufacturing and construction, 40.5% from service sector, and 16.4% from other. Among own-account workers and helpers in household enterprises, more workers were from the service sector, followed by manufacturing and construction and others.

Table 1. Distribution of self-employed individuals by type of work

		Own-account Workers	Employer	Helper in HH Enterprise	Total
Gender	Women	15.2	5.2	36.3	16.7
	Men	84.8	94.8	63.7	83.3
Caste	ST	4.3	1.4	3.8	4.0
	SC	15.9	8.0	10.9	14.8
	OBC	46.4	42.2	51.3	46.7
	Generals	33.4	48.5	33.9	34.5
Religion	Hindu	76.5	76.9	77.7	76.7
	Muslim	18.6	14.9	17.0	18.2
	Others	4.9	8.2	5.3	5.1
Consumption Quintile	Q1 (poorest)	11.6	2.5	10.7	10.9
	Q2	16.4	4.4	15.4	15.4
	Q3	19.6	6.9	17.9	18.5
	Q4	25.6	21.6	26.2	25.4
	Q5 (richest)	26.9	64.6	29.9	29.9

Vocational Training	No	75.5	73.9	78.3	75.7
	Informal	21.2	18.5	18.3	20.7
	Formal	3.2	7.6	3.5	3.6
Industry	Manufacturing & construction	29.6	43.1	32.1	30.8
	Service sector	53.6	40.5	56.6	53.0
	Others	16.8	16.4	11.3	16.2
Overall		82.2	7.1	10.7	100.0

Source:
Authors' estimation from the unit-level PLFS data (2018-19)

Table 2. Summary statistics of the variables used in the logit models

	Self-employed					*Salaried*					*Overall*				
Variable	NOB	Mean	SD	Min	Max	NOB	Mean	SD	Min	Max	NOB	Mean	SD	Min	Max
employ_status	---	---	---	---	---	---	---	---	---	---	75,539	0.460	0.498	0	1
gender	33,961	0.833	0.373	0	1	41,562	0.779	0.415	0	1	75,523	0.803	0.397	0	1
caste	33,968	3.116	0.801	1	4	41,571	3.087	0.870	1	4	75,539	3.101	0.839	1	4
religion	33,968	1.285	0.554	1	3	41,571	1.237	0.561	1	3	75,539	1.259	0.558	1	3
location	33,968	0.484	0.500	0	1	41,571	0.612	0.487	0	1	75,539	0.553	0.497	0	1
lnhh_consexp	33,968	11.615	0.591	9.036	15.607	41,571	11.747	0.611	8.795	15.607	75,539	11.687	0.605	8.795	15.607
family_size	33,968	4.836	2.089	1	21	41,571	4.454	1.983	1	21	75,539	4.629	2.041	1	21
edu_level	33,962	4.445	2.160	1	9	41,563	5.588	2.355	1	9	75,525	5.063	2.338	1	9
tech_edu	30,653	0.040	0.196	0	1	39,224	0.123	0.329	0	1	69,877	0.086	0.281	0	1
voc_training	32,041	1.278	0.522	1	3	40,736	1.323	0.611	1	3	72,777	1.303	0.573	1	3
age_range	33,968	1.763	0.729	1	3	41,571	1.60	0.696	1	3	75,777	1.673	0.716	1	3

Source: *Authors' estimation from the unit-level PLFS data* (2018-19)

4. Empirical results and Discussion

4.1 Determinants of self-employment in India

Empirical results show that being a man improves the chances of being self-employed by 6.7% more than their female counterparts (Table 3). Many studies have confirmed the pro-male gender preference for self-employment in developing countries such as India (Mehrotra and Parida 2017). In discussing the barriers to women's economic participation in India, it has been observed that India's female LFPR has remained low in self-employmnet activities (Bhalla & Kaur 2011; Mehrotra and Parida 2017). This is despite positive societal changes for the empowerment of women, such as increased education rates and rising household consumption levels, which may have contributed in improving female partcipation in self-employment opprtunites. Socio-cultural norms persistently continue to impose restraints on women's work opportunities, and more so in engaging themselves in entrepreneurial activites. Households do not financially support women in taking up any self-employment or entrepreneurship ventures; therefore, the probability of their being employed, especially self-employed (which requires initial investment), is quite low (Bairagya et al. 2019).

Furthermore, the likeliness of being self-employed varies widely across caste groups. A clear caste hierarchy is observed in the probability of being self-employed, irrespective of other socioeconomic factors. Compared to SCs/STs, individuals belonging to OBCs and forward castes have 10.5% and 9.6% higher chances of opting for self-entrepreneurship, respectively. This is because most of the SC/ST workers come from either lower- or middle-class-income families who cannot afford to start their own businesses, especially in rural areas. Likewise, compared with Hindus, individuals belonging to Islam and other religions (including Christians, Sikhs, Jains, Buddhists, Zoroastrians, and others) have 5.9% and 1.9% higher chances of opting for self-employment in businesses, respectively.

Additionally, the economic status of households has a significant negative impact on the decision to undertake business. Estimates revealed that a unit increase in household consumption expenditure decreased the probability of becoming self-employed by 2%. This indicates that rich families preferentially opt for salaried jobs rather than taking up self-employment occupations. This may be because of the inherently risk-averse characteristics of the Indian society compared with other societies (countries) and the feeling of being more content and comfortable (as a result of being less responsible and burdened), which lead to fewer entrepreneurial classes in India and a lower number of self-employed individuals. In this context, a question naturally arises as to whether households with more members tend to choose self-employment over salaried jobs and merits further investigation. The present estimates indicated a positive relationship between household size and the likelihood of being self-employed. More specifically, having an additional family member increased the likelihood of being self-employed by 1.8 percentage points. One possible explanation is that households with a greater number of family members and comparably fewer resources at their disposal would tend to be left with scarce resources to spend on education, which may result in younger members, especially women, being driven to engage in self-employment rather than pursuing education and securing a salaried job in the future. This may be attributable to the push factor, which induces households to diversify their risks.

The study investigated the effect of workers' VET on their decision to be self-employed over taking up salaried occupations in the non-farm sector. [9] The specific question raised here is: Are workers with technical degrees more likely to take up self-employment activities vis-à-vis

workers with general education? The analysis suggests that the educational attainment of the workforce plays a vital role in individuals' employment decisions. There is a strong and negative relationship between educational attainment and being self-employed. With an increased level of education, the chance of taking up self-employment decreased by 2% at the pan-India level. Similarly, those having a technical certificate/diploma/degree were found to be 2.5% less likely to be self-employed. This indicates that the educated workforce prefers salaried jobs rather than self-employment. Though this relationship holds true across gender and locations, its magnitude is observed to be higher among women and urban workers. This finding supports the prediction of Lucas (1978) that there is an existence of certainty of higher returns to education when one works as a salaried worker than being self-employed. The next section examines the specific effect of vocational training on self-employment, the main focus of this study.

4.2 How does the workforce's VET affect their choice of self-employment over wage employment?

In this section, we examine the impact of vocational training, both formal and informal, on the probability of being self-employed. The logit regression estimates revealed that, compared with those with no vocational training, individuals with informal training were 2.5% more likely to be self-employed, whereas those with formal training were 2.4% less likely to be self-employed (see Table 3). The finding is contrary to our proposition that individuals with formal vocational training may be targeted in taking up self-employment opportunities rather than workers with informal vocational training. To associate workers' vocational training at a disaggregated level with their employment options, we interacted the status of the vocational training with gender, location, and caste. We found significant and interesting differences in the probabilities of being self-employed across these three characteristics. For instance, while there was a positive relationship between the probability of being self-employed and vocational training (both formal and informal) among men, it was observed to be strongly negative among women (see Figure 4). This indicates that a vocationally trained man has a higher chance of being engaged in any self-initiative business, whereas a trained woman prefers a salaried job vis-à-vis self-employment. Similarly, while vocational training was positively associated with being self-employed in rural areas, it was observed to be negative for urban areas (see Figure 5). This finding indicates that workers from rural areas with some informal training are induced to take up self-employment, whereas urban workers with formal training, including female workers, prefer salaried jobs. This pattern of employment is likely connected with the types of jobs available in rural and urban areas, respectively. As the data used for this study do not provide information on the supply-side indicators of the Indian labour market, this would require a separate analysis. Looking at gender across sectors suggests that the impact of training on the probability of being self-employed is greater among men in rural areas, followed by men in urban areas, rural women, and urban women (see Figure 6). These gender–location gaps do not vary much by training status. This indicates that gender and location play a more crucial role than training in self-employment decisions.

Table 3. Logit estimates for self-employment: effects of vocational training

	Models with interaction term				
	Eqn. 7 Coeff.	*Eqn. 8* Coeff.	*Eqn. 9* Coeff.	*Eqn. 10* Coeff.	*Eqn.11* Coeff.
gender (ref. – female)	.868***	.302***	.302***	.303***	.303***
	(.050)	(.021)	(.021)	(.021)	(.021)
caste_SC (ref. – ST)	.023	.024	-.551***	.024	.025
	(.036)	(.036)	(.089)	(.036)	(.036)
OBC	.485***	.488***	.115*	.492***	.488***
	(.032)	(.032)	(.078)	(.032)	(.032)
General	.439**	.441***	.268***	.445***	.441***
	(.032)	(.032)	(.078)	(.032)	(.032)
religion_Muslim (ref. – Hindu)	.290***	.292***	.292***	.285***	.293***
	(.024)	(.024)	(.024)	(.024)	(.024)
Others	.055***	.053**	.044*	.057**	.054*
	(.029)	(.029)	(.029)	(.029)	(.029)
location (ref. – rural)	-.218***	-.106***	-.218***	-.207***	-.219***
	(.018)	(.043)	(.018)	(.018)	(.018)
lnhh_consexp	-.141***	-.139***	-.140***	---	-.139***
	(.017)	(.017)	(.017)		(.017)
family size	.090***	.090***	.090***	.060***	.090***
	(.005)	(.005)	(.005)	(.004)	(.005)
edu_level	-.219***	-.217***	-.218***	-.218***	-.217***
	(.005)	(.005)	(.005)	(.005)	(.005)
tech_edu (ref. – No)	-.497***	-.501***	-.505***	-.498***	-.503***
	(.038)	(.038)	(.038)	(.038)	(.038)
age (Ref. – 18-35 years)					
36-50 years	.372***	.369***	.369***	.368***	.383***
	(.018)	(.018)	(.018)	(.018)	(.044)
51-65 years	.287***	.285***	.283***	.284***	.403***
	(.027)	(.027)	(.027)	(.027)	(.069)
gender#voc_training	-.425***	---	---	---	---
	(.033)				
location#voc_training	---	-.088***	---	---	---
		(.031)			
caste#voc_training					
SC	---	---	.456***	---	---
			(.066)		
OBC	---	---	.302***	---	---
			(.058)		
General	---	---	.149***	---	---
			(.058)		
cons_quintile#voc_training					
Q2	---	---	---	-.055**	---
				(.031)	

Q3	---	---	---	-.091***	---
				(.030)	
Q4	---	---	---	-.155***	---
				(.028)	
Q5	---	---	---	-.239***	---
				(.029)	
age#voc_training					
36-50 years	---	---	---	---	-.011**
					(.007)
51-65 years	---	---	---	---	-.096**
					(.051)
Constant	1.016***	1.351***	1.727***	-.098**	1.403***
	(.192)	(.191)	(.199)	(.052)	(.190)
R-squared	.072	.071	.071	.071	.071
Prob. > chi^2	0.000	0.000	0.000	0.000	0.000
Observations	67,753	67,753	67,753	67,753	67,753

Source:
Authors' estimation from the unit-level PLFS data (2018-19)
Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Figure 4. Probability of being self-employed by gender and vocational training

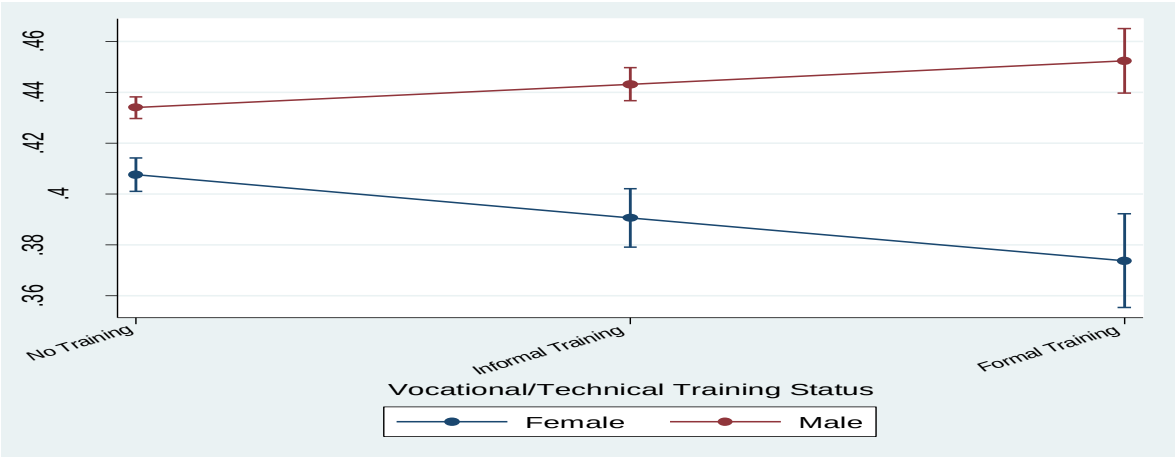


Figure 5. Probability of being self-employed by location and vocational training

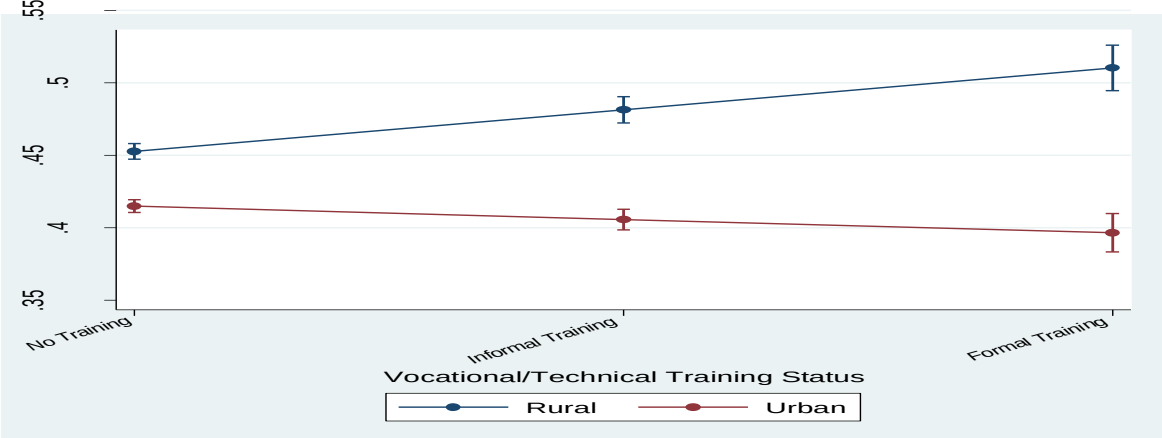
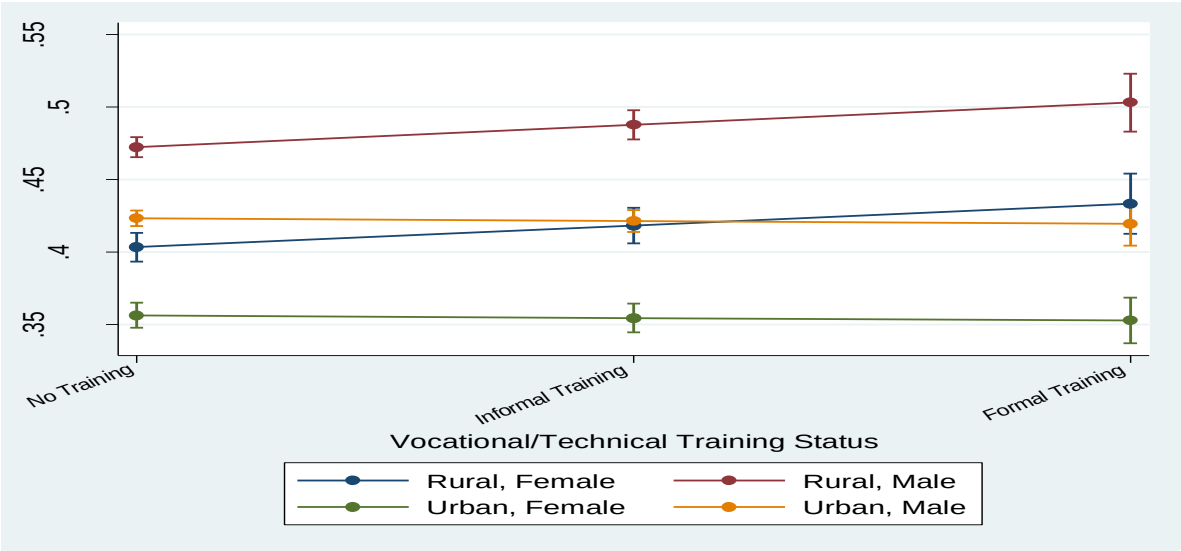


Figure 6. Probability of being self-employed by gender, location, and vocational training



The association between vocational training among different social groups and the probability of being self-employed yields some interesting insights. There is a negative relationship between being vocationally trained and being self-employed among SC/STs. More clearly, the probability of informally trained SC/STs being self-employed is less than that of SC/STs without vocational training, and the probability further decreases among formally trained SC/STs (see Figure 7). This indicates that vocationally and technically trained SC/STs are more likely to take up salaried jobs compared with the self-employed. In contrast, we observe a positive association between vocational training and self-employment among OBCs and general category workers. The probability of being self-employed is higher for individuals from the OBC and general categories with informal vocational training compared with individuals without vocational training; this probability improves further among the formally trained individual workers. Therefore, contrary to SC/STs, individuals from OBCs and forward castes take up self-employment over salaried jobs if they have either formal or informal vocational training. This may be because of the difference in initial endowments to set up any entrepreneurial activities among these caste groups.

The estimation of the probability of being self-employed across households' economic status and vocational or technical training revealed that the chances of being self-employed were highest for individuals belonging to poor families (Q1), and it further increased for individuals with informal or formal vocational training. In contrast, this likelihood was negative in the case of wealthy individuals (see Figure 8). While trained youth (in the age group of 18–35 years) were less likely to opt for self-employment, individuals in the age ranges of 36–50 years and above 51 years were more likely to opt for self-employment (see Figure 9). Therefore, with vocational training, individuals from poor households and in the later stages of their career are more likely to opt for self-employment than their rich and younger counterparts. Given the policy focus on youth employment in the Indian economy, this finding has significant policy implications.

Figure 7. Probability of being self-employed by caste and vocational training

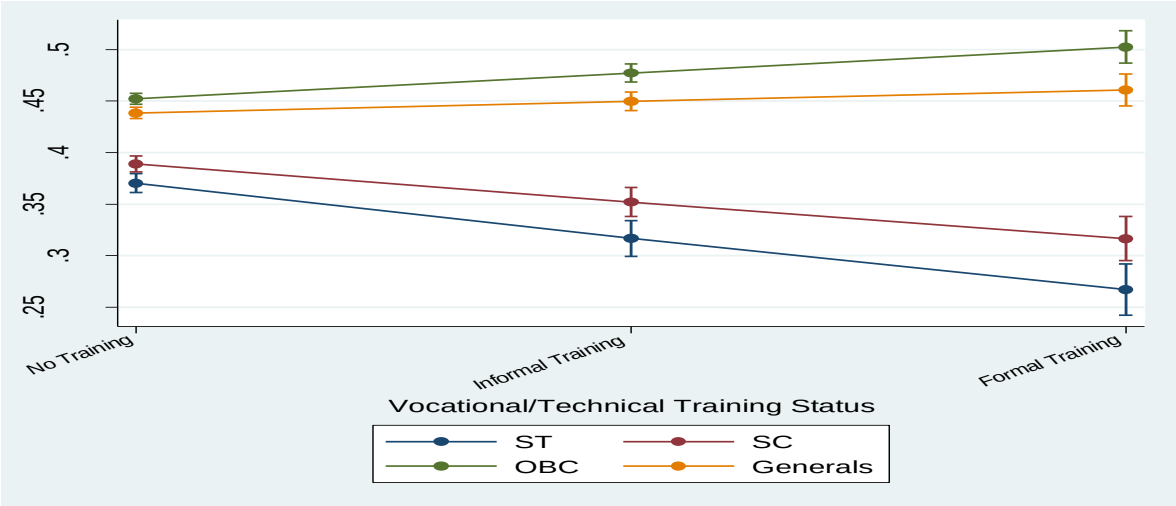


Figure 8. Probability of being self-employed by income quintile and vocational training

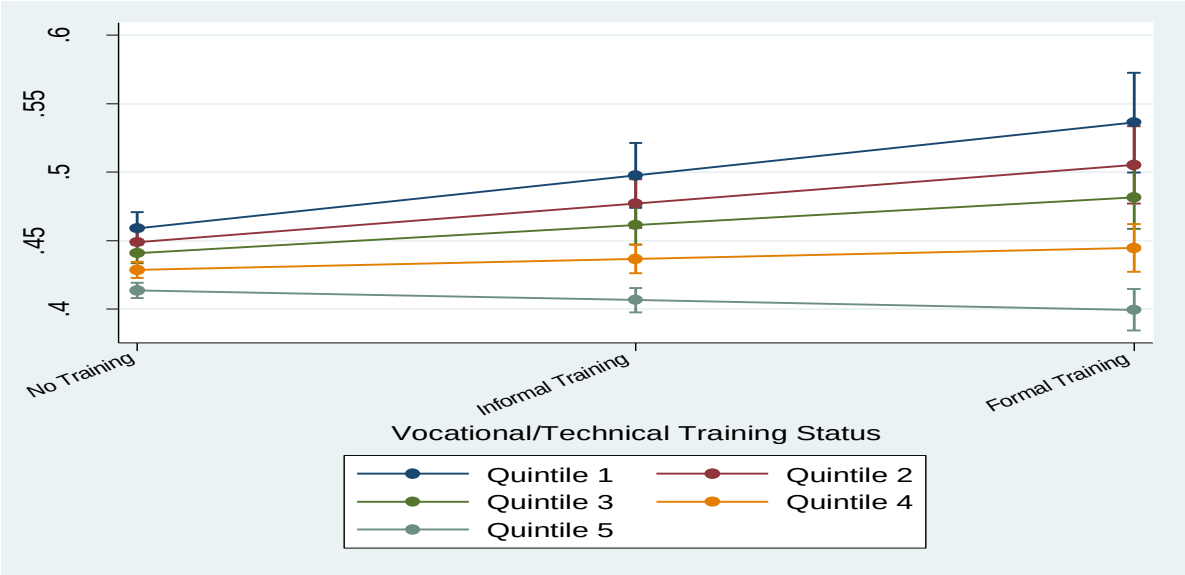
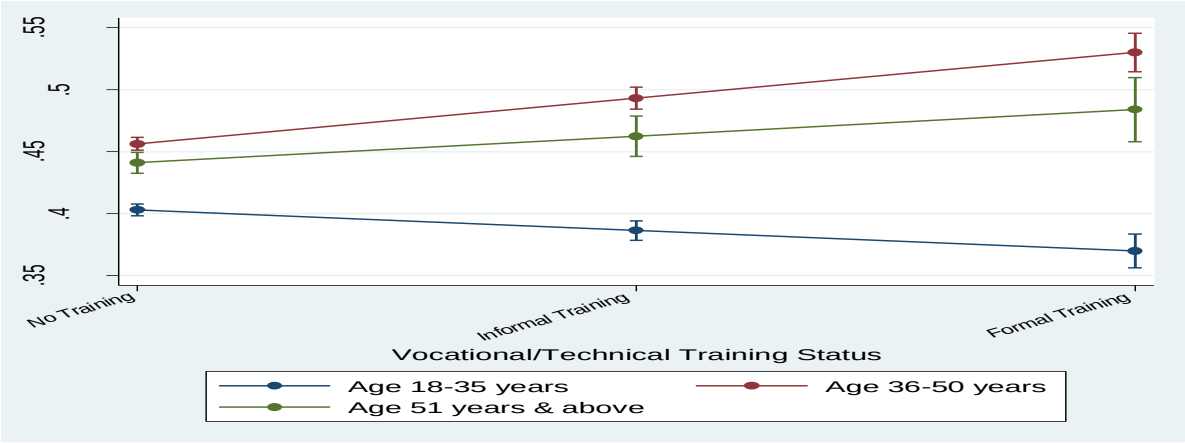


Figure 9. Probability of being self-employed by age and vocational training



5. Conclusion

In this study, we analysed the role of vocational training in individuals' employment decisions and how it varies with workers' socioeconomic, regional and demographic profiles. Specifically, we examined two key questions: (a) Does VET lead to self-employment over wage employment in the non-farm sector in India? (b) How does the employment preference vary for workers with different socioeconomic and demographic characteristics based on their VET status? Using the PLFS data collected in 2018-19, we found that individuals with vocational training are more likely to choose self-employment over wage employment, with stark socioeconomic and demographic differences. For instance, vocationally trained women and workers from backward castes are less likely to be self-employed than their counterparts. Moreover, we found that the youth trained in vocational skills tend to choose wage employment vis-à-vis self-employment. Thus, the study empirically underscores the socioeconomic complexities of providing vocational training to incentivise the workforce towards self-employment, a recent government policy objective in India. Education and labour market policies should account for the factors that hinder the Indian youth from opting for self-employment and act accordingly to address this perennial issue. There is a clear preference for wage employment (vis-à-vis self-employment) among the Indian youth; to alter this, there is a need to overhaul the VET system. For instance, the skills imparted through VET should help in improving entrepreneurial skills among the youth, which would help them in taking up self-employment activities. In fact, the National Education Policy 2020 suggests imparting training in focused areas of vocational education, which is chosen based on skills gap analysis and mapping of local opportunities. However, it remains to be seen how the policy will be implemented in VET institutions over time.

The findings of this study suggest several critical areas for further research. While this study unfolds the role of VET on the employment decisions of the working-age population at the all-India level, further research is needed to uncover the regional dimensions of the issue, as we found several variations in the socio-cultural and economic settings of the Indian population in various regions. This would help in improving the external validity of the findings and in framing regional policies to address the nexus between vocational education and employment in the Indian economy. We have examined the differential effects of formal and informal vocational training on self-employment. However, more research is needed to unfold the impact of different kinds of formal and informal training on workers' occupational decisions. Furthermore, possible causalities could be analysed to unfold the complexities between workers' VET and labour market decisions. Overall, this study clearly emphasises the need for more research in the area of skills, skill development, and the labour market in India.

Appendix

Table A1. Logit estimates for being self-employed vs. all others

	Coefficients	Margins
Male (Ref. – Female)	.181***	.037***
	(.020)	(.004)
Caste_SC (Ref. – STs)	-.136***	-.024***
	(.032)	(.006)
OBC	.399***	.079***
	(.029)	(.005)
General	.458***	.092***
	(.029)	(.006)
Religion_Muslim (Ref. – Hindu)	.199***	.041***
	(.021)	(.004)
Others	.022	.005
	(.026)	(.005)
Urban (Ref. – Rural)	-.004	-.001
	(.016)	(.003)
lnAnnual_income	.104***	.021***
	(.016)	(.003)
Family_size	.049***	.010***
	(.004)	(.001)
General education (years)	-.143***	-.029***
	(.004)	(.001)
Technical education (Ref. – No)	-.611***	-.124***
	(.037)	(.007)
Informal	.357***	.076***
	(.020)	(.004)
Formal	.020	.004
	(.038)	(.008)
Age (Ref. – 18–35 years)		
36–50 years	.592***	.123***
	(.016)	(.003)
51–65 years	.573***	.119***
	(.025)	(.006)
Constant	-2.218***	---
	(.170)	
R-squared	0.055	---
Prob. > chi^2	0.000	---
Observations	91,140	---

Source:
Authors' estimation from the unit-level PLFS data (2018-19)
Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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Notes

[1] The unemployment rate in India, which had fallen to 7.71% in 2010 from a peak of 19.59% in 2002, gradually rose to reach 11.67% in 2020 (as per International Labour Organization estimates reported in the World Development Indicators; World Bank 2020).

[2] Entrepreneurial self-efficiency is defined as the self-perception of personal skills in performing certain tasks and making career decisions. This is an important contributor to entrepreneurial intentions. Entrepreneurial education enhances students' knowledge and confidence and boosts their self-efficacy, which, in turn, enhances their self-perception of the feasibility of entrepreneurship and hence fosters their intentions. Innovation-driven development strategies place new demands on entrepreneurship education.

[3] The individuals are treated as the self-employed who work as own-account and unpaid family workers.

[4] For a detailed discussion on sample design, sample size, and the concepts and definitions of some important terms used in the survey, see the Annual report of the PLFS 2018-19, National Statistical Office, Ministry of Statistics and Programme Implementation, Government of India.

[5]The responses to employment status include: worked in h.h. enterprise (self-employed): own account worker -11, employer-12, worked as helper in h.h. enterprise (unpaid family worker) -21; worked as regular salaried/ wage employee -31, worked as casual wage labour: in public works -41, in other types of work -51; did not work but was seeking and/or available for work

-81, attended educational institution -91, attended domestic duties only -92, attended domestic duties and was also engaged in free collection of goods (vegetables, roots, firewood, cattle feed, etc.), sewing, tailoring, weaving, etc. for household use -93, rentiers, pensioners, remittance recipients, etc. -94, not able to work due to disability -95, others (including begging, prostitution, etc.) -97.

[6]The caste system in India is an old social stratification primarily based on the rituals followed by different groups and their engagements with different occupations. Over time, the caste discourse has shifted from ritualistic hierarchy and social discrimination to an instrument for mobilizing people for economic and political gain. Currently, for administrative or official purposes, the caste system in India is classified into four major groups, namely, Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs), and General. It is well recognized that the SC, ST, and OBC households fare relatively poorly on several socio-economic indicators when compared with the General category households. Therefore, SCs, STs, and OBCs are given special treatment by the Government of India in many welfare-oriented fields such as education, health, and employment (Choudhury 2016, 545).

[7] According to PLFS 2018-19 survey, the training that is acquired through institutions/ organizations and recognized by national certifying bodies, leading to diplomas/certificates and qualifications is considered as formal vocational or technical training. Vocational or technical training other than formal training includes that which occurs in daily life, in the family, in the workplace, in communities, and through the interests and activities of individuals, and typically does not lead to certification. Broadly, these are categorised as hereditary, self-learning, learning on the job, and others (National Statistical Office 2020).

[8] The PLFS data includes households' usual monthly consumer expenditure (Rs.). This information was used to calculate the monthly per capita expenditure (using information on family size) and the households were then classified into five different quintile groups, that is, Q1 to Q5. While the first quintile (Q1) includes the bottom 20% of the sample, the fifth quintile (Q5) includes the top 20% of the sample in the monthly per capita expenditure (Rs.). Q1 is treated as the poorest category, whereas Q5 is considered as the richest group.

[9] We define individuals' decision either to opt for self-employment or wage employment. In the absence of any job opportunity in the labour market, individuals may be forced to take up self-employment for earning their livelihoods; however, this is an alternative that they decide upon themselves. Some individuals may not take up either self-employment or wage employment unless the quality of jobs available to them matches their expectations. Individuals with entrepreneurial capability may opt for self-employment if they are dissatisfied with the jobs available in the market. In summary, the decision to join the labour market in India is quite complex, and this study interprets it in a limited sense.