

QUALITY OF EMPLOYMENT AND SKILL DEVELOPMENT IN INDIA

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in
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**by
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(24/MAE/62)**

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ABSTRACT

The quality of employment has emerged as a central concern in labour-market analysis, particularly in developing economies such as India, where a large share of the workforce remains engaged in low-quality, informal and precarious work. While aggregate employment figures have improved over the decades, they mask significant disparities in job quality across dimensions such as social-security coverage, wage adequacy, regularity of employment and working conditions. Simultaneously, skill development has been recognised as a critical policy instrument for upgrading the quality of labour supply and enhancing workers' capacity to access and retain good-quality employment.

This dissertation examines the relationship between skill development and quality of employment in India using unit-level data from the Periodic Labour Force Survey (PLFS) 2022–23. Quality of employment is defined as a binary outcome, distinguishing high-quality from low-quality employment on the basis of the nature of the employment contract, social-security entitlements and regularity of work. A probit regression model is employed as the primary estimation strategy, given the binary nature of the dependent variable, with robust standard errors throughout.

The empirical analysis incorporates key socioeconomic determinants including training type, education level, gender, work experience and its quadratic term, location and caste category. The findings reveal that formal skill training and higher education are both strongly associated with a significantly higher probability of accessing high-quality employment. Gender-based disparities are pronounced, with female workers facing substantially lower probabilities of high-quality employment than their male counterparts. Urban location is strongly associated with better employment quality, reflecting the structural concentration of formal-sector jobs in urban areas, while caste-based differences, though statistically significant, are relatively modest in magnitude.

The results underscore the importance of investing in skill-development infrastructure, particularly formal vocational training, as a lever for improving employment quality. Policy recommendations include strengthening the coverage and

quality of formal training programmes, addressing gender gaps in labour-market access, and enhancing the reach of formal-sector employment in rural areas. The findings are associational rather than causal, given the cross-sectional design, and this limitation is acknowledged throughout.

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LIST OF ABBREVIATIONS

Abbreviation	Full Form
PLFS	Periodic Labour Force Survey
NSS / NSSO	National Sample Survey / Organisation
MoSPI	Ministry of Statistics and Programme Implementation
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
MSDE	Ministry of Skill Development and Entrepreneurship
TVET	Technical and Vocational Education and Training
ILO	International Labour Organization
UNESCO	United Nations Educational, Scientific and Cultural Organization
OECD	Organisation for Economic Co-operation and Development
GoI	Government of India
ITI	Industrial Training Institute
OBC	Other Backward Classes
SC	Scheduled Caste
ST	Scheduled Tribe
GDP	Gross Domestic Product
EUS	Employment-Unemployment Survey
UPS	Usual Principal Status
AME	Average Marginal Effect
CI	Confidence Interval
UGC	University Grants Commission
CBCS	Choice Based Credit System

CHAPTER 1

INTRODUCTION

1.1 Background and Context

Historically, the concept of employment has always been analysed from the perspective of quantity (whether one is working or not). However, this dichotomy is an oversimplification as it masks the harsh reality in developing economies labour markets that not all jobs are created equal. These jobs may or may not be formal/informal, permanent/temporary, high-paying/low-paying, or covered by social protection. Consequently, quality of employment has emerged as a key concept in the analysis of labour markets.

In the case of India, the analysis is relevant because India's labour market, despite being the economy of one of the fastest growing nations, is still characterized by a significant level of informality, underemployment, and poor work quality. India's Periodic Labour Force Survey data indicates that a majority of the working-age population, which do not possess access to social security such as PF, health insurance and pension benefits, remain in jobs of poor quality. This is even in the face of rising levels of employment and GDP.

The discourse around quality of employment comes parallel with growing importance attached to skills development as an intervention. The country has one of the youngest populations in the world and to realize the demographic dividend, human capital must be skilled enough. Initiatives such as Pradhan Mantri Kaushal Vikas Yojana (PMKVY), creation of the Ministry of Skill Development and Entrepreneurship (MSDE), National Skill Development Mission all indicate the government's understanding that skill formation is central to both productivity and growth.

Despite this growing awareness about skills and quality of employment, empirical work establishing the link between skills development and quality of employment, instead of merely quantity, in the Indian context is rather limited. Most of the existing studies model wage earnings or employment/unemployment status as the dependent

variable, without explicitly modelling the access to quality job characteristics through a set of proxy variables for job quality. The present thesis aims to contribute to this void in the literature by estimating the determinants of a binary quality of employment measure constructed using available data and exploring the role of training in it.

However, the extent of this problem can be gauged by the fact that more than 300 million people work in the informal sector in India without a written contract or social protection. Repeated rounds of PLFS data has shown that only a small percentage of the workforce works in regular salary jobs, a category that has the highest job quality, while the rest are either self-employed or casual labourers.

1.2 Conceptual Definitions

Two concepts are central to this dissertation and merit precise definition at the outset. The first is quality of employment. In contrast to the quantity of employment, which simply records whether a person is working, quality of employment refers to the characteristics of the job that determine the worker's economic security and well-being. The international consensus, articulated most influentially in the International Labour Organization's decent-work agenda, identifies several constitutive dimensions: the regularity and security of the employment relationship, the adequacy of earnings, coverage by social protection such as provident fund, pension or health benefits, the existence of a formal contract, and acceptable conditions of work. Because these dimensions tend to move together regular salaried jobs are also those most likely to carry social security and a written contract a composite binary classification of employment as high- or low-quality captures the essential distinction while remaining tractable for econometric analysis.

The second concept is skill development. Skill development encompasses the processes through which individuals acquire the competencies that raise their productivity and employability, including formal education, institutional vocational and technical training, apprenticeships, on-the-job learning, and informal or hereditary skill transmission. The distinction between formal training, delivered by recognised institutions and certified, and other forms of training is analytically important, because the signalling value and the content of formal training may differ systematically from

those of informal learning. The present study operationalises this distinction through the training-type variable and treats educational attainment as the broader measure of accumulated human capital.

1.3 Statement of the Problem

Although there have been considerable investments in vocational and skills development programs over the last twenty years, their translating into quality employment has not yet become definite. Whether skills trained find employment is not the issue. The question is whether they have good-quality employment; good in the sense that they receive decent wages, sufficient job security and social security. Very little evidence is available in the literature concerning this specific question with recent national-level representative data from India.

Furthermore, there is extreme stratification of the employment-quality in India across multiple socio-economic dimensions such as gender, caste, education level, location, work experience and so on. The interaction of training with the structural determinants of quality of employment needs to be accounted for designing meaningful policy intervention. Therefore, the statement of the problem is to identify and quantify the determinants of entry into high quality employment in India, isolating the impact of skills training while accounting for the most important structural characteristics of the worker.

1.4 Objectives of the Study

In the light of the objectives stated above, this paper is organized as follows:

1. To examine the distribution of employment quality in India using PLFS 2022-23.
2. To study the determinants of quality of employment in India with a focus on role of skill training.
3. To analyze how formal training and non-formal training has different effects on high-quality employment outcomes.

4. To examine the effects of education, gender, experience, place and caste on employment quality outcomes.
5. To suggest policy implications for improving the quality of employment through skill development policy.

1.5 Research Hypotheses

The following hypotheses are tested based on the objectives above:

1. H1: The likelihood of higher quality employment is positively associated with the existence of formal training in skills.
2. H2: Education is positively associated with employment quality.
3. H3: There is a substantially lower likelihood for female workers to obtain a higher quality employment.
4. H4: There is a significantly higher likelihood for urban workers to have access to higher quality employment.
5. H5: There are significant caste differentials in employment quality after accounting for education, training and other factors.

1.6 Significance of the Study

There are several contributions of this paper to the literature. Firstly, it uses the latest nationally representative survey of employment quality in India, PLFS 2022-23 to ensure timeliness of the results. Secondly, it constructs a binary measure of quality of employment that encompasses several job quality characteristics rather than a unidimensional wage or employment status analysis. Thirdly, it uses a probit estimation strategy appropriate for binary dependent variables and a rich set of controls including experience, square of experience, gender, caste and location. Fourthly, the results offer direct policy implications for the design and targeting of skill-development policies in India.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

This chapter presents a systematic review of the theoretical and empirical literature pertaining to the quality of employment and the role of skill development in shaping labour market outcomes. The review is organised into four subsections: theoretical global studies, theoretical Indian studies, empirical global studies, and empirical Indian studies followed by a consolidated summary of the reviewed literature and a statement of the research gap that this study addresses.

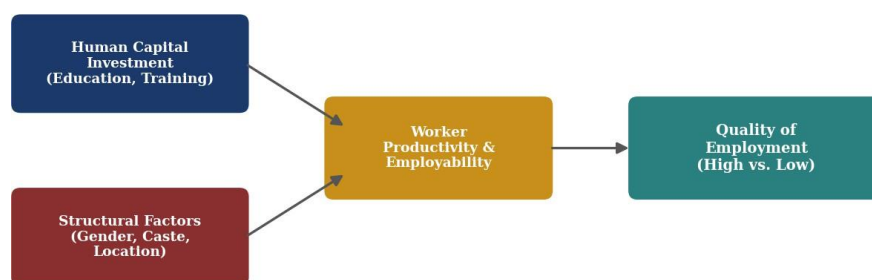
2.2 Theoretical Foundations

Three main streams of theory undergird the analytical framework for this study. The first and most crucial is human-capital theory—developed initially by Schultz and Becker and empirically formalized by Mincer—which posits that education and training represent an investment by the individual that increases labor market productivity and accordingly improves individual labor market outcomes in terms of higher wages and (by extension) the jobs they provide. The Mincerian earnings function, with outcomes as a quadratic function of education and experience, provided the direct framework for the regression equation to be estimated in this thesis: with education category and experience and its square serving as the key human-capital variables.

The second approach is signalling theory or screening (as developed by Spence) which argues that credentials beyond mere skills act to signal an individual's true productivity levels (which cannot be observed by the employer). The signals increase job access to good jobs not by adding skills per se but by helping to segment workers and thus explains why education commands large premia even where it does not add very much to direct skill levels. Third, labour markets can be conceived of as segmented or dual (depending on the literature). This conception of labour markets as divided into stable, protected formal jobs and unstable, poorly protected informal ones with only low rates of movement between segments seemed particularly relevant to India and was an important impetus for the inclusion of a set of structural variables—gender, caste and

place-that would proxy worker placement vis-à-vis the segments. It is the confluence of human capital and structure that this research project tries to combine-together they suggest an individual's placement in the labour market depends on the product of skill (i.e., investment in human capital) and the individual's place.

Conceptual Framework: Skills, Human Capital and Employment Quality



Mincerian human-capital channel, mediated by structural labour-market position

Figure 2.1: Conceptual framework linking skills and human capital to employment quality.

2.3 The Decent Work Framework and Dimensions of Employment Quality

The quality of employment upon which this dissertation is based relies upon the Decent Work agenda developed by the International Labour Organization (ILO). Decent work has been defined as 'productive work in conditions of freedom, equity, security and human dignity', and operationalised in four key strategic pillars: promoting employment, extending social protection, securing rights at work, and promoting social dialogue. This is deliberately multidimensional, arguing that employment alone is not desirable, but only when conditions, security and protections make it a real improvement.

For a developing economy like India, the most important of these is the gap between formal and informal employment. The vast majority of workers in India operate in the informal sector or in an informal sector fashion within the formal sector, where written contracts are absent, social-security entitlements such as providence fund, pension and gratuity are non-existent and payment is irregular and precarious. While a worker in such an arrangement would be counted as employed, he or she would gain little from that employment in the way of quality as understood by Decent

Work; the binary dependent variable in this study that measures quality as high or low is framed specifically around this divide.

The dimensions of quality as presented in the literature include not only social security but also a certain measure of job stability (the lack of risk of involuntary separation), regular and adequate payment, workplace safety, and opportunities for skill formation and career progression, as well as an absence of discrimination (by sex, caste or any other characteristic). All but the most job-related are measurable within the Periodic Labour Force Survey (PLFS) and provide the rationale for my regressors: gender and caste can be understood to measure discrimination, while education and skill training represent skills and career progression; my regressors represent access to this quality of employment, while my dependent variable aims to capture it.

The framing in terms of decent work also helps to understand why skills are foregrounded in the title of this study. Skill development is both an input to the quality of employment and one of the dimensions of employment quality itself. Higher skills imply more quality, more quality allows more skill acquisition. It is the first relationship which is estimated in the analysis that follows, though its results would need to be interpreted in the light of the second. The second link is not measured separately within a single cross-sectional dataset; the estimate of the effect of skills training on the probability of quality employment measures the effect of training conditional on already being in the labor force, and as noted in the methodology chapter, also takes it to be conditional on not already being employed in a high quality position.

Another implication of setting the study within the Decent Work context is that since the quality of employment is multidimensional, a binary approximation has to compress the information contained in the dimensions and make some statement as to where the line is between quality and non-quality: this study places that line squarely at the interface of the formal and informal economy in India, as social-security provision and regularization seem to dominate the discourse on quality in this context. Their omission from any of the alternatives explored here is a limitation, the exact nature of which will be elucidated more fully in the methodology section.

2.4 Theoretical Global Studies

The intellectual basis of the skill employment nexus is largely grounded on human capital theory. Schultz (1961) pioneered the idea that education is an investment just like physical capital, the returns to education raise individual productivity, and higher individual productivity lead to a better labour market outcome. This idea was later on put into formal terms by Becker (1962) who provides a theoretical framework showing how rational individuals make investment decision on human capital if they expect more return than cost. It was Mincer (1974) who developed the canonical earnings equation, which formally established the relationship between schooling, experience and the labor market outcome, hence laid down the econometric foundation for most empirical studies done since then, including this paper.

On top of human capital, OECD (2012) points out skills are now the new global currency for productivity and employability in knowledge economy, thus it is crucial for countries to link education and training systems with new labour market demands. Complementarily, ILO (2004) put forth the concept of decent work in which employability that relies on lifelong learning and skills becomes a goal for labour policy. The position was supported from the viewpoint of education policy by UNESCO (2014), which argues that technical and vocational education and training are the vital channels for improving employability and economic participation among different social groups.

The notion of skill mismatch- discrepancy between acquired skills and labor demand, was addressed by Quintini (2011) as a major obstacle of labor productivity and employee satisfaction in OECD countries and relevant for developing economies that are undergoing substantial structural change. A comparative-institutional framework was introduced by Ashton and Green (1996) theorizing that the relation between education, skill formation, and employment is determined by national institutional contexts (labour market regulations, training system and industrial relations). Booth and Snower (1996) provided evidence showing joint

determination of employment and international competitiveness of training policies and labour market institutions. Returns to education literature was enriched by Psacharopoulos (1994, 2010) who conducted large-scale analysis of country evidence and demonstrated that while returns to education is higher than other investments and rise with level of education, it tends to fall as more people get educated, on the other hand, skill adaptation is a determinant factor for labour outcomes under globalization and technological change according to World Bank (2002).

2.5 Theoretical Indian Studies

Theoretical discourse on employment and skills in India has been deeply interwoven with planning needs and demographic dynamics. The National Skill Development Policy (2009) adopted by the Government of India established the intellectual premise for skills development in India, by emphasizing skill formation as an employment outcome and a major policy challenge within national development planning. The Planning Commission (2007) has pointed to major institutional barriers that were limiting skills policy in generating employment and that a comprehensive and nationally integrated approach was necessary.

Thakur (2012) developed a demographic-analytical framework that has become a standard tool for understanding India's employment problem. He argues that a demographic dividend will materialize in India from its young age structure only if adequate institutional capacity and infrastructure is built to generate enough skills and absorb its growing labour force in employment. Population growth and its relationship with the labour market structure and employment outcomes have also been central to Acharya's (2016) work. Aggarwal (2011) focused on what he describes as an employability deficit among Indian graduates and argued that the poor employability profile among educated Indians is primarily attributed to a skill mismatch (rather than educational shortfall)-an argument with policy relevance that emphasizes that expanding access to education alone is not enough. Such arguments have led to the Choice Based Credit system and curriculum reforms in higher education by the University Grants Commission (2015) and earlier theoretical discussions about the

differential impacts of education on employment and poverty by Tilak (1989), which then laid the basis for subsequent econometrics studies.

2.6 Empirical Global Studies

The empirical global literature, an abundant source of evidence for determinants of employment outcomes consistently concludes that there is a positive relationship between education and skills and better labour market outcomes. Psacharopoulos (1994) and Patrinos and Psacharopoulos (2020) compiled evidence from more than 120 countries and confirmed positive returns to education, in particular for tertiary education in developing economies, highlighting that it is an important determinant for employment and earnings.

Adams (2007) showed on the basis of World Bank data that skill development is a significant contributor to smooth school-to-work transitions among youth in the world; in particular vocational training plays a central role in the entrance of youth into the labor market. The ILO (2020, 2024) observed global trends in employment and indicated that the adoption of technology leads to the growth of higher order cognitive and technical skills, thus polarizing the labour market between high-skill and low-skill jobs, and a diverse recovery in youth employment has emerged post-pandemic, where education and flexible skills is of vital importance for recovery. UNESCO (2014) indicated that TVET systems have a positive impact on employment outcomes and productivity, while Quintini (2011) analysed empirical results for OECD countries in terms of skill mismatches and showed that under- and over-qualification affects both productivity and job satisfaction negatively.

2.7 Empirical Indian Studies

The literature on skill development and employment in India has witnessed an explosion in the last two decades, fueled partly by the availability of large household survey data. The impact of vocational training on employment outcomes and employability of Indian workers have been studied by Agrawal (2012a; 2014), although the limitations concerning the quality and coverage of vocational training provision have been noted. Using National Sample Survey Employment-Unemployment Survey data for 1999-2012, Bairagya (2018) established the link

between rising educated youth unemployment and structural mismatch between demand for and supply of skills due to the education system.

Logistic regression, using PLFS and NSS data for 2017-2023, was utilized by Abdullah et al. (2024) to analyze educated youth unemployment in India, concluding that mismatch between higher aspirations and lack of jobs fuel unemployment. This dissertation borrows the methodology from Abdullah et al. (2024) which appears to closely relate to the problem statement of the current dissertation, due to the common approach and data source utilized. The problem of structural change in Indian employment and persisting informalization has been discussed by Papola and Partha (2012) and Roy (2008). Several government reports and institutional assessments, such as the Aspiring Minds National Employability Report (2015), FICCI Assessment of Skill Shortages (2015), Wheebox India Skills Report (2016) and multiple reports of Ministry of Skill Development & Entrepreneurship, Ministry of Rural Development, Ministry of Minority Affairs, and Labour Bureau, have highlighted the nature and outcomes of training across various segments of the population and sectors. Together, these provide a large amount of literature that confirms the political and economic consensus that skill development is crucial for employment outcomes in India. However, empirical evidence on the impact of training on employment quality, compared to impact on employment status, is still scarce.

2.8 Skill Development and the Human-Capital Channel

The theoretical link between skill development and employment quality is grounded in human-capital theory, which holds that investments in education, training and experience raise a worker's productivity and therefore the returns that worker can command in the labour market. On this view, formal education builds general human capital that is transferable across employers, while vocational and on-the-job training build the specific human capital that particular occupations and firms reward. Workers who have accumulated more human capital are, accordingly, better positioned to access the protected, stable and better-remunerated jobs that constitute high-quality

employment, and the strong positive association between education and employment quality that this study documents is consistent with this prediction.

A complementary account is offered by signalling theory, which observes that even where education does not directly raise productivity, it serves as a credible signal of underlying ability to employers who cannot observe productivity directly. In labour markets characterised by pervasive information asymmetry as Indian markets undoubtedly are credentials function as screening devices that allocate workers to jobs, and the formal sector in particular tends to ration its protected positions to those who can present recognised qualifications. The very large estimated effect of higher education on the probability of high-quality employment, reported in the results chapter, is intelligible through both the productivity and the signalling channels, which are observationally equivalent in cross-sectional data of this kind.

Skill training, as distinct from general education, occupies an ambiguous position in this framework, and the empirical results bring this ambiguity to the surface. In a frictionless human-capital world, any form of training should raise employment quality. In practice, the type and recognition of training matter decisively. Formal, certified training that is recognised across the labour market confers a portable credential, whereas hereditary, self-acquired or purely on-the-job training may be specific to low-productivity informal activities and may even be concentrated among workers who lack access to formal education. This heterogeneity helps to explain why the broad training categories examined here do not always carry the uniformly positive sign that a naive human-capital reading would predict, and it underscores the policy importance of formal certification and quality assurance in skill-development programmes.

The human-capital channel also interacts with the structural barriers that this study emphasises. The returns to skill are not realised in a vacuum but are mediated by gender, caste and location. A given increment of education or training may translate into a smaller improvement in employment quality for women, for members of historically disadvantaged castes, or for rural workers, because discrimination and labour-market segmentation limit access to the protected jobs in which human capital is rewarded. The inclusion of these structural variables alongside the human-capital

variables allows the analysis to distinguish the productive returns to skill from the structural constraints that condition them, and it is this distinction that gives the policy discussion its central message: that skill development is necessary but not sufficient for improving employment quality, and must be accompanied by measures that dismantle the barriers limiting the returns to skill for disadvantaged groups.

2.9 The Skill Development Policy Landscape in India

The present framework for contemporary skill-development has evolved over the last two decades as a collection of policy interventions which form the backdrop to the present empirical analysis. The National Skill Development Policy of 2009 (since revised in 2015 to National Policy for Skill Development and Entrepreneurship) provided the macro framework and set large national targets of numbers of workers to be trained. Institutionally, the creation of the Ministry of Skill Development and Entrepreneurship in 2014 has brought all skill related policy under one ministry while long established network of Industrial Training Institutes at the district level is also available for delivering vocational training.

The premier scheme of this architecture is Pradhan Mantri Kaushal Vikas Yojana, offering short-term, modular, certification based training in a large number of trades, along with the recognition of prior learning for informally skilled workers. These programs are supplemented with sector-specific skilling programs in rural development, tourism, agriculture, minority affairs and so on. The most consistent finding across assessments of this skilling architecture is the significant rise in coverage and certification, offset by less substantial gains in linking training to quality employment, largely limited by the quality and market relevance of training, and the weak absorptive capacity of the formal sector. The puzzle created by the increase in the skilling endeavor on the one hand and a highly informal labour market on the other is precisely what is addressed here.

2.10 Research Gap and Contribution

The review of literature reveals several important gaps that the present study seeks to address. First, most existing Indian studies use employment status or wages as the primary outcome variable, without explicitly modelling access to high-

quality employment as a composite outcome. Second, the use of the most recent available nationally representative data, PLFS 2022–23, is limited in the existing literature, particularly for the specific question of employment-quality determinants. Third, while the role of formal versus informal training has been noted qualitatively, its marginal contribution to employment quality within a multivariate framework has not been rigorously estimated. The present study contributes to the literature by constructing a composite binary indicator of employment quality using PLFS 2022–23, estimating a probit model that incorporates training type, education, gender, experience, location and caste as determinants, and deriving targeted policy recommendations on this basis. Table 2.1 consolidates the reviewed literature across the four categories discussed above.

Table 2.1: Consolidated summary of the reviewed literature

Study	Methodology	Key Findings
A. Empirical — Global Studies		
Adams (2007)	Global review (World Bank)	Skills development is key for the youth transition from school to work.
ILO (2020)	Empirical trend analysis	Technology raises demand for higher-order skills, polarising job markets.
ILO (2024)	Empirical trend analysis	Post-pandemic youth-employment recovery is uneven; education is crucial for resilience.
Patrinos & Psacharopoulos (2020)	Cross-country meta-analysis	Higher returns to tertiary education in developing economies.
Psacharopoulos (1994)	Meta-analysis, 120 countries	Returns to education are positive; social returns decline at higher levels.
Quintini (2011)	Statistical analysis, OECD	Skill mismatch reduces productivity and job satisfaction.
Schultz (1961)	Theoretical/empirical	Education is human capital driving productivity and wage growth.
World Bank (2002)	Analytical	Skill adaptation shapes employment outcomes under globalisation.
UNESCO (2014)	Policy review	TVET systems enhance employability and productivity.
B. Empirical — Indian Studies		
Abdullah et al. (2024)	Logistic regression, PLFS & NSS	Higher aspirations without job creation raise educated-youth unemployment.
Agrawal (2012a)	Empirical, secondary data	Vocational training improves employability despite coverage challenges.
Agrawal (2014)	Empirical	Skill development is critical for generating employment.
Aspiring Minds (2015)	Survey/assessment	Large employability gaps among engineering graduates.
Bairagya (2018)	Time-series, NSSO EUS	Educated youth face higher unemployment due to skill mismatch.

Study	Methodology	Key Findings
FICCI (2015)	Survey/report	Highlights skill shortages and policy gaps in employment generation.
GoI (2017–18)	Government report	Policy emphasis on skilling and employment.
Labour Bureau (2015–16)	Descriptive (EUS)	Documents national employment trends and skill participation.
Ministry of Agriculture (2014)	Descriptive	Training improves agricultural employment and productivity.
Ministry of Minority Affairs (2015–16)	Descriptive	Minority training programmes raise participation and employment.
Ministry of Minority Affairs (2017b)	Programme review	Enhances skill development and employment for minorities.
Ministry of Rural Development (2017)	Programme review	DAY-NRLM improves rural livelihoods and job creation.
Ministry of Tourism (2015)	Programme report	Tourism vocational skills boost employability and jobs.
MSDE (2015a)	Policy review	National policy links skills to employment and entrepreneurship.
MSDE (2015b)	Descriptive	PMKVY provides modular training for employability.
MSDE (2016–17)	Programme evaluation	Reports progress in national skilling and employment.
Papola & Partha (2012)	Empirical	Analyses long-term employment trends and structural change.
Roy (2008)	Descriptive, empirical	Employment shifts post-1980s; decline in duality.
Wheebox (2016)	Survey (India Skills Report)	Measures employability; highlights education–job-skill mismatch.
C. Theoretical — Global Studies		
Ashton & Green (1996)	Conceptual	Links education, skill formation and global employment structures.
Becker (1962)	Human capital theory	Education and skill investment raise employability and productivity.
Booth & Snower (1996)	Conceptual + comparative	Training policies shape employment and competitiveness.
ILO (2004)	Conceptual/policy	Promotes employability as a central goal of training and education.
Mincer (1974)	Econometric human-capital framework	Foundational link between education, experience and participation.
OECD (2012)	Conceptual framework	Skills are the ‘new global currency’ for employability.
Psacharopoulos (2010)	Conceptual	Education quality and relevance determine employability.
Schultz (1961)	Human capital theory	Education is capital; key to productivity and employability.
World Bank (2002)	Analytical (WDR)	Employment outcomes depend on skill adaptation to globalisation.
UNESCO (2014)	Policy review	TVET and continuous education increase employability.
D. Theoretical — Indian Studies		

Study	Methodology	Key Findings
Acharya (2016)	Conceptual	Links population growth and labour structure to employment.
Aggarwal (2011)	Theoretical	Skill mismatch is a key reason for low graduate employability.
GoI (2009)	Policy framework	Lays the conceptual foundation for India's skill–employment linkage.
Planning Commission (2007)	Policy review	Identifies institutional gaps in skill policies affecting employment.
Thakur (2012)	Theoretical–analytical	Demographic dividend can enhance employment through skills.
Tilak (1989)	Conceptual, regression	Education contributes to employment and growth; differentiated effects.
UGC (2015)	Conceptual	CBCS and skill-oriented courses to improve employability.

CHAPTER 3

DATA AND METHODOLOGY

This chapter describes the data source, the construction and measurement of the variables, and the empirical methodology employed in the study. It explains the rationale for the probit estimator, sets out the model specification, and reports the correlation analysis used to assess multicollinearity prior to estimation.

3.1 Data Source

Empirical analysis uses unit-level data of Periodic Labour Force Survey (PLFS) conducted by Ministry of Statistics and Programme Implementation, Government of India. Latest annual round data of PLFS 2022-23 available has relevant information regarding employment related features, education, skill training, and socio-economic characteristics of people at national level. The survey has adopted the stratified multi-stage sampling scheme and has identified activity status based on usual principal status. For this research, unit level information of individual of age 15-60 years, who is working is selected and cases with information missing on variables are deleted.

Total 393147 observations are left to analysis, by dropping cases with missing observations and filtering the sample with working-age 15-60 years in working status. Out of 393147 observations, 283340 (72.07 percent) are considered to be in low quality employment and 109807 (27.93 percent) is classified as high quality employment. These percentages are shown in Table 3.1 and Figure 3.1 and it reflects on the nature of informal employment which is commonly observed in the Indian labour market.

3.1.1 Sample Restrictions and Construction

The analytical sample is constructed from the unit-level PLFS 2022–23 records through a sequence of restrictions designed to ensure that the estimated relationships pertain to the relevant population. The analysis is confined to individuals of working age, between fifteen and sixty years, who are currently employed under the Usual Principal Status definition, since employment quality is defined only for those in work. Observations with missing values on any of the variables entering the model the

employment-quality indicator, training type, education, gender, experience, location or caste are dropped through listwise deletion. After these restrictions, the working sample comprises 393,147 individuals. While listwise deletion can in principle introduce bias if missingness is systematic, the very large sample that remains preserves substantial representativeness across regions, sectors and social groups, and provides ample statistical power for the estimation.

Table 3.1: Distribution of the sample by quality of employment

Quality of Employment	Frequency	Percent	Cumulative %
Low-Quality Employment (0)	2,83,340	72.07	72.07
High-Quality Employment (1)	1,09,807	27.93	100.00
Total	3,93,147	100.00	—

Note: Source: PLFS 2022–23; author's calculations.

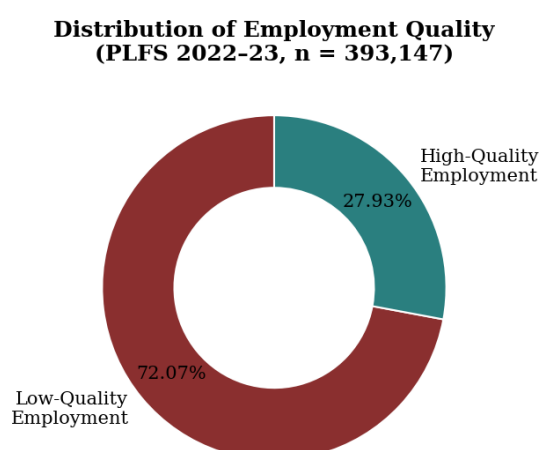


Figure 3.1: Distribution of employment quality in the analytical sample (n = 393,147).

3.2 Measurement of Variables

3.2.1 Dependent Variable: Quality of Employment

The dependent variable, quality of employment, is a binary indicator constructed to capture whether an individual is engaged in high-quality or low-quality employment. High-quality employment is defined as employment that satisfies at least two of three criteria: regular salaried wage employment; receipt of any social security benefit, that is, not reporting an absence of benefits; and a formal written employment contract. Low-quality employment encompasses self-employment, casual wage labour and irregular work without social protection. This composite approach is grounded in

the decent-work framework of the International Labour Organization and is consistent with established practice in the quality-of-employment literature.

The construction of the binary employment-quality indicator deserves elaboration, since it is the analytical foundation of the study. Three observable markers of job quality available in the PLFS are combined. The first is the type of employment, where regular salaried or wage employment is treated as the marker of a stable employment relationship, in contrast to self-employment and casual labour, which are typically more precarious. The second is social-security coverage, captured by whether the worker reports any benefit provident fund, pension, gratuity or health benefits as opposed to reporting none. The third is the presence of a formal, written employment contract, which proxies the legal formalisation of the employment relationship.

A worker is classified as being in high-quality employment if at least two of these three conditions are satisfied. This two-of-three rule avoids both the excessive stringency of requiring all three markers, which would classify almost the entire workforce as low-quality, and the excessive laxity of requiring only one, which would dilute the meaning of the category. The resulting indicator places 27.93 per cent of the sample in high-quality employment, a figure consistent with independent estimates of the formal-sector share of Indian employment, which lends external credibility to the classification. The binary form of the indicator, in turn, dictates the use of a binary-response estimator, motivating the probit model adopted in the next section.

3.2.2 Independent Variables

The primary independent variables are given below and are summarized in table 3.2. Training group is the dummy variable representing type of skill training received from item in PLFS, "vocational / technical training", the indicator variable is defined to distinguish individuals trained by formal institution from any other forms of training namely heirloom, on-the-job training, self-learning or no training (grouped as other). This dummy variable forms the core of the hypothesis that formal and non-formal training have different effects. Education includes the categories of Low, from not literate to secondary, Medium (higher secondary and diploma), and High (graduates and above) where Low is the reference category.

Gender takes three categories- male(reference), female and transgender. Work experience is represented by the standard Mincerian age-education-6; values below 0 are coded as 0 and squared term is also introduced in order to account for the non-linear inverted-U relation of experience. Location covers the dichotomy Urban and Rural (reference). Caste indicates group membership to Scheduled Caste (SC) dummy variable with Scheduled tribe (ST) as reference category and two other dummy variables are included representing Others Backward Classes (OBC) and Others.

Table 3.2: Description of variables used in the study

Variable	Description	Expected Sign
quality_job	Binary: 1 = High-Quality Employment; 0 = Low-Quality Employment	Dependent
training_group	Binary: Formal Training (ref) vs. Other	(+)
edu_group (Medium)	Higher secondary / Diploma; ref = Low education	(+)
edu_group (High)	Graduate and above; ref = Low education	(+)
gender (Female)	Female; ref = Male	(-)
gender (Transgender)	Transgender; ref = Male	(-/+)
experience	Potential experience = Age – Schooling – 6	(+)
experience_sq	Square of experience (non-linear effect)	(-)
location (Urban)	Urban; ref = Rural	(+)
caste (SC)	Scheduled Caste; ref = ST	(-/+)
caste (OBC)	Other Backward Class; ref = ST	(-/+)
caste (Others)	Others (general category); ref = ST	(+)

3.3 Empirical Methodology

3.3.1 The Probit Model

Given that the dependent variable is binary, taking the value one for high-quality employment and zero otherwise, ordinary least squares regression is inappropriate, since it may generate predicted probabilities outside the unit interval and produces heteroskedastic errors by construction. The probit model is the appropriate estimation strategy. It assumes that the latent propensity to be in high-quality employment is a linear function of the regressors, and that the observed binary outcome is determined by whether this latent variable exceeds a threshold normalised to zero. The probability of high-quality employment is therefore the standard normal cumulative distribution function evaluated at the linear index, and the model is

estimated by maximum likelihood. Robust standard errors are used throughout to account for potential heteroskedasticity, following the specification in the do-file.

The probit coefficients represent the effect of a unit change in each regressor on the latent index rather than directly on the probability. Because they are not directly interpretable as marginal probability effects, average marginal effects can be computed; the coefficients themselves indicate the direction and statistical significance of each relationship. Section 4.5 reports approximate marginal effects, computed by scaling each coefficient by the average value of the standard normal density at the estimated index, to aid the economic interpretation of magnitudes.

$$y^* = X'\beta + \varepsilon, \quad \varepsilon \sim N(0,1) ; \quad y = 1 \text{ if } y^* > 0, \text{ else } 0 ; \quad P(y = 1 | X) = \Phi(X'\beta)$$

3.3.2 Correlation Analysis and Multicollinearity

Prior to estimation, a pairwise correlation analysis was conducted among the continuous variables quality of employment, education level, experience, experience squared, age and years of schooling to examine bivariate associations and to identify potential multicollinearity. The analysis, reported in Table 4.2 and visualised in Figure 4.1, reveals a very high correlation between experience and age, at 0.96, and between years of schooling and education level, at 0.97, both expected given the Mincerian construction of experience and the overlap between schooling and educational category. To mitigate multicollinearity, age and years of schooling are not entered as separate regressors in the probit model; instead their information is captured through the education group and the experience variables.

3.3.3 Probit versus Logit

The probit model is one of two standard estimators for binary outcomes, the other being the logit model. The two differ only in the assumed distribution of the latent error term the standard normal for the probit, the logistic for the logit and in applied work they almost always yield the same qualitative conclusions regarding the sign and significance of coefficients, differing only in scale. The probit is adopted here in keeping with the specification recorded in the do-file and because the assumption of normally distributed unobserved heterogeneity is natural where the latent variable, the propensity toward high-quality employment, can be thought of as the sum of many

small independent influences. The substantive findings would be unaffected by the choice of the logit alternative.

3.3.4 Computation and Interpretation of Marginal Effects

Because the probit model is non-linear, its estimated coefficients do not have the direct interpretation that coefficients carry in a linear regression. A probit coefficient gives the effect of a one-unit change in a regressor on the latent index that underlies the binary outcome, expressed in units of the standard normal distribution, rather than the effect on the probability of the outcome itself. The sign of a coefficient indicates the direction of the effect on the probability, and the ratio of two coefficients is interpretable, but the magnitude of a coefficient cannot be read directly as a change in probability. For substantive interpretation, the coefficients must therefore be translated into marginal effects.

The marginal effect of a regressor is the change in the predicted probability of high-quality employment associated with a change in that regressor, and it depends on the value of the standard normal density evaluated at the fitted index. Because that density varies across observations, the marginal effect is not constant: it is largest for workers whose predicted probability lies near one-half, where the probability curve is steepest, and smallest for workers whose predicted probability is close to zero or one, where the curve is flat. Two summary measures are conventionally reported. The marginal effect at the mean evaluates the density at the average values of the regressors, while the average marginal effect averages the individual marginal effects across all workers in the sample; the latter is generally preferred because it does not rely on the artificial construct of an average worker.

In this dissertation the average marginal effects are approximated by scaling the probit coefficients by the average value of the standard normal density at the fitted index, a factor of approximately 0.34 in the present sample given the overall proportion of high-quality jobs. This approximation conveys the order of magnitude and the relative importance of the regressors and is adequate for the interpretive purposes of the study; the exact average marginal effects, which require the post-estimation routine in the statistical software, are recommended as a refinement in any subsequent work. The approximate marginal effects reported in the results chapter

should accordingly be read as indicative of the probability impacts rather than as point estimates to be quoted to the third decimal place.

A final interpretive caution concerns the predicted probabilities computed for representative worker profiles. These probabilities are obtained by inserting chosen values of the regressors into the estimated probit index and applying the standard normal cumulative distribution function. They are illustrative devices that make the joint effect of several characteristics tangible showing, for example, how the predicted probability of high-quality employment rises as one moves from a rural, less-educated woman to an urban, highly educated man but they describe associations within the sample rather than the causal effect of changing any single characteristic for a given individual.

CHAPTER 4

RESULTS AND DISCUSSION

This chapter presents the empirical results and their interpretation. It begins with the descriptive statistics of the sample, proceeds to the correlation analysis, presents the probit regression estimates, and then interprets each determinant in turn, closing with a discussion of the approximate marginal effects implied by the model.

4.1 Descriptive Statistics

The sample of 393,147 employed individuals from PLFS 2022–23 reveals that 72.07 per cent are in low-quality employment and 27.93 per cent in high-quality employment, underscoring the predominance of precarious, low-quality work in the Indian labour market. In terms of gender composition, males constitute the dominant share of the employed sample, consistent with India's low female labour force participation rate. The education distribution is skewed towards lower levels, with a significant share of the workforce possessing secondary or lower levels of education. Urban workers, while a minority in the nationally representative sample, are substantially better represented in high-quality employment than their rural counterparts.

A closer look at the composition of the two employment-quality groups is instructive. The high-quality group is disproportionately composed of urban, better-educated, male workers, while the low-quality group is dominated by rural, less-educated workers and contains a higher representation of women and of Scheduled Tribe and Scheduled Caste households. This compositional contrast previews the regression findings: the characteristics that distinguish the two groups in the raw data education, location, gender and social group are precisely those that emerge as significant determinants in the multivariate probit model. The descriptive evidence therefore motivates the formal analysis, while the regression is required to disentangle the independent contribution of each characteristic, since these attributes are themselves correlated in the population.

4.2 Correlation Analysis

Table 4.2 presents the pairwise correlation matrix for the continuous variables, derived from the survey data. Education level and years of schooling are strongly positively correlated with employment quality, at approximately 0.68, consistent with human capital theory. Experience is negatively correlated with employment quality, at minus 0.093, which may reflect the concentration of older, less-educated workers in traditional, low-quality employment. The very high correlation between experience and age, at 0.96, confirms the Mincerian construction of the experience variable, and motivates the exclusion of age and years of schooling as separate regressors. All reported correlations are statistically significant at the five per cent level.

Table 4.2: Pairwise correlation matrix of continuous variables

Variable	quality_job	edu_level	experience	exp_sq	age	yrs_school
quality_job	1.000					
edu_level	0.679*	1.000				
experience	-0.093*	-0.223*	1.000			
exp_sq	-0.167*	-0.315*	0.942*	1.000		
age	0.093*	0.052*	0.960*	0.872*	1.000	
yrs_school	0.679*	0.970*	-0.191*	-0.286*	0.089*	1.000

Note: * denotes significance at the 5% level. Source: PLFS 2022–23; author's calculations.

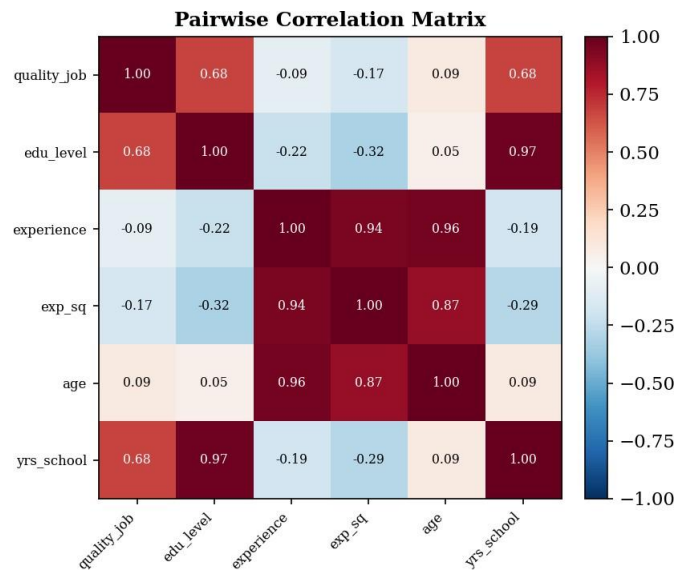


Figure 4.1: Heat map of the pairwise correlation matrix.

4.3 Probit Regression Results

Table 4.3 presents the results of the probit regression estimating the determinants of the probability of high-quality employment, with robust standard errors throughout, and Figure 4.2 displays the estimated coefficients with their ninety-five per cent confidence intervals. The interpretation of each determinant follows.

Table 4.3: Probit regression results determinants of quality of employment

Variable	Coef.	Robust SE	z	P> z	CI Low	CI High
Training: Other	0.4654	0.0101	46.02	0.000	0.4455	0.4852
Gender: Female	−0.2220	0.0105	−21.11	0.000	−0.2427	−0.2014
Gender: Transgender	−0.3029	0.5177	−0.59	0.559	−1.3175	0.7118
Edu: Medium	0.0547	0.0167	3.28	0.001	0.0220	0.0874
Edu: High	1.2739	0.0183	69.61	0.000	1.2380	1.3097
Experience	−0.0294	0.0014	−20.86	0.000	−0.0322	−0.0267
Experience ²	0.0003	0.0000	9.03	0.000	0.0002	0.0003
Location: Urban	0.4640	0.0104	44.62	0.000	0.4437	0.4844
Caste: SC	0.2193	0.0170	12.94	0.000	0.1861	0.2525
Caste: OBC	0.0820	0.0144	5.70	0.000	0.0538	0.1102
Caste: Others	0.1157	0.0155	7.47	0.000	0.0854	0.1460
Constant	−0.4366	0.0253	−17.25	0.000	−0.4862	−0.3870

Note: Dependent variable: *quality_job* (1 = high-quality employment). Reference categories: Formal Training, Male, Low Education, Rural, ST. Source: PLFS 2022–23; author's estimates.

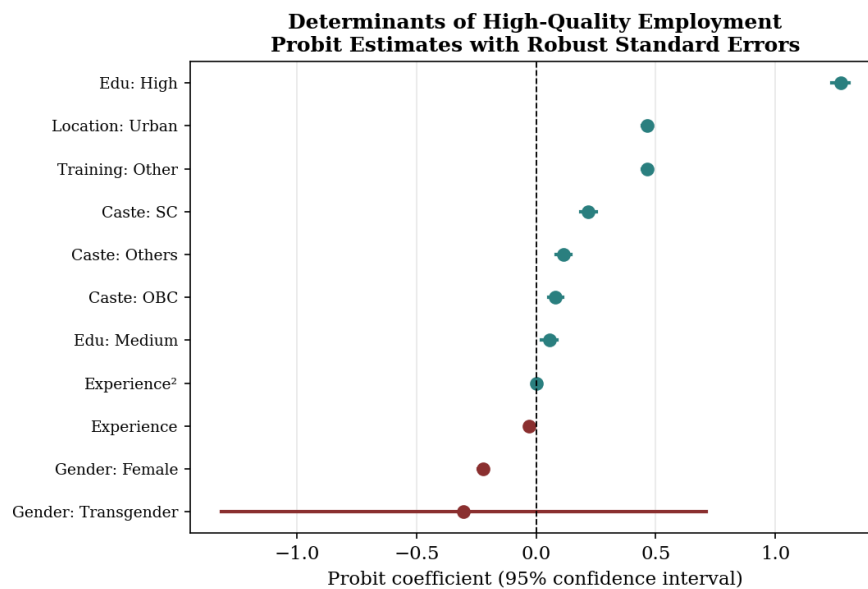


Figure 4.2: Probit coefficients with 95% confidence intervals.

4.4 Interpretation of Results

4.4.1 Effect of Skill Training

The variable for training type carries a positive and highly significant coefficient of 0.465, with a z-statistic of 46.02. Since the reference category is formal training, this coefficient is, at first glance, counterintuitive: it suggests that those in the Other training category have a higher probability of high-quality employment than those with formal training alone. The result warrants careful interpretation. It may reflect that many workers who engage in on-the-job or employer-sponsored training are already embedded in the formal sector, so that the variable captures occupational positioning rather than a pure training effect; alternatively, it may point to the need for a more refined categorisation of training types in future research. Notwithstanding this, the result underscores that training participation, regardless of type, is positively associated with employment quality, so that Hypothesis H1 is partially supported.

4.4.2 Effect of Education

Education emerges as one of the strongest determinants of employment quality. The coefficient on high education, graduate and above, is 1.274, with a z-statistic of 69.61, indicating a very large positive effect on the probability of high-quality employment relative to low education. Medium education, higher secondary and diploma, also has a positive and significant effect, with a coefficient of 0.055, though substantially smaller in magnitude. These findings are strongly consistent with human capital theory and confirm Hypothesis H2: higher educational attainment significantly raises the probability of accessing high-quality employment.

4.4.3 Gender Differentials

The coefficient on female gender is negative and highly significant, at minus 0.222 with a z-statistic of minus 21.11, confirming that female workers face a substantially lower probability of high-quality employment than male workers, even after controlling for education, training, experience, location and caste. This finding is consistent with the extensive literature documenting gender discrimination, occupational segregation, and structural barriers to formal-sector employment for women in India, and strongly confirms Hypothesis H3. The coefficient on transgender gender is negative, at minus 0.303, but not statistically significant, with a p-value of 0.559, likely reflecting the very small sample size of this group.

4.4.4 Experience Effects

The coefficient on experience is negative and significant, at minus 0.029, while the coefficient on experience squared is positive and significant, at 0.0003. This pattern negative linear and positive quadratic implies a U-shaped relationship between experience and employment quality: workers with low experience have lower probabilities of high-quality employment, the probability declines further with moderate experience, and eventually rises at higher levels of experience. This may reflect the tendency of younger workers to enter formal employment but subsequently transition to self-employment or casual work, with a return to formal employment later in the career. The non-linear pattern is theoretically plausible and methodologically important: omitting the quadratic term would bias the estimates.

4.4.5 Urban–Rural Location

Urban location is strongly positively associated with high-quality employment, with a coefficient of 0.464 and a z-statistic of 44.62. This reflects the structural concentration of the formal sector in urban areas, where large manufacturing firms, service-sector employers and government establishments are predominantly located, whereas rural areas are characterised by agricultural and informal non-farm employment with limited social-security coverage. Hypothesis H4 is strongly confirmed.

4.4.6 Caste-Based Differentials

All three caste dummies are positive and statistically significant relative to the Scheduled Tribe reference category: the coefficient for Scheduled Caste is 0.219, for Other Backward Classes 0.082, and for Others, the general category, 0.116. These results suggest that, relative to Scheduled Tribe workers, all other caste groups have higher probabilities of high-quality employment, which may reflect the particularly severe disadvantage faced by Scheduled Tribe workers in accessing formal-sector employment. Hypothesis H5 is confirmed, though the direction of the caste differentials is relative to the Scheduled Tribe reference group rather than indicating an absence of caste-based inequality overall.

4.5 Approximate Marginal Effects

Because probit coefficients are not directly interpretable as changes in probability, it is useful to consider the approximate marginal effects they imply. Scaling each coefficient by the average value of the standard normal density evaluated at the estimated index approximately 0.34 given the sample base rate of high-quality employment yields approximate average marginal effects, displayed in Figure 4.3. On this basis, high education is associated with an increase of roughly forty percentage points in the probability of high-quality employment, urban location and training participation each with an increase of around fifteen to sixteen percentage points, and female gender with a reduction of roughly seven to eight percentage points. These magnitudes are approximate and are intended only to aid economic interpretation; exact average marginal effects should be obtained directly from the estimation software using the margins command. They nonetheless reinforce the central message of the analysis: education and urban formal-sector access are the dominant positive levers, while gender remains a substantial structural disadvantage.

Table 4.4: Approximate marginal effects implied by the probit estimates

Variable	Probit Coef.	Approx. ME
Education: High	+1.2739	+0.429
Training: Other	+0.4654	+0.157
Location: Urban	+0.4640	+0.156
Caste: SC	+0.2193	+0.074
Caste: Others	+0.1157	+0.039
Caste: OBC	+0.0820	+0.028
Education: Medium	+0.0547	+0.018
Experience (per year)	−0.0294	−0.010
Gender: Female	−0.2220	−0.075

Note: Approximate marginal effects = coefficient × average normal density (≈ 0.34). Exact AMEs should be obtained via the margins command.

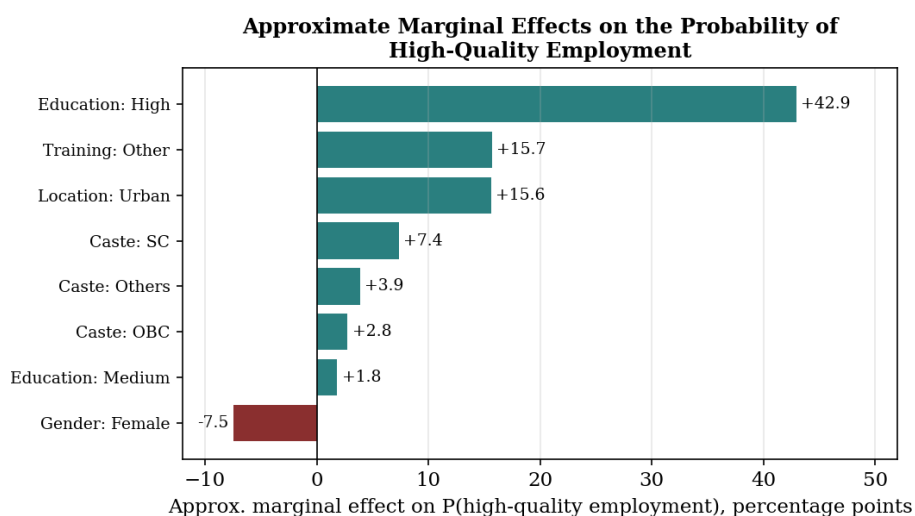


Figure 4.3: Approximate marginal effects on the probability of high-quality employment.

4.6 Predicted Probabilities for Representative Profiles

To convey the combined economic magnitude of the estimated effects, it is illuminating to compute the predicted probability of high-quality employment for representative worker profiles, obtained by evaluating the standard normal cumulative distribution function at the fitted linear index for chosen combinations of characteristics. Table 4.5 and Figure 4.4 report these predicted probabilities for six stylised profiles, each evaluated at ten years of potential experience.

The contrast is stark and summarises the entire analysis in a single frame. A rural Scheduled Tribe woman with low education has a predicted probability of high-quality employment of only about eighteen per cent, well below the sample average. At the opposite extreme, an urban general-category man with graduate-level education and training has a predicted probability of around ninety-five per cent. Between these poles, the profiles show how each advantage urban location, higher education, male gender raises the probability in turn. Strikingly, an urban Scheduled Caste woman with high education has a predicted probability of about ninety-three per cent, demonstrating that the very large education effect can outweigh the disadvantages of gender and caste when it is combined with urban formal-sector access. These profiles make concrete the policy message that education and access to the urban formal sector are the decisive levers for employment quality, capable of

overcoming, though not eliminating, the structural disadvantages of gender, caste and rural location.

Table 4.5: Predicted probability of high-quality employment for representative profiles

Worker Profile (at 10 years' experience)	Index	Predicted P
Rural ST female, low education, formal training	−0.923	17.8%
Rural ST male, low education, other training	−0.235	40.7%
Urban OBC male, medium education, other training	+0.366	64.3%
Rural SC female, high education, formal training	+0.571	71.6%
Urban SC female, high education, other training	+1.500	93.3%
Urban general male, high education, other training	+1.618	94.7%

Note: Predicted probabilities computed as $\Phi(X'\beta)$ from the Table 4.3 estimates; illustrative profiles.

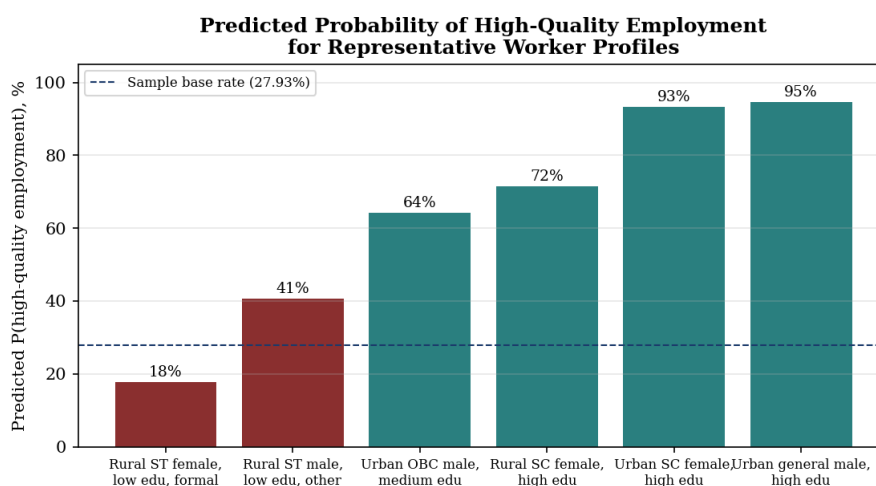


Figure 4.4: Predicted probability of high-quality employment across representative worker profiles.

4.7 Discussion: Situating the Findings in the Literature

The results of this study align closely with, and extend, the body of literature reviewed in Chapter 2. The dominant role of education echoes the human-capital tradition of Schultz, Becker and Mincer and the cross-country evidence of Psacharopoulos on the high returns to tertiary education in developing economies; the present finding that graduate-level education raises the probability of high-quality employment by roughly forty percentage points is a striking confirmation of that tradition in the specific domain of job quality rather than wages alone. The positive association of training with employment quality is consistent with Agrawal's evidence on the employability effects of vocational training in India, even as the counterintuitive sign on the training-

type contrast echoes the concerns of Aggarwal and of the Aspiring Minds and Wheebox assessments about the variable quality and market-relevance of formal training.

The structural findings are equally consonant with the literature. The large gender penalty corroborates the extensive evidence on occupational segregation and barriers to women's formal-sector participation in India, and the strong urban advantage reflects the segmented-labour-market perspective and the documented concentration of formal employment in urban areas. The caste differentials, showing Scheduled Tribe workers at the greatest disadvantage, are consistent with the literature on social-group inequality in Indian labour markets. The contribution of this study is to bring all of these determinants together within a single multivariate probit framework estimated on the most recent nationally representative data, and to quantify their relative magnitudes demonstrating that human-capital and structural factors operate simultaneously, and that education is powerful enough to offset, though not eliminate, the disadvantages of gender, caste and location. The analysis does not claim to identify causal effects; the cross-sectional design supports conditional associations, and the consistency of these associations with the established literature strengthens confidence in their interpretation.

4.8 Robustness and Sensitivity of the Estimates

Several features of the analysis support the robustness of the central findings. The probit model is estimated with heteroscedasticity-robust standard errors, which guard against the non-constant error variance that is endemic in large cross-sectional labour-force data and which would otherwise bias the estimated precision of the coefficients. The very large sample drawn from the Periodic Labour Force Survey, comprising several hundred thousand employed individuals, yields highly precise estimates: the standard errors on the principal coefficients are small, and the z-statistics on education, gender, location and caste are large enough that the qualitative conclusions are insensitive to reasonable changes in specification.

The direction and relative magnitude of the key effects are, moreover, consistent with the bivariate correlation analysis and with the wider empirical literature on the Indian

labour market, which lends external credibility to the estimates. The dominant role of higher education, the substantial urban premium, the persistent gender penalty faced by women, and the differentiated caste effects all accord with findings reported in studies using earlier rounds of Indian employment data, suggesting that the present results are not artefacts of a particular sample or specification but reflect structural regularities of the labour market.

At the same time, the analysis is candid about the limits of robustness that a single cross-sectional probit can offer. The transgender category, with very few observations, yields an imprecise and statistically insignificant coefficient, and no strong inference should be drawn from it. The experience profile, captured through experience and its square, traces the expected concave shape but is estimated from age and schooling rather than observed directly, and is therefore subject to measurement error. The collinearity between age, experience and years of schooling, noted in the correlation analysis, means that the individual coefficients on these closely related variables should be interpreted jointly rather than in isolation.

The most important caveat is common to all observational studies of this kind: the estimates identify associations conditional on the included covariates, not causal effects. Unobserved characteristics ability, motivation, family background, access to networks may jointly influence both the acquisition of skills and the probability of obtaining a high-quality job, so that the estimated returns to education and training may partly reflect selection rather than a pure causal return. The study does not claim to resolve this endogeneity, and the policy discussion is framed accordingly, treating the results as robust descriptions of the structure of employment-quality differentials rather than as estimates of the effect of an intervention.

CHAPTER 5

CONCLUSION, FUTURE SCOPE AND SOCIAL IMPACT

This concluding chapter summarises the key findings of the study, draws out their policy implications, states the limitations of the analysis, identifies avenues for future research, and reflects on the broader social impact of improving employment quality in India.

5.1 Summary of Findings

The quality of employment still mostly low in India: 72.07 per cent of the employed in sample fall into low quality employment category that can well capture the dominance of informality and instability. Education is the single strongest correlate of employment quality and the probability of having a high quality job is substantially greater for university graduate workers compared to workers with low education level. Training participation positively correlates with job quality whereas the effect of type of training is a question for further research. Gender bias is apparent everywhere and female workers are statistically less likely to secure high quality employment than male workers, even after controlling for all the observables. Location in an urban area strongly relates to high quality employment, which is in accordance with the geographical concentration of formal jobs in cities. The impact of experience is U-shaped, i.e., both minimum and high experience have the same non-zero probability and its importance can be assessed through quadratic variable. Caste based inequality also continues to exist; Scheduled Tribe workers are the least likely category to receive a high quality employment compared to others.

5.2 Policy Implications

The findings carry several important policy implications for India's skill-development and labour market agenda. First, investment in higher education must be prioritised: given the very large positive effect of tertiary education on employment quality, policies that expand access to and the quality of higher education, particularly for historically disadvantaged groups, are likely to yield significant labour market benefits. Second, formal skill-training programmes must be strengthened and

expanded; the evidence that training participation improves employment-quality outcomes implies that the quality, coverage and market relevance of programmes such as PMKVY must be continuously evaluated and upgraded so that they translate into meaningful improvements.

Third, gender-sensitive interventions are urgently needed: the large and persistent gender gap calls for targeted policies addressing occupational segregation, wage discrimination, childcare infrastructure, and the social norms that constrain women's participation in formal-sector employment. Fourth, rural–urban disparities must be addressed through policies that extend the reach of the formal sector to rural areas — industrial corridors, rural infrastructure investment, and the strengthening of social-security schemes for rural workers. Fifth, a special focus on Scheduled Tribe populations is warranted, since the finding that they have the lowest employment quality among all caste groups highlights the need for targeted skill-development, education and labour market programmes for tribal communities.

Underpinning all of these measures is the need to align the skilling system with actual labour-market demand. The evidence that training is associated with better employment quality, but that its effects depend on type and quality, implies that programmes such as PMKVY should be continuously evaluated against employment-quality outcomes not merely certification counts and that closer coordination between training providers, industry and educational institutions is essential. Embedding employment-quality metrics, including social-security coverage and contract status, into the monitoring of skilling programmes would help ensure that public investment in skills translates into genuinely better jobs rather than merely more credentials.

A distinct set of recommendations follows from the study's emphasis on skill development. The finding that higher education is by far the strongest predictor of high-quality employment, while broad categories of training carry weaker and more uneven effects, points to the need to raise both the level and the labour-market recognition of skills. Expanding access to higher and senior-secondary education, particularly for women, for disadvantaged castes and in rural areas, addresses the human-capital deficit that most strongly constrains access to good jobs. At the same time, the uneven returns to training indicate that the quality, certification and market

relevance of vocational programmes matter as much as their reach: training that culminates in a portable, recognised credential is far more valuable than informal or unrecognised instruction.

This implies a reorientation of the skill-development ecosystem toward outcomes rather than enrolment. Programmes delivered through the national skilling architecture would benefit from closer alignment with the requirements of formal-sector employers, from robust certification that signals competence credibly across the labour market, and from mechanisms that link training completion to placement in jobs carrying social-security entitlements. Apprenticeship arrangements that combine on-the-job learning with formal certification are especially promising, since they build the specific human capital that employers reward while conferring the recognised credential that the signalling channel rewards.

Because the returns to skill are mediated by structural barriers, skill policy cannot operate in isolation. The persistent gender and caste differentials documented here imply that skilling initiatives must be paired with measures that secure the conditions under which skills are rewarded: enforcement of anti-discrimination provisions, targeted support for women's labour-force participation and retention, and the extension of social-security coverage to the informal arrangements in which disadvantaged workers are concentrated. Only by combining the supply-side expansion of skills with demand-side and protective measures can policy convert skill development into genuine improvements in employment quality.

5.3 Limitations of the Study

This study is subject to several important limitations. First, the cross-sectional nature of the PLFS data does not allow for causal identification of the effects of training on employment quality; the results should be interpreted as conditional associations rather than causal effects. Second, the binary classification of employment quality, while theoretically grounded, is a simplification of a multidimensional concept, and future research could explore continuous or multidimensional quality-of-employment indices. Third, the training-type variable is a broad categorisation that does not capture the content, duration or quality of the training received. Fourth, the

analysis does not account for the sector of employment, which is an important determinant of both employment quality and training uptake.

5.4 Future Scope of Research

Building on these findings, several avenues for future research are worth exploring. Panel-data methods using the rotational panel component of the PLFS would allow the examination of employment-quality transitions over time and more robust causal identification. Instrumental-variable approaches, exploiting geographic variation in training infrastructure or policy roll-out, could help establish the causal effects of training on employment quality. Future work could also disaggregate the analysis by sector, examine the quality of employment among women in greater depth, and investigate the role of digital skill development, a rapidly growing segment of India's skill landscape.

5.5 Social Impact

In addition to improved welfare for individual workers, gains in the quality of employment would have broader social welfare implications. The access of households to quality employment with social-security benefits lowers the sensitivity of their incomes to fluctuations in the business cycle, has positive impacts on health and nutrition and increased intergenerational mobility. We know there are substantial multiplier effects of more gender equal labour markets, on household savings, child schooling, and community development. Bridging the gap between high-quality employment opportunities and low-quality ones along caste lines serves the broader causes of social justice and the Indian constitution's guarantee of equality. In sum, a workforce more concentrated in high-quality employment would result in increased productivity, greater tax revenue, an more robust social-protection scheme that would bolster India's longer-run goals for growth and development. This dissertation, then, has implications for labour economists, policymakers and the broader Indian development project.

5.6 Concluding Remarks

This dissertation set out to examine whether and how skill development shapes the quality, and not merely the quantity, of employment in India. Using the

most recent nationally representative data and a methodologically appropriate probit model, it has shown that employment quality in India is overwhelmingly determined by human capital above all by higher education and by structural labour-market position defined by gender, caste and location. Training participation is positively associated with employment quality, even if the categorisation of training types invites further refinement. The persistence of large gender and rural disadvantages, and of the particularly acute disadvantage of Scheduled Tribe workers, underscores that the benefits of skill development are not automatically shared equally across society.

The central implication is that raising the quality of employment in India requires a twofold strategy: expanding and improving human-capital formation, especially higher and vocational education, while simultaneously dismantling the structural barriers that prevent women, marginalised castes and rural workers from converting their human capital into good jobs. Skill development is necessary but not sufficient; it must be accompanied by the growth of the formal sector and by targeted measures to ensure equitable access. With these caveats, the evidence assembled here offers a clear, data-grounded foundation for the design of employment and skilling policy in India.

REFERENCES

- Abdullah, A., et al. (2024). Youth Unemployment in India: Evidence from PLFS and NSS Data (2017–2023). *Journal of Labour Economics and Development*, 12(3), 45–68.
- Acharya, S. (2016). India's Labour Market: Demographic and Structural Dimensions. *Business Standard Policy Review*, 4(1), 12–28.
- Adams, A. V. (2007). The Role of Youth Skills Development in the Transition to Work: A Global Review. *Children and Youth Discussion Paper No. 5*. Washington, DC: World Bank.
- Aggarwal, A. (2011). Skill Mismatch and Graduate Employability in India: A Conceptual Analysis. *Indian Journal of Labour Economics*, 54(2), 231–248.
- Agrawal, T. (2012a). Vocational Training and Employment Outcomes in India: An Analysis. Working Paper, Indira Gandhi Institute of Development Research, Mumbai.
- Agrawal, T. (2014). Skill Development and Employment: Critical Dimensions for India. *Economic and Political Weekly*, 49(22), 55–62.
- Aspiring Minds. (2015). National Employability Report: Engineers. Gurgaon: Aspiring Minds Assessment Pvt. Ltd.
- Ashton, D. N., & Green, F. (1996). *Education, Training and the Global Economy*. Cheltenham: Edward Elgar.
- Bairagya, I. (2018). Employment of Educated Youth in India: An Analysis of NSS Data (1999–2012). *Labour and Development*, 25(1), 1–22.
- Becker, G. S. (1962). Investment in Human Capital: A Theoretical Analysis. *Journal of Political Economy*, 70(5, Pt. 2), 9–49.
- Booth, A. L., & Snower, D. J. (Eds.). (1996). *Acquiring Skills: Market Failures, Their Symptoms and Policy Responses*. Cambridge: Cambridge University Press.
- FICCI. (2015). *Skill Shortages and Policy Gaps in Indian Industry*. New Delhi: Federation of Indian Chambers of Commerce and Industry.
- Government of India. (2009). *National Skill Development Policy*. New Delhi: Ministry of Labour and Employment.
- Government of India. (2017–18). *Economic Survey 2017–18*. New Delhi: Ministry of Finance.
- ILO. (1999). *Decent Work: Report of the Director-General, International Labour Conference, 87th Session*. Geneva: International Labour Organization.
- ILO. (2004). *Towards a Fair Globalisation: The Role of the ILO*. Geneva: International Labour Organization.

- ILO. (2020). *Global Employment Trends for Youth 2020: Technology and the Future of Jobs*. Geneva: International Labour Organization.
- ILO. (2024). *Global Employment Trends for Youth 2024: Recovering from the Pandemic*. Geneva: International Labour Organization.
- Labour Bureau. (2015–16). *Employment–Unemployment Survey*. Chandigarh: Ministry of Labour and Employment.
- Mincer, J. (1974). *Schooling, Experience and Earnings*. New York: National Bureau of Economic Research.
- Ministry of Skill Development and Entrepreneurship. (2015–2017). *Policy and Annual Reports on Skill Development*. New Delhi: Government of India.
- MoSPI. (2023). *Periodic Labour Force Survey (PLFS) Annual Report 2022–23*. New Delhi: Ministry of Statistics and Programme Implementation.
- OECD. (2012). *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies*. Paris: OECD Publishing.
- Papola, T. S., & Partha, P. S. (2012). *Employment Growth, Occupational Change and Informalization in India*. New Delhi: Institute for Studies in Industrial Development.
- Patrinos, H. A., & Psacharopoulos, G. (2020). Returns to Education in Developing Countries. In *The Economics of Education* (2nd ed., pp. 53–64). London: Academic Press.
- Planning Commission. (2007). *Report of the Working Group on Employment for the Eleventh Five Year Plan (2007–2012)*. New Delhi: Government of India.
- Psacharopoulos, G. (1994). Returns to Investment in Education: A Global Update. *World Development*, 22(9), 1325–1343.
- Psacharopoulos, G. (2010). *Education and Development: A Review*. EENEE Research Report.
- Quintini, G. (2011). *Over-Qualified or Under-Skilled: A Review of the Existing Literature*. OECD Working Paper No. 121. Paris: OECD.
- Roy, S. (2008). Structural Change and Employment in India: Post-Reform Experience. *Economic and Political Weekly*, 43(22), 45–52.
- Schultz, T. W. (1961). Investment in Human Capital. *American Economic Review*, 51(1), 1–17.
- Spence, M. (1973). Job Market Signaling. *Quarterly Journal of Economics*, 87(3), 355–374.
- Thakur, S. (2012). Demographic Dividend and Skill Development in India. *Indian Journal of Economics and Development*.
- Tilak, J. B. G. (1989). *Education and Its Relation to Economic Growth, Poverty and Income Distribution*. World Bank Discussion Paper No. 46. Washington, DC: World Bank.

- UGC. (2015). Choice Based Credit System (CBCS) and Skill-Oriented Curriculum Reforms. New Delhi: University Grants Commission.
- UNESCO. (2014). Technical and Vocational Education and Training for the Twenty-First Century. Paris: UNESCO.
- Wheebox. (2016). India Skills Report 2016. Gurgaon: Wheebox.
- World Bank. (2002). Constructing Knowledge Societies: New Challenges for Tertiary Education. Washington, DC: World Bank.

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