LABOUR MARKET OUTCOMES: A COMPARATIVE STUDY OF GENERAL AND VOCATIONAL EDUCATION GRADUATES

Dissertation

SUBMITTED TO THE NATIONAL INSTITUTE OF EDUCATIONAL PLANNING AND ADMINISTRATION, NEW DELHI IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF PHILOSOPHY

BABITA BALODI

NATIONAL INSTITUTE OF EDUCATIONAL PLANNING AND ADMINISTRATION, NEW DELHI
MAY 2021

DECLARATION BY THE SCHOLAR

This is to certify that the M.Phil. Dissertation being submitted by me on the topic entitled "Labour Market Outcomes: A Comparative Study of General and Vocational Education Graduates" has been completed under the guidance of Prof. Aarti Srivastava. It is declared that the present study has not previously formed the basis for the award of any Degree, Diploma, Associateship or Fellowship to this or any other University.

Babita Balodi

CERTIFICATE OF THE SUPERVISOR

This is to certify that the dissertation/thesis entitled "Labour Market Outcomes: A Comparative Study of General and Vocational Education Graduates" is the work undertaken by Ms. Babita Balodi under my supervision and guidance as part of her M.Phil. degree in this Institute. To the best of my knowledge, this is the original work conducted by her and the dissertation may be sent for evaluation.

Prof Aarti Srivastava

Dedication

To my parents, whose hard work always inspires me to do my best

ACKNOWLEDGEMENT

First and foremost, praises and thanks to the Almighty, for His showers of blessings throughout my research work which enabled me to complete the research successfully.

I would like to express my deep and sincere gratitude to my research supervisor, Prof Aarti Srivastava, for giving me the opportunity to do research and providing invaluable guidance throughout this research. Her dynamism, vision, sincerity and motivation has deeply inspired me. It was a great privilege and honor to work and study under her guidance. I am extremely grateful for what she has offered me. I would also like to thank her for the friendship, empathy, and great sense of humor.

I am extremely grateful to my parents for their love, prayers, caring and sacrifices for educating and preparing me for my future. Also, I express my thanks to my brothers for their support and valuable prayers.

I would like to say thanks to my friends and research colleagues Anushka Tiwari, Ruchi Payal and Dipak for their constant encouragement and support. I express my special thanks to Srishti Chamola for her genuine support throughout my research work.

Finally, my thanks go to all the people who have supported me to complete the research work directly or indirectly.

Babita Balodi

LIST OF TABLES

LIST OF FIGURES

ABBREVATIONS

OCED	Organisation for Economic Co-operation and Development
GDP	Gross Domestic Product
NSSO	National Sample Survey Office
NSS	National Sample Survey
UNESCO	United Nations Educational, Scientific and Cultural Organization
ITI	Industrial Training Institute
ITC	Industrial Training Centres
UGC	University Grant Commission
B.Voc	Bachelors of Vocation
M.Voc	Masters of Vocation
NSQF	National Skill Qualification Framework
NSDC	National Skills Development Corporation
ILO	International Labour Organization
TVET	Technical Vocational Education and Training
CoE	Centre of Excellence
MSE	Modular Employable Skills
VET	Vocational Education and Training
AQF	Australian Qualifications Framework
OBC	Other Backward Class
OLS	Ordinary Least Square
CABE	Central Advisory Board of Education
NCERT	National Council of Educational Research and Training
CTE	Career and Technical Education
AICTE	All India Council for Technical Education
MoE	Ministry of Education
UT	Union Territory
NCVT	National Council for Vocational Training
NSDA	National Skill Development Agency
NCVET	National Council for Vocational Education and Training

MSDE	Ministry of Skill Development and Entrepreneurship
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
CSCM	Centrally sponsored Centrally managed
PMKK	Pradhan Mantri Kaushal Kendras
SME	Small and Medium Enterprise
CSTARI	Central Staff Training and Research Institute
NIMI	National Instructional Media Institute
NSTI	National Skill Training Institute
FDI	Foreign Direct Investment
OLF	Out of Labour Force
SC	Schedule Caste
ST	Schedule Tribe
B.A.	Bachelors of Arts
LFP	Labour Force Participation

TABLE OF CONTENT

Abstract

Education plays crucial role in the economic growth and development of a country. Over the years there has been massification of the Indian higher education system in the country. However, it has been facing criticism due to the rising graduate unemployability despite the growth of India economy in the past decade. As per the periodic labour force survey, graduate comprise of higher proportion of unemployed individuals in the country. Previous studies have attributed the skill gap which is the shortage of skilled labour force given the demand, as the major reason for high rate of unemployment in the country.

Vocational education and training programmes assume important role in skill development. However, the existing system of vocational education and training is poor to say the least. It suffers from wide range of issues ranging from low level of prevalence to poor employability. The government in order to remove the current issues in the vocational education and training system has taken number of robust initiatives. Nevertheless, important question which arise is how far the efforts of the government in reforming and improving existing vocational education and training step up has been realized?

The present study seeks to address the above question through analysing the labour market outcomes of vocational education through surveying graduates from B.Voc. It goes a step further to compare the labour market outcomes of vocational education to general education so as to provide important policy directions to the government. The findings from suggests that characteristics such as domicile, percentage in grade 12 are important factor in determining the participation in vocational education in comparison to general education. Further, the findings from labour market outcomes suggests that the graduates from vocational education are more likely to be employed than being out of labour force in comparison to the graduates from general education. Furthermore, the findings from the heckman's two step selection model suggests that the graduates from vocational education are likely to received higher earnings as compared to the graduates from general education at undergraduate level. Therefore, in order to realize the objective of skill labour force so as to exploit demographic dividend effectively, it's important to address the existing issues in the vocational education and training in exhaustive and integrated manner.

Chapter 1

Introduction

1.1 Setting the Context

Education assumes important role in the growth and development of a country (Nigam et al., n.d.). Around the globe, rapid economic growth depend upon access to equitable and quality education (Gylfason, 2001). Education is an indispensable part in the process of economic development of a nation as it promotes productivity among the workforce leading to higher per capita income and economic development (Ozturk, 2008). As suggested by previous studies, investment in education helps in developing human capital which in turn leads to development and growth in national income (G. Becker, 1993; Hanushek & Kimko, 2000; Hendricks, 2002; Lindahl & Krueger, 2001).

According to OCED, human capital is, "the knowledge, skills, competencies and other attributes embodied in individuals or groups of individuals acquired during their life and used to produce goods, services or ideas in market circumstances". It is widely recognized as an important requirement for achieving sustained economic growth and rising incomes, particularly in developing country. The role of human capital in the development and growth of a nation is unquestionable. First, country's stock of human skills is central to the potential for economic growth in highly competitive international environment. Second, the distribution of that human capital is a key determinant of income inequality, even more important with a high wage premium for skills. Third, the link between a person's human capital and their background is a fundamental determinant of social mobility and perpetuation of disadvantage (Burgess, 2016). The economic growth models based on quantifying the relationship between investments in education and training and the level and growth of per capita GDP at national level revealed significant impact of higher educational investments on national economic growth. Moreover, evidence suggests that a 1 % increase in school enrolment rates leads to an increase in GDP per capita growth of between 1 - 3 per cent and an additional year of

secondary education causing increase in the stock of human capital leads to a more than 1 % increase in economic growth each year (Wilson & Briscoe, n.d.).

Moreover, investment in education results into wide ranging private as well as social returns. Several studies in the past based on determining the returns to education reported presence of significant returns to investment in education particularly in primary and secondary levels (Heckman & Polachek, 1974; Psacharopoulos, 1985; Trostel, 2005). Further, in a developing country like India, investment in education is more valuable than developed countries as the returns to education are higher for low- and middle-income countries than high income country because with higher level of economic development and education, the returns to education start declining (Fasih, 2008).

Over the years, there has been massive expansion in educational system in the country and more significantly in higher education. India's Higher Education sector has witnessed a tremendous increase in the number of Universities/University level Institutions & Colleges since past several decades (Sheikh, 2017). Since independence, the number of colleges in the country has increased 52.35 times and the enrolment of students in the higher education system has increased by 178 times1. However, the massification of higher education in the country has often been criticised due to the poor labour market outcomes in terms of low employability among the graduates. Employability refers to an ability to find a job and adapt to labour market demands. Employability skills are the set of non-technical skills such as higher order thinking skills, personal skills, social skills, generic skills which are required to enter the workforce and to stay afloat and develop a career amid the changes in the workplace (Fajaryati et al., 2020). The skills required by the employer includes cognitive and technical skills. However, non-cognitive skills such as communication, punctuality, problem solving and flexibility are most important (Archer & Davison, 2008; Srivastava, 2012). Moreover, employability skills which must be owned by workers according to the employer includes communication, team working, problem solving and technological skills.

[1] Annual Report, UGC, 2018-19 (*3060779_UGC-ANNUAL-REPORT--ENGLISH--2018-19.Pdf*, n.d.)

As suggested by the report from Labour Bureau, Ministry of Labour & Employment, the unemployment rate among the individuals belonging to 18-29 years in the country is highest among the graduates followed by diploma and certificate holders (Ministry of Statistics and Programme Implementation , 2018-19). The issue of low employability resulting into higher unemployment rate among the young population is not the unique feature of Indian higher education but widespread among the young population in the country as a whole. According to the Skill India Report 2020, the employability among the youth has remained stagnant at around 46 per cent since past three years and the state of employability in the country has not improved over the years (Wheebox, 2020) .

Table 1.1. Distribution of persons by educational qualification based on Usual Principal Status Approach for the age group 18-29 years (%)

S.NO	Educational Classification	Unemployment Rate	Not in Labour Force
1.	Not Literate	1.8	47.9
2.	Below Primary	2.1	47
3.	Primary	2.3	41.5
4.	Middle/Secondary/Higher Secondary	4.7	54.8
5.	Diploma/Certificate	9.3	58.4
6.	Graduate and Above	15.6	44

Source: Youth Employment- Unemployment Scenario, Vol 2, 2013-14, Labour Bureau, Ministry of Labour & Employment

The presence of high unemployment rate due to poor employability among the graduates and diploma holders suggests the presence of the possible skill challenge in the country. On the one hand, this clearly showcase the problem of skill mismatch in the country because the individuals who have degrees do not possess the skills and competencies actually demanded in the labour market leading to the prominent issue of graduate

unemployability. On the other, it underscores the issue of skill gap as those who are trained and possess diplomas and certificates do not have employability skills as they have second highest unemployment rate at 9.3 per cent and they also constitute major proportion of individuals who are out of the labour force. Studies in the past have also suggested the skill gap and mismatch as the potential reason for the low employability among the youth graduates in particular (Chowdhury, 020; Hajela, n.d.; Prateek Kukreja, 2018; Santosh Mehrotra, Ankita Gandhi, Bimal K Sahoo, 2013; Sengupta, 2017; Sodhi, 2020; Unni, 2016)

Technical and vocational education plays important role in the skill development in the country as it equips individuals with the necessary skills as per the requirement of the industry. However, the existing skilling ecosystem in the country is poor to say the least. According to the Periodic Labour Force Survey (PLFS) 2017-18, only a small section of the youth reported to have received any vocational training, and a large share of these individuals were either unemployed or out of the labour force. As per NSSO 68th round report, among the persons of working age group of 15-59 years, only 2.2 per cent reported to have received formal vocational training and 8.6 per cent reported to have received non- formal vocational training. Moreover, the proportion of persons of age 15-29 years who received formal vocational training as estimated from NSS 68th round (2011-12) and 61st NSS round (2004-05) were nearly at the same level. The present system of skill development in the country presents a bleak picture in comparison to the foreign countries. As the following table highlights, in India, percentage of students enrolled in vocational education course is only 5 per cent whereas in South Korea and China it is 96 and 50 per cent respectively.

Table 1.2. Students enrolled in Vocational Education Courses around the Globe (%)

S.NO.	Country	Students in Vocational Education Course (%)
1.	China	50
2.	Germany	70
3.	Egypt	30

4.	South Korea	96
5.	India	5
6.	Denmark	40

Source: New Education Policy, 2020, Ministry of Education

Furthermore, India is in crucial stage of demographic dividend which has subsequently rendered issue of low employability and high unemployment among youths as a serious concern for the policy makers. In India the population in the age-group (15-59) is more than 62 per cent which makes it one of the youngest nations in the world (Ministry of Skill Development and Entrepreneuship , 2015). Moreover, as highlighted by (MEHROTRA et al., 2012) around 12.8 million individuals enter the Indian labour market annually. The huge number of labour force presents unique opportunity to the country as it could be utilized for meeting the global demand for skilled individuals. However, it requires robust ecosystem for skill development and providing skilling opportunities to such a large number of potential workforces is a challenge in itself. In order to realize the "demographic dividend" , this increased labour supply must be employed productively which in turn requires increasing human capital through adequate education and training (UNESCO, 2018)**.**

1.2 General and Vocational Education

General education is often referred to as theoretical education which helps in developing the generic skills among the individual and assumes important role in the development of an individual. General education focuses on improving the ability for lifelong learning and acquiring new skills which makes individual less vulnerable to changes in labor demand in the long run (Golsteyn & Stenberg, 2017). Further, it also acts as a safety net in the long run, as it makes individual less sensitive to the long-term changes in labour market. However, it does not prepare the individual for immediate transition to labour market.

On the other hand, the vocational education is parallel to the conventional courses with the objective of developing individuals for a specific trade or profession. It is aimed at increasing the employability of the individual in the market so once an individual completes a level of vocational education, he/she can join the workforce. The major emphasis of vocational education is on the skill development. Vocational education facilitates transition to labour

market through its emphasis on the trade specific skills particularly in short run. In the short run, vocational education is recommended particularly for the academically less inclined students as it is believed to facilitate the school to work transition. However, in the long run, vocational education contains risk of decline in the demand for vocationally graduate's skill in future (Golsteyn & Stenberg, 2017). The vulnerability of graduates from vocational education arises due to the fact that vocational education programmes do not focus much on developing general skills and knowledge which are required for the lifelong learning. When the labour market condition changes, then due to lack of general skills vocational education graduates become inflexible and less ready to adapt to these changes leading to higher retrenchment and unemployment (Lavrijsen & Nicaise, 2017).

Around the world, there are different systems of education, the most common are the ones which have mix of both the general and vocational education. However, the importance that a country accords to particular education type could be different. As in the United States, greater emphasize is placed on the formal general education whereas most of the countries in Europe supports vocational education and training to prepare the individuals for participation in the labour market in future.

In India, there is availability of the educational opportunity in general education as well as vocational education. Earlier, vocational education and training was restricted to senior secondary level in the schools and training in formal and informal institutions such as ITIs and ITC. The vocational education was restricted to senior secondary level and those who passed senior secondary examination with vocational subjects did not have opportunity to continue their chosen vocations in higher education. Further, the admission criteria for general higher education also put these students at disadvantage as it did provide openings to those with vocational education qualifications (Ministry of Education , 2020). In order to address the issue of vertical mobility of students with vocational subjects, the University Grants Commission (UGC) launched Bachelor of Vocation (B.Voc.) degree and Maters of Vocation (M.Voc) in 2014

The B.Voc programme has been designed as per the National Skill Qualification Framework (NSQF) of Ministry of Skill Development with National Skills Development Corporation (NSDC) to focus on skill-based education. The programme focuses on skill development based

higher education leading to Bachelor of Vocation (B.Voc.) degree with multiple entry and exit points (Ministry of Skill Development and Entreprenuership , 2019-20). Its objective is to provide judicious mix of skills relating to a profession and appropriate content of general education, so that they are work ready at each exit point of the programme. It also integrates NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirement. Further, a more detailed discussion on the present schemes of vocational education and training is discussed in the subsequent chapter.

1.3. Operational definitions

1. **Labour Force –** In a country, labour force includes all the individuals who are currently in work or are unemployed but seeking work. It does not include institutional labour force.
2. **Labour Force Participation Rate –** It measures the proportion of a country's working-age population which is actively engaged in the labour market through working or looking for work (International Labour Office, 2016).
3. **Labour market outcomes –** It consists of number of variables such as transition, employment, unemployment rate and annual earning which reflects the economic prospect of individuals in the labour market.
4. **Transition to work** – There are number of variables which can be used to assess transition to work in case of general and vocational education. The proposed study is based on two such variables –
5. **Transition Rate –** It reflects the rate at which individual moves from education to the work in a country. Smaller transition rate implies easy education to work movement of an individual thus better labour market outcomes.
6. **Job Characteristics** - it shows the general attributes of employment. It is further divided into: a) formal employment b) informal employment
   a) Formal Employment – Under formal employment, there is a contractual relationship between the employer and the employee and worker is secured by the existing labour laws in the country.

b) Informal Employment -Informal employment encompasses all remunerative work – both self-employment and wage employment – that is not recognized, regulated or protected by existing legal or regulatory frameworks and non-remunerative work undertaken in an income-producing enterprise (ILO, 2002).

7. **Employment Status**- whether a graduate from vocational or general education is employed or unemployed or out of the labour force.

   a) Employed: Persons who are engaged in any economic activity during the reference period or who, despite their attachment to their economic activity, have temporarily abstained from work for reasons of illness, injury or other physical disability, bad weather, festivals, social or religious functions or other contingencies necessitating temporary absence from work constitute workers. Unpaid helpers who assist in the operation of an economic activity in the household, farm or non-farm activities are also considered as workers.

   b) Unemployed: Persons, who owing to lack of work, had not worked but either sought work through employment exchanges, intermediaries, friends or relatives or by making applications to prospective employers or expressed their willingness or availability for work under the prevailing condition of work and remuneration are considered as those who are 'seeking or available for work (or unemployed).

   c) Out of labour force: Persons who are neither 'working' and at the same time nor 'seeking or available for work' for various reasons during the major part of the reference period are considered to be 'out of the labour force'. The persons under this category includes students, persons engaged in domestic duties rentiers, pensioners, recipients of remittances, those living on alms, infirm or disabled persons, too young or too old persons, beggars, prostitutes. In simplest word, it refers to the proportion of population who are neither working nor seeking work (International Labour Office, 2016).

8. **Wages –** According to ILO, "wages are a measure of the level and trend of workers' purchasing power and an approximation of their standard of living" (International Labour Office, 2016).

1.4. Rationale of the study

India is often referred to as one of the fastest developing country in the world in term of gross domestic product. Since independence, Indian economy has witnessed massive transformation in terms of growth in gross domestic product and structural shifts. The GDP growth rate was only 3.5 per cent for the period ranging from 1950-51 to 1979-80. However, the brief period of 1980-81 was a turning point, there was a sharp uptick in the growth as the GDP growth rate rose to 5.6 per cent per annum in the period from 1980-81 to 2004-05. The Indian growth turnaround was led by the rampant growth of the service sector (Kapila, 2018). As highlighted by (T.S. Papola and Alakh N. Sharma, 2018) in their study, the average growth in GDP between 2004-05 and 2009-10 was close to 9 per cent with the per capita income increasing at around 7.2 per cent. Moreover, post the 1991 reforms with the advent privatisation in the country, the services oriented growth trajectory was further reinforced with the private organized sector decisively replacing the public sector as the driving force behind it (Mazumdar, n.d.).

However, this growth has often been referred to as "jobless growth" by various critics due to its lack of inclusivity as substantial proportion of population has not benefited from the growth process to a larger extent. There is a visible disconnect between the growth on the one hand and labour market and employment on the other. Further, this problem is further aggravated due to the existing feature of Indian employment growth which suggests that the employment growth has decelerated in the recent years and most of the growth has taken place in the informal sector (T.S. Papola and Alakh N. Sharma, 2018).

As discussed in the previously in the beginning, this issue of low level of employment among the young labour force is caused due to the prevalence of low employability caused due to lack of required skills suggesting possible skill gaps and mismatch in the country. Lately, government has been working proactively to revamp the existing system of vocational education and training in the country. The government has established Ministry for Skill Development and Entrepreneurship, 2014 to give fresh impetus to the Skill India agenda and helps in creating an appropriate ecosystem that facilitates imparting employable skills to its growing workforce over the next few decades.

Moreover, National Policy for Skill Development and Entrepreneurship, 2009 has been effectively revised in 2015 with the primary objective to meet the challenge of skilling at scale with speed, standard (quality) and sustainability. It aims to provide an umbrella framework to all skilling activities being carried out within the country, to align them to common standards and link skilling with demand centres (Ministry of Skill Development and Entrepreneuship , 2015). The objective of the government through the above initiatives of linking the skilling activities to the demand centre is aimed at bridging the skill gap and improving employability of the vocational training graduates. This demand driven approach is also complemented with more involvement of industries for training, so as to facilitate their employment.

The pertinent question which arises is how far the objectives of the government in terms of bridging the skill gap and improving employability among the vocational education graduates has been successful. There are number of studies (Ahmed, 2016a; Fersterer et al., 2008; Gustman & Steinmeier, 1982; Hotchkiss, 1993; Kumar et al., 2019b; Tanima Banerjee, 2016; Tripney & Hombrados, 2013a), which has already focused on impact of vocational training and education on the wages and employment.. However**,** the existing empirical studies on the impact of educational type on individual's labour market outcomes are fairly limited as suggested by (Eric A. Hanushek, Ludger Woessmann,Lei Zhang, 2011). Moreover, in Indian context, the existing empirical researches around labour market outcomes of vocational graduates are further miniscule and focus majorly on vocational training not education (T. Agrawal, 2012; Dey & Devi, 2019). Therefore, the proposed study will focus on filling this literature gap through determining the impact of vocational education relative to general education on labour market outcomes in India.

1.5. Research questions

1) What are the factors determining the choice between vocational and general degree?
2) What are the returns to vocational education in comparison to general education?
3) What is the effect of general and vocational stream on the employability of a graduate?

1.6. Research objectives

1) To determine the factors affecting choice between vocational and general education.
2) To analyze the labour market outcomes of graduates from vocational education.
3) To compare the labour market outcomes of graduates from vocational and general education

1.7. Research Methodology

1.7.1 Study Area

The area of the study is Delhi as it presents unique opportunity not just in terms of availability of the multiple educational opportunity for higher studies but also the employment opportunity in the city is also tremendous.

1.7.2 Research Design

The proposed study will use a quantitative research design. Quantitative method will consist of survey wherein a questionnaire is developed to determine the labour market outcomes among the graduates which will involve information about their family and educational background and labour market outcomes.

1.7.3 Data collection

The data is collected from both the primary and secondary sources. Primary data sources consist of data received from the respondents of online survey through google forms. Secondary data source includes data from NSSO, labour bureau and other government reports on vocational education and training.

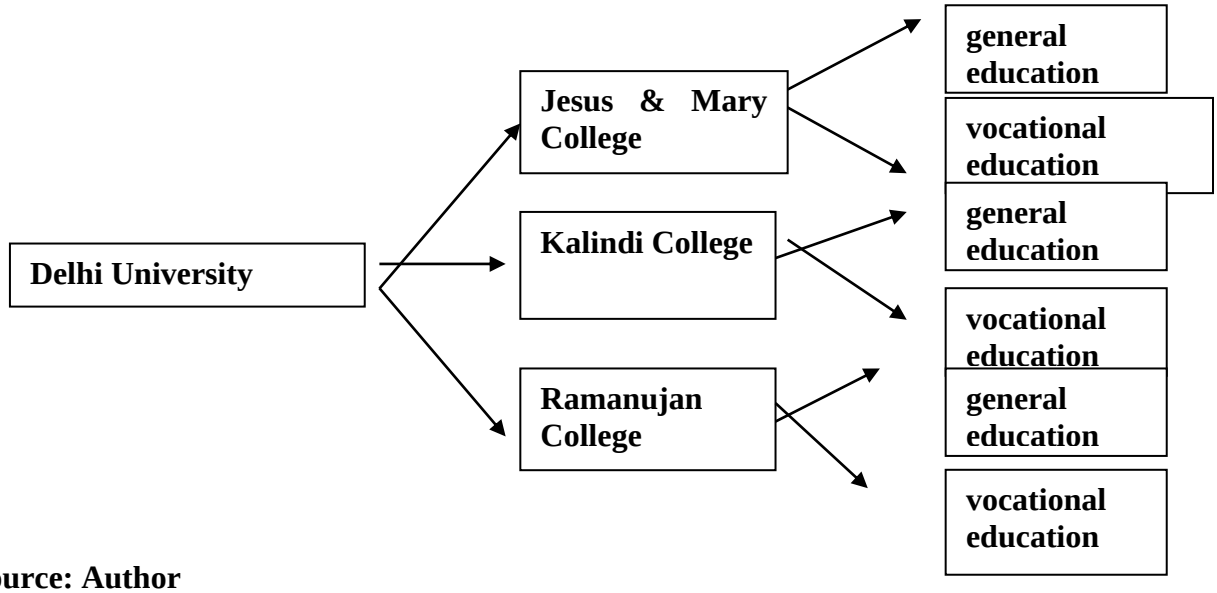
1.7.4 Population

The institutions/colleges offering Bachelors of vocational education (B.Voc) and B.A. programme in Delhi University.

1.7.5 Sample – It consist of the respondents of the online questionnaire from B.Voc and B.A. programme from the colleges offering both the programmes in Delhi University

1.7.6 Sample design

Fig. 1.1. Proposed design of the sample



Source: Author

1.8. Implications of the study

The proposed study will help the policy makers in making more informed decisions so as the effectively utilize the demographic dividend in the country and address the issues associated with the employability skills and labour market outcomes among the graduates from vocational education.

The study will also help the prospective students who are more inclined towards skills and training to make more informed choice in their careers.

1.9. Limitation of the study

The proposed study has been designed to find out the labour market outcomes of B.Voc graduates vis-à-vis general education graduates. Since the study is based on the primary data source, COVID19 has caused number of limitations in data collection. Colleges are not properly working offline which has made it difficult to get graduates data from colleges.

Moreover, there was instances of reluctance from the colleges to give passed outs data, which has severely affected data collection. Thus, available data size is small which may not be quite robust for a quantitative study due to the possibility of errors which may arise with small sample data sets.

1.10. Plan of the Study

Chapter one gives brief introduction of the problem being studies. It includes rationale along with objectives of the study as to guide the path during the study.

Chapter second is based on the review of literature with an aim to find out the gaps in the existing literature. The techniques of thematic review have been adopted so as to better understand the topic from different interrelated components.

Chapter three gives the overview of vocational education and training in detail. It contains discussion on the existing issues of vocational education and training and new education policy with reference to vocational education.

Chapter four contains methodology used in the study. It includes brief introduction of the econometrics model as well as various dependent and independent variables

Chapter five is based on the comprehensive analysis of primary as well as secondary data.

Chapter six is the final chapter which presents the findings, summary and conclusion of the study.

Chapter 2
Review of Literature

This chapter presents the review of various related concept around labour market outcomes. the first part consists of the discussion on the proposed theoretical framework of the study. Afterwards the chapter discuss the Indian labour market, its features, trends and issues. Then, the discussion revolves around skill gap and role of vocational education and training and its determination in the subsequent parts. Finally, the chapter ends with extensive discussion on the labour market outcomes of general and vocational education and training.

2.1. Theoretical Framework

The economic growth models came to existence long time before, however the discord around its accounting in the formal model is still present (Izushi & Huggins, n.d.). The neoclassical model focused on the supply side factors such as land and labour in the growth to articulate the determinants of the economic growth in the long run. Whereas the Keynesian model of economic growth focussed the demand side factors such as consumption and investment for determining national income and output. Later on, economists such as Solow revealed the significant contribution of the technology to the economic growth of a country. Earlier neoclassical model focussed on physical capital, labour, land and management as the main factors of production. However, soon Shultz in his seminal work, " Investment in Human Capital" proposed the concept of "Human Capital" as a residual factor or the gap which helped in explaining the growth of United States which could not be explained through the traditional factors of production (Schultz, 1961). The stock of human capital is considered as the major factor responsible for economic prosperity and development of a nation.

The fundamental principle of Human Capital Theory is the credence that people are a form of capital which adds to the total production and leads to increase in the national output (G. S. Becker, 1993). This capital can be developed through investing in education

and training through deliberate investments which would lead to increased productivity among the workers and the organizations. The human capital theory contends that the individuals' decision for investment in education and training is based on the benefits to be derived future given the present cost and foregone earnings. In other words, the investment in human capital depends on the associated benefits and the costs. If the benefits are higher than the cost, then individual undergoes education and training so as to add knowledge and skills thus adding up to the existing stock of human capital in the country.

Human Capital Theory proposed that the people are an important form of capital for development and this capital can be increased through investment in education and training (G. Becker, 1993; Benhabib & Spiegel, 1994; Hendricks, 2002). However, important question is how much investment in education and training is to be made? What are the returns to investment in education? Does like any other capital, investment in education entails diminishing returns? (Psacharopoulos, 1985).

The mincer's model of earnings is widely used for estimating the returns to education as it laid the foundation of the estimation of the returns to schooling (Heckman et al., 2003). Furthermore, there have been numerous studies based on determining the returns to education (Psacharopoulos, 1985; *Trostel - 2005 - Nonlinearity in the Return to Education.Pdf*, n.d.). According to the study by (Psacharopoulos & Patrinos, 2018), social returns to schooling are higher than the private returns. Globally, private average return to a year of schooling is 9 per cent a year. Moreover, returns to education contain non-linearity as primary and secondary education have increasing returns in general whereas higher education have significant diminishing returns (Trostel, 2005).

The theoretical foundation of the present study is based on the human capital theory. Adequate discussion on the human capital theory is important to understand how variables in the study interacts to determine the labour market outcomes of the graduates.

2.2. Indian Labour Market

As per the (Ministry of Skill Development and Entrepreneuship , 2015) population in the age-group (15-59) is more than 62 per cent which makes it one of the youngest nations in the world. According to estimates, India's population is going to overtake China by 2030. Moreover, the working age population of India will be increasing to 957 million in 2026.Invalid source specified.. The huge population size presents unique window of opportunity in terms of upcoming "demographic dividend. However, to realize this "demographic dividend", it becomes necessary to employ this increased labour supply productively which in turn requires increasing human capital through adequate education and training (UNESCO, 2018). The existing features of the labour market in the country suggests influx of huge numbers of new workers annually in the labour market accompanied with workers who are continuously moving away from agriculture to other sectors and those with improved education and literacy workers who are seeking better quality non- agricultural jobs (Mehrotra, Gandhi, et al., n.d.; Thomas, 2014)**.** However, there has been mismatch in the labour market in terms of labour demand and supply due to the inadequate employment generation in the country which has rendered huge number of individuals unemployed and out of labour force.

The last decade and a half have been characterized by stronger employment growth in urban areas and for men. This period witnessed, therefore, an unprecedented withdrawal of women from agriculture. Consequently, female labour force participation in India, which is low by international standards, fell further in the 2000s. Though a number of interrelated and complex factors are driving the decline, including increased educational enrolment and rising incomes, the lack of employment opportunities appears to be a major constraint. Another much proclaimed feature of employment in India is informality; it is often stated that more than 90 per cent of workers are informal. However, this figure masks two underlying but countervailing trends: the fall in the share of workers in the unorganized sector, while the share of informal workers in the organized sector (i.e. contract labour) has increased. Further disaggregating informality

by employment status and place of work reveal that the majority of people in informal employment are own-account workers, followed by informal employees in the informal sector and contributing family workers (Verick, 2018).

Faster growth in the economy helps in generating higher employment with increase in productivity of the workforce. According to (T.S. Papola and Alakh N. Sharma, 2018), there has been growth in the labour market over the years. However, despite this growth, the working condition didn't improve much owing to the dualism in the Indian labour market. Dualism refers to the condition wherein, substantially large part of the labour force is employed in the subsistence economy often referred to as "informal economy" characterized by low productivity and wages, whereas the other part is in formal setup with higher wages, job security and other non-wage benefits. Thus, there is need to adopt appropriate macroeconomic and sectoral policies such as creation of decent employment needs to be developed as well as strengthening the social protection for the workforce. (Thomas, 2017) discussed the labour market dualism in the Indian labour market, its causes and effects on allocative efficiency, wage inequality and growth of employment. The causes of dualism as highlighted in the study are existing labour legislation, neglect of primary and basic education in education policies, protection to small scale units leading to their horizontal expansion. The findings revealed the following impacts of dualism- a) inequality in the distribution of wage per worker b) large gap in the marginal products of labour and capital c) low employment elasticity due to shortage of skilled labour d) might affect the growth of manufacturing through its impact on demand. The inequality perpetuated by the existing feature of dualism is a serious concern in the labour market. In this regard, (Dev, 2018) has comprehensively discussed various forms of inequalities in the labour market in India. The finding suggests that the in organised sector the share of wages has been declining whereas the share of profits is on constant increase. Sectoral inequality suggests that the higher percentage of employment in agricultural and allied sectors despite low contribution to GDP whereas service sector has higher contribution to GDP at 58 per cent but it employs on 27 per cent of the workers. In organized sector, the regular formal workers followed by regular informal workers

have lowest level of poverty as compared to the regular informal workers and self-employed workers in the unorganized sector. Casual workers have highest poverty levels in both organised and unorganised sectors. Wage inequalities suggests that the ratio of regular over casual workers was 2.1 and 2.6 times in rural and urban areas in 2011-12, respectively. Moreover, inequality among the regular workers is much higher than casual workers. At last, the findings of the study revealed that education is the largest contributor to wage inequalities followed by occupation.

India has comparative advantage in terms of availability of huge labour stock which is young as compared to ageing workforce in the developed countries. There is a need to focus on labour intensive sectors and industries so as to efficiently use this comparative advantage. One such sector is manufacturing which has the potential to absorb the excess supply labour by providing meaningful employment (IBEF, n.d.). Manufacturing sector not only provides huge employment opportunity but it also aids in development. As argued by (Felipe, 2018) , the explanation of the Asian region's fast growth starting in the second half of the 20th century is that these economies understood early on that the transition to manufacturing was key to generate high growth rates and to develop in general. However, owing to limited growth in manufacturing sector, India has failed to leverage its manufacturing sector to absorb a part of country's labour reserve leading to limited impact of manufacturing sector on India's employment creation (Jayan Jose Thomas, 2018). Further, in manufacturing there is also presence of dualism with existence of strong bi-modal distribution in employment as there is strong concentration of employment at the small and large size groups of establishments with conspicuous "middle man". The impacts of missing middleman are - inequality in the distribution of wage per worker, large gap in the marginal products of labour and capital, low employment elasticity due to shortage of skilled labour, possible effect on the growth of manufacturing through its impact on demand (Dipak Mazumdar and Sandip Sarkar, 2018)

2.3. Skill Problem in India

According to the estimates, 83 million of youths are unemployable out of the total 145 million of labour force in the country[2]. The low employability of the Indian labour force is a major concern for various stakeholders. Moreover, as suggested by (Khare, 2014), this problem of poor employability is more acute for the youth graduating in general academic streams and in small towns. There are multiple factors which has resulted in the lower employability outcomes of the graduates in the country. The studies (Chowdhury, 2020; Paul Comyn, 2020) have discussed the inefficiency of the existing employment exchanges and lack of availability of labour market information system where both employers and job seekers can exchange information on skill demand and supply and suggested work should be done to enable access to quality information and employment services for job seekers. The other studies have pointed out to the existences of skill gap as the major hindrance to the employability of the workers in the Indian economy (Hajela, n.d.; Santosh Mehrotra, Ankita Gandhi, Bimal K Sahoo, 2013; Sengupta, 2017; Unni, 2016, 2016). Skill gap refers to the mismatch between the demand and supply of the skill in the labour market which is mainly attributed to the unavailability of the extensive skill development programmes as well as ineffectiveness of the existing vocational education and training programmes for developing requisite skills among the workforce. The extent of low prevalence of skilled workforce in the country can be gauged from the fact that among the persons of working age group of 15-59 years, only 2.2 per cent reported to have received formal vocational training and 8.6 per cent reported to have received non- formal vocational training[3]. The challenges of skill development in the country include poverty, the poor quality of mainstream education, limited access to and capacity of current TVET, a lack of focus on skills required in the current job market, and a poor enabling environment with deep systemic challenges.

(Chowdhury, 2014) reported the issue of allocative inefficiency in the Indian labour market referred to as skill mismatch. The factors responsible for this labour market

[2] India Labour Report, TeamLease, 2008
[3] 68th Round, NSSO (*Nss_report_no_566_21sep15_0.Pdf*, n.d.)

distortions are the lack of incentives for the employers to train unskilled workers and disconnect between the education system and the labour market requirements causing wastage or misallocation of scarce resources. Further, the study by (Mehrotra, Raman, et al., n.d.) based on the primary survey of companies in selected sectors, highlighted the issues related to skills in the economy in terms of numbers and quality which are faced by large number of companies. One of the most prominent issue is the lack of linkage between the theory and practices in current system of technical and vocational education followed by the unavailability of qualified trainers. Other issues involved are lack of awareness for apprenticeship schemes, outdated curricula and cost of training. Although the companies irrespective of their sizes provides training to their workers but most often, they rely on substituting labour with capital intensive technologies such as machines to address this skill gap. In India high percentage of the labour force is employed in informal sector characterized with poor working conditions and low wages. Low wage is a direct result of the low productivity of the workers in the informal sector as they do not have requisite skills. The issue of skill gap is more prominent for the workers in the informal sector due to their weaker socio-economic background as they are unable to access the formal modes of skill training and education. (Sodhi, 2014) tried to estimate the skill gap in the informal sector based on primary survey. The findings of the study revealed that the overall skill gap among the different workers was 48 per cent for motor mechanic, 55 per cent for mason, 39 per cent for carpenters, 44 per cent for plumbers and 48 per cent of mechanics. Moreover, despite this huge skill gap, workers in the informal sectors are not really willing to undergo training. In order to build competency and skills among the workers, the basic education is the primarily needs otherwise technical and vocational education could have distorting effect. In order to remove the skill gap among the workers in informal sector, there is a need for flexible and diversified system of education consisting of combination of methods of vocational education theory, on-the-job training and informal learning (Singh, 2020).

In order to remove the skill gap in the country, it is important to know what are the kind of employability skills are actually demanded by the employer. Employability skills are

the personal attributes enabling people to get a job and remain on the job. They are a set of skills to perform a particular job including technical skills, higher order thinking skills, personal skills, social skills, generic skills and self-perceived employability skills. Employability skills assumes importance in the labour market thus the education system should apply it in every learning process. According to (Fajaryati et al., 2020)**,** the skills which are required by the employer include communication, team working, problem solving and technological skills. Moreover, the skills required in future will consists of three groups: cognitive abilities, basic skills and cross functional skills. However, the most projected skills will be soft skills and technological skills in future. Another study by (Srivastava, 2012) tried to look into the employers perspectives on skill requirement in south Asian countries namely India, Pakistan and Bangladesh. The findings suggested that the skills required by employers across India. Pakistan and Bangladesh are essentially non- cognitive skills such as critical thinking, leadership, communication skills tec. Non- cognitive skills are the set of generic skills which makes individuals adaptable to the changes in environment and ensures survival. These skills are needs for the successful labour market outcomes for individuals.

2.4. Vocational Education and Training Issues in India

Since the advent of globalisation in the country post 1991 reforms, the skills requirement in the labour market are constantly evolving. There has been greater consensus regarding the ineffectiveness of the general education to prepare youths for the future work due to possible delink between theoretical knowledge and the actual work. In this regard, vocational education and training has been seen as an alternative to develop the workforce as per the industries requirement. Vocational education and training help to bridge the skill gap in the economy and helps in addressing the problem of employment among youth since it has closer and direct link with the economic and professional development as compared to general education. According to the findings of the study by (Mouzakitis, 2010), technical and vocational education with adequate and effective curriculum, helps in preparing individuals for employment in a trade or industrial

occupation or enables employed persons in the same sectors to enhance their qualifications through further training, such as for life learning.

In many countries around the world, vocational education and training are used interchangeably, but in India they are different. On the one hand, vocational education forms the part of formal system of education in which courses are offered in class 11 and 12 under the centrally sponsored scheme named "Vocationalisation of School Education". Moreover, the government has initiated new courses namely Bachelors of Vocational Education and Master of Vocational Education in order to provide vocational education degrees at undergraduate and post graduate level. On the other hand, vocational training comes under the purview of The Indian Directorate General for Employment and Training (DGE&T), part of the Ministry of Labour wherein certificate level crafts training is provided to the students who leave school after completing grades 8-12. It has different modes such as craftsman training scheme, apprenticeship training scheme. And in informal sector, modular employable skills has been initiated to provide training to the workers in informal sector in order to equip them with necessary skills (Rao et al., 2014).

The government of India has been proactively working on skill development through necessary reforms in the existing vocational education and training structures. However, there are number of challenges facing the existing vocational education and training system in the country. The foremost issue relates to the poor perception regarding vocational education and training as it is often assumed to be meant for students with low grades. This perceived inferiority of vocational education and training in comparison with general education affects the student's choice and results in low level of participation[4]. Moreover, as suggested by the study (Mehrotra, Gandhi, & Sahoo, n.d.) based on the objective of analyzing the challenges and present status of education and skills in the Indian labour force, the number of persons receiving vocational training are less as compared to the total number of Indian labour force and there is issue of quality of skills as those who are trained do not possess the competencies for employment and skill

[4] New Education Policy, 2020 (*NEP_Final_English_0.Pdf*, n.d.)

mismatch between what is demanded and supplied. Moreover, the actual requirement is less than the targeted 500 million in the skill development policy which in reality requires new strategy for training. Another study (Mathur et al., n.d.)**,** based on the primary survey of the learners of vocational training in ITIs/ private ITI and apprenticeship in enterprises, highlighted the number of issues in the existing vocational training system such as unsatisfactory quality of practical training as machines and tools are outdates in most of the ITIs, unqualified teachers and shortage of teachers, gap between skills demanded by industries and supplied by institutions, leading to unemployment. Low participation of disadvantaged groups such as SCs and women and poor employability among the ITI graduates. (Joshi et al., 2014) in the research study based on primary data examined the status of infrastructure, internal and external efficiency, instructor quality and insights into CoEs and MSE courses for ITIs and private ITIs. The findings revealed that there is lower enrolment than sanctioned strength in these ITIs. There is also an issue of dropouts which is higher for government ITIs than private ITIs. Moreover, there is adequacy of machinery, but CoE, Centre of Excellence do not have qualified staff. Although MES courses are promoting employability, but still 33 per cent of graduates from ITIs are unemployed.

Addressing the challenges to vocational education and training are crucial so as to achieve the objective of skill development in the country. In his study, (Chunyang, n.d.) discussed the measures to improve attraction of vocational education based on Foster's opinion. She argued that clearing the misunderstandings of the positioning of vocational schools and creating influential brand culture of vocational schools, meeting the employment needs of the students, establishing and implementing curriculum of vocational schools, developing new enterprise school cooperation with multiple modes helps in making the vocational education popular among individuals**.** (Pilz & Regel, 2021) further emphasized on raising the acceptance and standing of VET for overall improvement and development of VET in India. This requires improving quality to increase the attractiveness and demand for VET in the short run while changing cultural attitudes in the long run.

(Tilak, 1988a) referred vocational education as “costly, meagre and insufficiently funded”. He called for careful planning of vocational training and education irrespective of whether it is imparted through formal system of education or on the job training. Moreover, extensive manpower analysis must be preceded by the plans of vocational education. The goal of successful realization of vocational education requires sufficient allocation, trained teachers, relevant equipment. If the existing challenges are not addressed in a planned manner, it may lead to double deprivation among the youths. (Mehrotra & Ghosh, 2014) has comprehensively discussed the various measures to tackle the issues related to poor financing of vocational education and training. These measures include establishing national training funds, levies from organized and medium-large enterprises for training, adopting both revenue raising and levy disbursement schemes and demand side financing of vocational training by paying stipend to the trainees. Furthermore, a study by (B. Jain, 1992) discussed the problem of vocational education in the country. The study suggested the following policy recommendations: vocational education should be provided out of the mainstream educational system, vocational education should not be used as an instrument of removing distortions in general education, Encouragement to private vocational educators. Vocational education should be subsidized and, establishment of special vocational education without any requirement of minimum qualification. (R. Agrawal & Indrakumar, 2014) stated the need to revamp vocational education at school level and making it more effective and efficient in tune with the labour market demands. They further suggested, vocational education and training should cover not only new labour entrants but existing labour force and vocational courses should be diverted towards the dropouts. (Mehrotra, 2014) in his research discussed the reforms required for dealing with the challenges of vocational education and training. He suggested adopting new National Skill Qualification Framework, re- engineering existing public institutions, reforming the apprenticeship system, a new vocational education and training act, establishment of a national training fund, robust labour market information system in order to remove the quantitative and qualitative issues in vocational education and training

2.5. Determinants of Vocational Education and Training

The understanding of the determinants of choice of vocational education and training is crucial for targeting the potential labour force. (Kumar et al., 2019a**)** in their study based on the logit and multinomial method tried to find out the factors associated with the participation in vocational training programmes in India. The findings suggests that residence, gender, education level, religion, category and sector of employment have effect on the participation of individuals in the formal vocational training as being urban dweller and male is associated with increased odds of participating in formal vocational training. Similarly, increased level of education and receiving technical education and working in secondary and tertiary sectors increased the odds ratio of receiving formal training. However, ever married person and individuals belonging to Scheduled Trible have less chance of receiving formal training. A study (Agodini et al., 2004) based on the objective of examining the factors influencing participation in vocational education using nationally representative revealed that students with following characteristics are more likely to participate in the vocational education: low academic achievement, low educational aspirations and poor socioeconomic backgrounds. However, contrary to the findings of previous studies, ethnicity have negligible impact on the participation in vocational education. The findings from another study (Moenjak & Worswick, 2003a) revealed that in case of men, being from higher socio economic background measured by father's education and occupation, is associated with increased likelihood of receiving vocational education than general education. Similarly, men and women who are raised in the prosperous region of the county have higher chances of undertaking vocational education. Thus, socio economic status of an individual does have significant impact on the participation of individual in vocational education. On the contrary, a study by (El-Hamidi, 2006) revealed that the parental education is negatively associated with the participation in vocational education as the individuals with lower level of parental education are more likely to receive vocational education compared to individuals with higher level of parental education. Moreover, presence of young siblings increases the chances of women receiving vocational education.

(Walstab & Lamb, 2008) in their study on the participation in vocational education and training in different regions in Australia found the presence of huge variation in the VET participation in all qualification levels across the region. The findings of the study highlighted higher participation in the rural areas of the country especially in basic and middle level VET courses. Demographic factors such as social, cultural and educational background have significant influence on the VET participation at higher awards level. Moreover, economic factors namely labour market outcomes and composition of industry structure plays important role in influencing participation in VET as with increase in unemployment rate, participation in VET tend to fall. Another study by (Curtis et al., 2008) examined the characteristics of the students enrolled in following VET programs: apprenticeships, traineeship, and non- apprenticeship VET courses in Australia. The study revealed that in apprenticeship VET program, an individual enrolled is more likely to be school leaver and less likely to be from a non-English background. In traineeship program, individuals who completed schools are more likely to participate in traineeship than no post school study pathways. Moreover, trainees are more likely to be females than men and less likely to be from high socio-economic background. Further, non-apprenticeship VET is offered in different AQF levels ranging from Certificate I to Advanced Diploma. The individuals who didn't complete the school are more likely to enrol in lower certificate programs as compared to school completes who are more likely to enrol in diploma and above level program.

2.6. Labour Market Outcomes of VET

The success of any education and training for skilling and re-skilling the existing labour force depends on its labour market outcome as these provides signal to the individuals regarding the usefulness of the education and training. Major studies focussing on determining labour market outcomes of vocational education and training in India are mainly based on secondary data from NSSO (Kumar et al., 2019c) carried out a quantitative study based on the objective of determine the impact of vocational training on the wages of an individual at overall and sectoral levels using NSSO dataset. The results highlighted that the males have better chances of receiving formal vocational

training. In terms of labour market outcomes, formal training increases the wage of the individuals by 4.7% in the overall economy as compared to those without training and the effect of vocational training is high in primary sector than secondary sector. The findings from the study by (Ahmed, 2016b) based on the NSSO 66 and 61th round revealed that the wages of the VET are better. However, the unemployment rate is poor for graduates of vocational education and training especially from courses corresponding to lower levels of general education. Further, the graduates of VET are more likely to join salaried sector employment. The study suggested improved industries participation as it could lead to better market outcomes. Another study (Tanima Banerjee, 2016) tried to find out how the impacts of VET on employment and wage income vary across social groups using Mincer wage equation. The findings of the study revealed that VET significantly enhances participation in manufacturing but they vary across industries. VET increases participation in Indian manufacturing sector similarly across all social groups except OBCs and VET and formal VET leads to increase in wages significantly in manufacturing sector. However, at individual level, it is found out to be ineffective in certain industries. The research study by (Duraisamy, 2002) to determine the returns to education using OLS method revealed that the higher level of education is associated with the increase chances of entering intro wage employment. Further, the returns to education for those under wage employment increases with increase in education level only up to secondary level and then it falls, the women have higher returns than men at the middle, secondary and higher secondary level and surprisingly, the returns for those in rural areas are higher than the dwellers in urban areas in primary, secondary and technical diploma levels. More specifically, with respect of technical diploma and certificate, the returns to education are higher than the college education. On the contrary, a study by (T. Agrawal, 2012) based on secondary data from NSSO examined the current scenario of VET programmes and labour market outcomes of vocational graduates in India. The findings revealed that at the graduate level, the unemployment rate among the vocational graduates is higher. However, at secondary level, the unemployment rate among the general secondary graduates is higher than the vocational graduates.

Moreover, the vocational graduates working as casual and regular workers have higher daily wages as compared to the other graduates in the same work category.

(Dey & Devi, 2019) carried out a case study focusing on the labour market outcomes of the youth in rural areas and empowerment of women. The findings revealed that training improved the employment prospect of youths in rural areas along with better income for the trained individuals in these areas. Moreover, vocational training proved to be useful in case of labour market outcomes of women as it led to their higher participation in the labour market and better employment opportunities, thus empowerment. However, the findings also suggested that the employment rate of trained youths decreased with time and the self-employment opportunity were also very low for trained youth. Another study (Grootaert, 1990) based on the primary survey to examine the formal and informal TVET revealed that the type of vocational education and training impacts the chances of being employed in either formal or informal sector. He also contends that formal and information vocational education and training are not substitute as they both lead to employment in different sectors. The graduates from apprenticeship are more likely to be employed in informal sector whereas the graduates from formal technical and vocational education are more likely to be employed in formal sector. However, informal vocational education and training isn't inferior to the formal one as the returns to both informal and formal TVET in terms of earnings per year are similar which is more than 10 per cent.

(Eric A. Hanushek, Ludger Woessmann,Lei Zhang, 2011) focused on the benefits of vocational education relative to general education in terms of wages and life time earnings. The findings revealed that there is declining age employment pattern for those in vocational education relative to those with general education and vocational education also has impact on the adaptability of workers to technological and structural changes in the economy. Further, the impacts of vocational education vary considerably with the specific institutional structure of schooling and work-based training and the balance in lifetime earning is in favour of vocational education in Switzerland but in favour of general education in Denmark and Germany. Similarly, the study by (Moenjak & Worswick, 2003b) determined the returns to TVET in comparison to the general

education at the upper secondary level in Thailand using probit model and correcting for self-selection. The results showed that the vocational education at the upper secondary level have higher returns than general education. It further suggests investing in vocational education to improve the access. Moreover, (Psacharopoulos & Patrinos, 1993) found that the in the returns to vocational education are higher in 7 out of 11 Latin American countries as compared to the returns to secondary general education. However, addition of cost of curriculum and social returns caused leads to lower returns to vocational education in comparison with general education. Similarly, the study by (El-Hamidi, 2006) showed that the private rate of returns to education increase by 29 per cent in case of vocational education in comparison to general education.

On the contrary, according to (Malamud & Pop-Eleches, 2010a) those who were affected by the educational reform in 1973 in Romania, which resulted in a shift from vocational education to general education have similar level of participation and earning compared to their counterparts who remained unaffected by the policy. Thus, no better returns to vocational education graduates as compared to general education graduates. Similarly a study by (Meer, 2007) based on the National Educational Longitudinal Survey, 1988 to determine the labour market returns to secondary vocational education in United States used the multinomial logistic selection model. The findings of the study revealed that there are no increased earnings for those individuals who have undergone technical and vocational education as compared to others. Moreover, the study (Tripney & Hombrados, 2013a) based on the systematic review to examine the overall effectiveness of vocational education and training, and type of TVET intervention being used to improve employment prospectus of youth provided some evidence that the participation in TVET improves labour market outcomes. However, the review did not provide conclusive evidence of the effectiveness of TVET on youth employment outcome.

Missing Links

The study of previous literatures on vocational education and training suggests that a wide variety of work has already been done in this area. However, still the empirical

studies relating to labour market outcomes of vocational education and training are limited. Further, in the India, the previous studies on labour market outcomes of vocational education and training are mainly based on the vocational training using secondary data.

It is important to understand the how labour market outcomes of vocational education vary with respect to the general education as it helps in effectively utilizing the limited budgetary allocation to education. However, the studies in this area are almost absent specially in Indian context. Thus, the present research tries to fill this gap through analysing labour market outcomes of vocational education vis-à-vis general education.

Chapter -3

Vocational Education and Training in India

3.1 Introduction

With the advent of technological revolution around the world with emergence of new technologies such as artificial intelligence, blockchain, and many more, the demand for specialized labour force has all more increased. As discussed in the very beginning, despite the huge proportion of labour force, there is a persistent issue of skill gap which is the major impediment in employment and growth in the country. The government of India in order to address the skill issues has taken numerous steps in the field of vocational education and training so as to develop skilled workforce in the country.

Vocational education and training are often seen as an alternative to skill development in the country as it helps in bridging the skill gap among the labour force. It helps in building the human capital resource in the country which in turn leads to higher economic growth rate and improved standard of living (Juster & Beaton, 1974). It is widely accepted that equipping individuals with right knowledge and skills ensures overall national progress and economic growth (Kaushik, n.d.). In this regard, role of vocational education and training assumes importance as the primary objective of vocational education and training is to develop individuals for a specific trade or profession. It is aimed at increasing the employability of the individual in the market so that transition to labour market becomes smoother.

The present chapter is based on the extensive discussion on the present status of vocational education and training in the country. It is further sub divided into following parts: first part briefly discusses the history of vocational training and education in India followed by second part wherein existing structure of vocational education and training has been explained. The third part contains discourse on the recent policy initiative and major schemes in skill development arena and the final part deals with the challenges in the existing system of vocational education and training.

3.2 Emergence of Vocational Training and Education in India

The history of vocational education in India dates back to the pre independence era. During the British rule, vocational education was seen as a measure to stabilize traditional agricultural life and to limit the expansion of education (Tilak, 1988). There was huge demand for the introduction of occupational education during the days of Woods dispatch (1854) which was also recommended by the subsequent Sargent Commission and the Hartog Committee. The Woods Abbot Commission argued for the introduction of polytechnics. The Sargent Commission recommended academic and technical streams of education.

After independence, the need for the vocational education was stressed by Radhakrishnan Commission (1948). The Secondary Education Commission (Mudaliar Commission 1952-53) recommended establishment of multipurpose schools along with diversification by including various crafts. The Kothari Commission (1964-66) recommended a uniform pattern of 10+2+3 throughout the country by restructuring along with segmentation of +2 level into academic and vocational streams[5]. The Central Advisory Board of Education (CABE) also supported the previous policy resolution for vocational education at senior secondary level and entrusted NCERT to prepare curricula and help the state governments in implementing vocational education programme.

In 1977, the Ministry of Education, Government of India formulated the Working Group on Vocationalization of Education under P. Sabanayagam, which presented the scheme of implementation of vocational education and also recommended the establishment of a National Council of Vocational Education and Training with corresponding State Councils. However, the final results were not satisfactory as only a few states and union territories followed the recommendations. Further, in 1978 National Review Committee was formulated under Dr. Malcolm Adiseshiah on Higher Secondary Education with Special Reference to Vocationalization, the committee suggested that the Higher

[5] (*Report-Education and National Development-Vol-4-Planning, Administration, Finance.Pdf*, n.d.)

Secondary stage should comprise a general education spectrum and a vocationalized spectrum or a mix in spectrum of both.

In 1985, the vocational education in the country was reviewed by the National Working Group on Vocationalization of Education, Ministry of Education. It introduced the concept of vocationalization at different levels and recommended the need for linkages among different agencies running vocational programmes, setting up of a robust management system, an action plan for promotion of vocationalization in the country and financial assistance for achieving objectives.

Under the National Education Policy (1986), vocational education was given high priority6. Subsequent the Programme of Action (1992) prepared by the Ministry of Education for implementation of National Policy of education 1986, highlighted the unsatisfactory state of the vocational education and training in the country. The factors identified for slow progress of vocational education were absence of a well-coordinated management system, unemployability of vocational pass outs, mismatch between demand and supply, reluctance in accepting the concept by the society, absence of proper provisions for professional growth and career advancement for the vocational pass out. some of the recommendations were setting up of District Vocational Training Centres to impart skill training to vocational students in diverse vocation, hundred per cent grant was to be provided by the Centre for apprenticeship, evaluation and monitoring, district vocational surveys, curriculum development, instructional material development, textbook development, teacher training, resource person training, equipment to schools and construction of workshop/laboratory buildings.

The latest New Education Policy 2020, aims to achieve the exposure of 50 per cent learners to vocational education by 2050. Some of the recommendations in the field of vocational education are: offering vocational courses through Open and Distance Learning mode, developing practice-based curriculum for grades from 6 to 8, detailed National Skill Qualification Framework for each profession

[6] (*Policy_1986_eng.Pdf*, n.d.)

3.3. Structure of TVET in India

The general education is based on the theoretical knowledge whereas vocational education and training has more emphasize on training and developing skill component than pure theoretical knowledge. Vocational education or Vocational Education and Training (VET), also called Career and Technical Education (CTE), prepares learners for jobs that are based in manual or practical activities, traditionally non-academic and totally related to a specific trade, occupation or vocation, hence the term, in which the learner participates. It is sometimes referred to as technical education, as the learner directly develops expertise in a particular group of techniques or technology (AICTE). In most of the countries vocational education and training means one and same thing however in India they both are distinct.

3.3.1 Vocational Education

Vocational education in India is a part of the formal education system under the purview of Ministry of Education (MoE). Under the scheme of Vocationalisation of Secondary Education, 1988 various vocational courses are offered to class 9th onwards. Since its inception, 10,000 schools were covered with an intake capacity of 10 lakh students (Ministry of Education earlier MHRD). In 2014, the name of above scheme has been revised to "Vocationalisation of Secondary and Higher Secondary Education" and subsumed under the Rashtriya Madhyamik Shiksha Abhiyan Scheme. The scheme has following provisions: a) vocational education in secondary school education beginning from class IXth b) expenditure is shared between centre and states in 75:25 ratio whereas in case of northeastern states and UTs, it is 90:10, c) provision expenditure for industry sector skill council's engagement for assessment and certification and d) there is also a provision for performance linked incentives for government recognized and aided schools as well as private schools.

Earlier, vocational education was restricted to senior secondary level in the schools and training in formal and informal institutions such as ITIs and ITC. As highlighted by the New Education Policy, 2020 the vocational education was restricted to senior secondary

level and those who passed senior secondary examination with vocational subjects did not have opportunity to continue their chosen vocations in higher education[7]. Further, the admission criteria for general higher education also put these students at disadvantage as it did provide openings to those with vocational education qualifications.

In 1994-95, at undergraduate level, the government started Vocationalisation programmes consisting of various Certificate, Diploma, Advance Diploma in different fields which was revamped in 2003-04 as career-oriented programme/courses. The objectives of these programmes were to develop skills and aptitude among the students as well as to reduce the pressure on the institutions of higher learning for Master's Degree Programme[8]. These programmes offered an opportunity to the undergraduate students to hone their skills as per the requirements of the labour market alongside their conventional degree courses.

In order to address the issue skill development in a comprehensive manner along with vertical mobility of students with vocational subjects, the University Grants Commission (UGC) launched following schemes:

a) Community college

This scheme was launched in 2013-14 to fulfill the needs of lifelong learning of the community and provide opportunities to individuals from the community to transit easily into the labour market or higher education. The scheme targets to train 7500 individuals from community each year and offers low cost and high-quality education at local level consisting of both vocational skill development and traditional coursework. The onus of implementing the scheme falls on the universities and colleges through general development assistance from UGC. Under this scheme, there is also a provision for continuous consultation with industries so as to regularly update the curriculum as per the changing requirements of the industries.

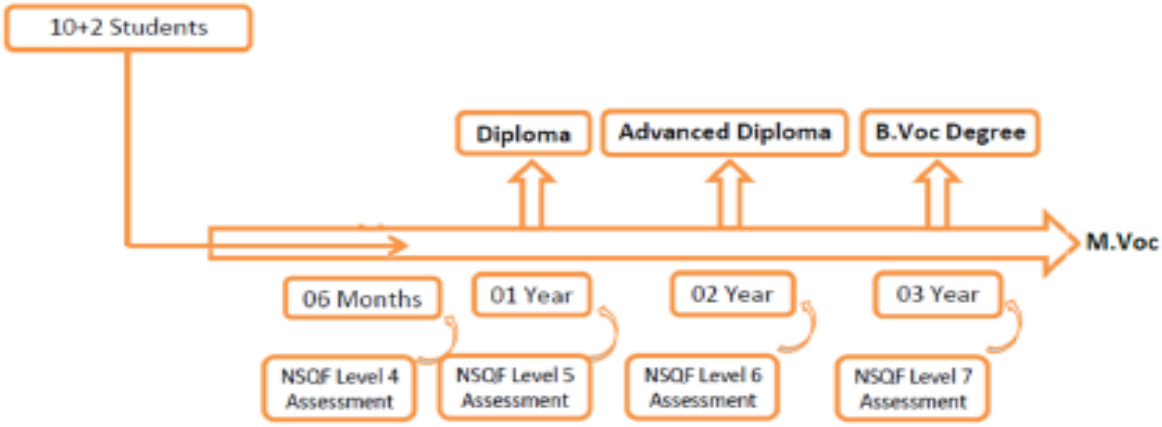
b) B.Voc Degree Programme

The UGC has launched a scheme on skill development based higher education as a part of College/ University education leading to Bachelor of Vocation (B.Voc) Degree with

[7] New Education Policy 2020 (*NEP_Final_English_0.Pdf*, n.d.)
[8] Annual Report, UGC, 2016-17 (*UGC ANNUAL REPORT 2016-17-English.Pdf*, n.d.)

multiple entry and exit option such as Diploma/Advance Diploma under the NSQF. The B.Voc programme has been designed as per the National Skill Qualification Framework (NSQF) of Ministry of Skill Development with National Skills Development Corporation (NSDC) to focus on skill based education. The programme focuses on skill development based higher education leading to Bachelor of Vocation (B.Voc.) degree with multiple entry and exit points to improve the knowledge and skills for employment and entrepreneurship among the graduates of higher education system. Under B.Voc degree programme, students have much better flexibility with multiple entry and exit options. The programme also involves participation of industry through curriculum development, training and assessment of the learners. Its objective is to provide judicious mix of skills relating to a profession and appropriate content of general education, so that they are work ready at each exit point of the programme. It also integrates NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirement. Students completing the first year get a Diploma certificate, after second year they get the Advanced Diploma certificate and after completion of three years, the B.Voc. Degree is awarded. The course curriculum has 40% general education (theory) and 60% vocational training (practical) components.

Fig 3.1. Progressions under Bachelors of Vocation



Source: University of Delhi, Information Bulletin

The scheme targets to train 10000 learners each year and there is a provision for financial assistance from UGC for all universities and colleges receiving plan grant from UGC[9]. Further, the eligibility condition for admission to B.Voc. Programme is 10+2 or equivalent, in any stream and the credits consists of skill components majorly with general education credits.

Table 3.1. Credits in B.Voc Programme

NSQF Level	Cumulative Credits for award		Normal calendar duration	Exit Points / Awards
	Skill component Credit	General Education Credits		
Year 1	36	24	Six Semesters	Diploma
Year 2	72	40	Four semesters	Advanced Diploma
Year 3	108	72	Two semesters	B.Voc.

Source – UGC Annual report 2016-17

c) DDU Kaushal kendras

These kendras were established during the XII plan period to supplement the existing community college and B.Voc degree programme schemes. Like B.Voc degree programme, this scheme includes flexible short term certificate along with post graduate degree. However, this scheme also has component of developing entrepreneurship among the individuals not just providing skilling. These kendras also include existing institutions and colleges already offering vocational courses under community college and B.Voc degree schemes. Moreover, these kendras are envisaged as the coordinator between the higher education system and industry to become a Centre of Excellence for skill development in specialized areas.

The schemes related to skill development initiated by UGC has been expanding continuously over the years. There has been tremendous increase in the total number of institutions as well as students under the schemes. The total grants released under the schemes have also increased from just 4.28 crores in 2013-14 to around 142.6 crores in

[9] Annual Report, UGC, (*UGC ANNUAL REPORT 2016-17-English.Pdf*, n.d.)

2018-19. The B.Voc Degree Institutions scheme has the highest share in the grants. Moreover, it also highest number of institutions as well as students.

3.3.2 Vocational training

Vocational training in India is under Ministry of Labour in India. It includes two schemes- "Craftsmen Training Scheme" and "Apprenticeship Training Scheme".

a) **Craftsmen Training Scheme** It was introduced in 1950 through establishing government owned Industrial Training Institutes (ITIs) in order to provide skilled workers in different trades for the domestic industry so as to meet the skilled labour force requirement (Sodhi, 2014). The objectives of the schemes were: To raise to raise quantitatively and qualitatively the industrial production by systematic training, to reduce unemployment among the educated youth by providing them employable skills, to cultivate and nurture a technical and industrial attitude in the minds of younger generation.

   Under this scheme there are two types of institutions which provides training according to the needs of the industry – Industrial Training Institutes (ITI), financed and managed by state labour ministries. But the development of the overall training in terms of policy planning, standards, norms, examination, certificate etc. are vested with central government (*Craftsmen Training Scheme(CTS) | Directorate General of Training*, n.d.).

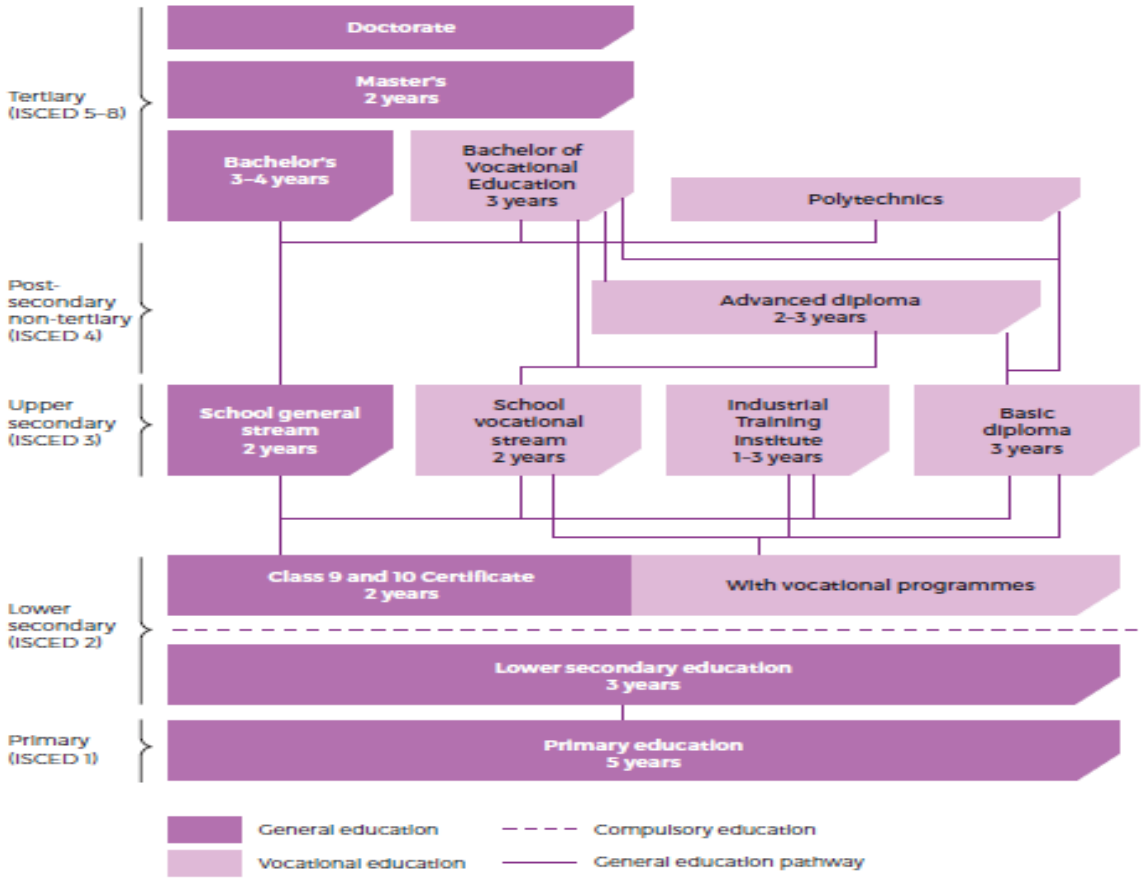
b) **Apprenticeship Training Scheme**

   Under the Apprenticeship training scheme, training facilities are provided to youth in different trades under the Apprentice Act, 1961. Apprentices Act, 1961 was enacted with the following objectives: To regulate the programme of training of apprentices in the industry so as to conform to the prescribed syllabi, period of training etc.as laid down by the Central Apprenticeship Council; and to utilise the facilities available in industry for imparting practical training with a view to meeting the requirements of skilled manpower for industry.

   Directorate General of Training under Ministry of Skill Development and Entrepreneurship monitors the implementation of act in central government undertakings

and departments, State Apprenticeship in State government undertaking/Department and Private Establishment and Department of Education in Ministry of Education is responsible for implementation in respect of Graduate, technician and technician apprentices (*Apprenticeship Training | Directorate General of Training*, n.d.). It consists of following trainees: Trade Apprentices, Graduate Apprentices, Technician Apprentices and Technician Apprentices.

Fig. 3.2. Structure of TVET in India



Source: State of the Education Report for India 2020 Technical and Vocational Education and Training (TVET), UNESCO

3.4. Recent Policy Intervention in Skill Development Arena

The ministry of Skill Development and Entrepreneurship since its inception in 2014 has launched number of policies and initiatives to augment the process of skill development in the country. It includes the following key policies and initiatives.

3.4.1. National Policy for Skill Development and Entrepreneurship

In 2009, the government had notified first ever policy related to skill development i.e. the National Policy on Skill Development. However, the policy needed urgent changes due to the presence of several issues in terms of absence of any quality assurance, career progression, etc. The government taking cognizance of the above issues, launched new National Policy on Skill Development and Entrepreneurship in 2015 which superseded the earlier policy with an aim of meeting the challenge posed by skilling at scale with speed, standard and sustainability in order to achieve the objective of skill India. The policy seeks to address the important issues related to skill development in the country such as poor integration with formal education, low aspirational value, inadequate infrastructure and non-availability of qualified trainers through narrowing skill gap with supply and demand alignment, active involvement with industries, promoting apprenticeship, quality assurance framework and leveraging modern technology. Further, it also contains entrepreneurship component as it aims to advance the entrepreneurship ecosystem in the country by fostering entrepreneurship skills and providing required monetary and non-monetary support such as mentoring, networking and access to finance to the budding entrepreneurs, promoting entrepreneurship among women, improving ease of doing business.

3.4.2 National Skill Development Mission

In India, programmes for skill development are spread over number of ministries and department of the government. This causes number of issues such as overlapping efforts and lack of coordination among various ministries and departments of the central and state government engaged in skill development programmes. In order to overcome this issue a high-powered decision-making framework was required for bringing convergence

and expediate the decision-making process. Thus, multilevel institutional structure in the form of National Skill Development Mission has been established to converge, coordinate, implement and monitor skilling activities across the country (Ministry of Skill Development and Entreprenuership , 2019-20). The institutional framework of National Skill Development Mission consists of governing council, steering committees and executive committees entrusted with key functions of providing overall policy direction, implementation and monitoring various skilling programmes and initiatives.

3.4.3 National Council for Vocational Education and Training

National Council for Vocational Training i.e. NCVT had been regulating various vocational training courses provided by Industrial Training Institutes and Modular Employment Schemes in the country. However, there has been massive expansion of the vocational training and education over the years with significant presence of large number of privately owned institutions which has resulted in multiple training programmes with different standards necessitating the establishment of new institution for the coordinating the efforts of the government and various private sector institutions involved in skill development programmes. Thus, National Skill Development Agency (NSDA) was established to bring in conformity in quality and standards.

However, the government of India, notified the National Council for Vocational Education and Training (NCVET) which subsumed skill regulatory bodies i.e. National Skill Development Agency (NSDA) & National Council for Vocational Training (NCVT) as an broad based skill regulator in the country. It has been entrusted the task of establishing minimum standards and regulating various institutions involved in imparting short as well as long terms vocational education and training programmes in the country. It consists of number of executives, non-executive and one nominated member headed by Chairperson.

3.4.4 Centre of Excellence

Centre of excellence has been established as a one -stop resource centre to improve the training standards and productivity, tackle skill gaps and reorient skill training according to the needs of industry through close coordination with industry. These centres are envisaged to carry out skill training, trainings of the trainers as well as research to improve skill training to address the skill gap, sustainable of skilled workforce and disseminate best practices. It functions consists of providing quality training in specific sectors, developing association between academia and industry, conducting research and development, upgrading technical capacity of the centres, establishing sound institutional base through strengthening existing infrastructure, fostering relations across countries, government, workers, commerce, academia, industry for project collaborations, creating network of institutes mentoring support and building capacity and establishing entrepreneurship cell[10.]

3.4.5. Skill University

National Skills Universities and Institutes are meant to be promoted as Centres of Excellence for skill creation and training of trainers in collaboration with States, either as de-novo institutions or as a part of the current university landscape, according to the National Skill Policy of 2015. MSDE has developed guidelines in consultation with a variety of stakeholders and established Skills Universities to define minimum standards for the establishment and operation of Skill Universities and to introduce uniformity to their operations, which have been forwarded to the University Grants Commission for adoption (Ministry of Skill Development and Entreprenuership , 2019-20).

[10] (*Guidelines for Recognition of Centre of Excellence in Skilling Ecosystem..Pdf*, n.d.)

3.5 Major Schemes for Skill Development in India

3.5.1. Pradhan Mantri Kaushal Vikas Yojana (PMKY)

The scheme was launched in 2015 as a flagship Skill Certification Scheme by Ministry of Skill Development and Entrepreneurship and implemented by National Skill Development Corporation with an objective of enabling large number of young Indians to take up skill training as per the demand of the industry and secure better wages and standard of living[11]. It also has provision for Recognition of Prior Learning for certifying individuals with prior learning and skills training. Under the scheme, the cost of skill development training for school and college dropouts and unemployed youths are entirely borne by the government. Further, there is also monetary reward for the successful trainees under the scheme. Initially the scheme was implemented at pilot basis for a year but later it had been extended for 2016-20 with greater coordination with other government of India missions such as Make in India, Digital India, Swachh Bharat, and others. The objectives of revamped scheme include preparing 10 million workers to undergo skill training so as to improve their employability and income, increase productivity of the existing labour force, promote standardization of the certification process and create registry of skills.

The centrally sponsored scheme is implemented by Centre and states wherein the centrally sponsored centrally managed (CSCM) components consists of 75 per cent of the PMKVY targets. The central component has provisions for short term training, recognition of prior learning and special projects. On the other hand, the state component of PMKVY is funded by the centre but managed by the states through state skill development mission wherein the states have responsibility to support and monitor the scheme to improve its efficacy and efficiency. The state's role in the scheme is important as they are in better position to understand the skilling requirements for state specific economic activities. Thus, their participation in the skill development training would allow meeting the local demand and aspiration of the youths. It will boost capacity and

[11] https://pmkvyofficial.org/

capability of the current National Skill Development framework ensuring that everybody has equal access and opportunity. The achievement of the Pradhan Mantri Kaushal Vikas Yojana has been summarized below:

Table 3.2. Summary of Achievement under the Skill Development Programme

Scheme	*Trained*				*Total Certified*	*Reported Placed*
	STT	*RPL*	*Special Projects (SP)*	*Total Trained*		
PMKVY 1.0	18,04,170	1,81,767	0 (No SP in PMKVY)	19,85,937	14,51,285	2,51,689*
PMKVY 2016-20 CSCM	32,97,244	32,78,515	1,59,092	67,34,851	53,59,741	15,23,171**
PMKVY 2016-20 CSSM	5,21,614	--	--	5,21,614	3,81,131	1,09,729

**Placement tracking was not mandatory*

***Placement figures applicable to certified candidates under STT & SPL i.e. 28,06,520. (RPL orients Candidates and doesn't train them hence placement is not mandatory).*

Source: Annual Report, 2018-19, Ministry of Skill Development and Entrepreneurship

The scheme is so far successful in achieving its pre-determined target as large number of the young labour force has already been given skill training under the scheme. As highlighted by the study based on assessing the impact of the PMKVY 2.0, the scheme has been beneficial for the trainees as the employment prospectus of the individual trainees who have successfully completed short term training with certification as their income has increased by 52 per cent before the training. In case of recognition of prior learning component of the scheme, most the successful trainees strongly agreed to the

improvement in their confidence, technical and soft skills leading to 25 per cent higher monthly income after certification[12.]

3.5.2. Pradhan Mantri Kaushal Kendras (PMKK)

The Ministry of Skill Development and Entrepreneurship (MSDE) has started the process of establishing state-of-the-art, visible, and aspirational model training centres in every district of India, ensuring coverage of all parliamentary constituencies (PCs). These training centres are known as “Pradhan Mantri Kaushal Kendra” (PMKK). PMKK is Ministry of Skill Development and Entrepreneurship 's initiative to establish a structured infrastructure for skill development training delivery that is equipped to provide high-quality industry-driven courses with an emphasis on employability and create an aspirational value for skill development training (Ministry of Skill Development and Entreprenuership , 2019-20).

Under the scheme, private training partners selected through an RFP may apply for a secured loan of up to Rs 70 lakhs per PMKK at a subsidised interest rate to purchase and set up laboratories, training-relevant machinery, training aids, and other equipment. According to the latest Annual Report of Ministry of Skill Development and Entrepreneurship, 812 Kaushal Kendras had been assigned to districts and 710 Kaushal Kendras have been formed across 36 states and union territories.

3.5.3. Skills Strengthening for Industrial Value Enhancement (STRIVE)

It is an outcome-based project of the central government which has been implemented with the assistance from world bank with an aim to reform the existing Industrial Training Institutes (ITIs) and apprenticeships. The scheme seeks to improve upon the existing skill development training programmes so as to improve the efficiency and relevance of the skills acquired by the trainees through structural reforms. By involving SMEs, business associations, and industry clusters, it will incentivize ITIs to boost overall efficiency, including apprenticeship. The project aims to reinforce institutions

[12] (*PMKVY 2.0 Impact Evaluation Report – Executive Summary.Pdf*, n.d.)

such as the State Directorate of Training and Jobs, CSTARI, NIMI, NSTIs, and ITIs in order to create a comprehensive system for providing quality skill development training.

The Central Sector Scheme will focus on the following outcomes: ITI's efficiency has improved, state governments' capacity to support ITIs and apprenticeship training has grown, teaching and learning have improved, apprenticeship training has been improved and expanded. Till now the performance of the schemes is laudable as 31 states and UTs have already signed agreement to implement the schemes and total 314 ITIs have been selected and a performance-based grant agreement has been signed by 211 ITIs (Ministry of Skill Development and Entreprenuership , 2019-20).

3.6. Challenges of Vocational Education and Training in India

Skill Development assumes important role in the economic growth and prosperity of a country. Although the present system of skill development through vocational training and education dates back to early independence era, it still suffers from number of wide-ranging issues. The foremost issue in India with respect to vocational training and education is the low level of prevalence among the Indian population. Moreover, the percentage of individuals who are undertaking vocational training in the country has not increased much since past several years. As per the NSSO, the proportion of persons of age 15-29 years who received formal vocational training as estimated from NSS 68th round (2011-12) and 61st NSS round (2004-05) were nearly at the same level. The low level of participation in vocational education and training could be attributed to the poor perception around vocational education and training as it is often assumed to be meant for individuals with lower ability who struggle with formal academic system. Further, individuals undergoing vocational training seem to rely more on informal mode of vocational training as compared to the formal modes as the prevalence of informal training is higher among both the men and women at 4.7 and 2 per cent as compared to the formal training which is only 2.7 and 1.4 per cent respectively (Ministry of Statistics and Programme Implementation , 2018-19). Apart from this, in India majority of the labour force is engaged in the informal sector where most of the workers do not have any

kind of vocational training. The premium for skilling in informal sector is low due to which the workers in informal sector with any kind of formal training accounts for only 2.5 per cent whereas workers with informal training constitutes 12.5 per cent of the informal sector workforce(T. Jain et al., 2019). This is one of the prominent reasons for the low productivity of the workers in the informal sector which transact into low wages and abysmally low living standards.

Moreover, the skill development programmes in the country have been entrusted with several key ministries and department. At present apart from MSDE and MoE, there are 19 ministries involved in vocational training in the country including Ministry of Agriculture, Commerce and Industry, Textiles and Tourism (Wheebox, 2020). The presence of number of stakeholders results into poor coordination and monitoring mechanism making it difficult to realize the goal of skill ed workforce (UGC, 2018-19). Other institutional level challenges pertain to inconsistency in the outcomes due to the multiplicity in assessment and certificate systems leading to confusion among the employers.

Further, there is also persistent skill issues in the country namely skill gap and mismatch. Skill gap arises due to the low capacity of the current skill development programmes in the country given the huge demand for the skilled workforce in the labour market. According to estimates by (Jain et al., 2019) there is a skill gap of around 250 million across 21 key sectors in the country. The skill mismatch due to the difference between the skill demanded in the market and supplied in the training centres with those who are trained do not possess the competencies for employment (Santosh Mehrotra, Ankita Gandhi and Bimal K. Sahoo, 2014).

The success of vocational education depends on sufficient resource allocation, trained teachers and availability of the relevant equipment while training. However, Vocational education is costly, meagre and insufficiently funded in the country (Tilak, 1988b). Addition to this, the financial resource constraint on developing countries such as India with decreasing resource allocation to education in particular makes it difficult to provide

required financial support to vocational education in the country. The ongoing pandemic has further aggravated the present situation with surging fiscal charges along with insufficient tax collection.

The other challenges of vocational education and training as highlighted by (Shachi Joshi, Gayatri Pandey, Bimal K. Sahoo, 2014) in the country are – low enrolment of the students than sanctioned strength , higher dropouts in ITIs than private ITI, low level of employability as 33% of those survey reported unemployed, ITI AND CoE (centre of excellence) do not have qualified staff. There is also dearth of trainers and the current system of technical and vocational education fails to attract trainers from industries. The quality of practical training in ITIs is unsatisfactory as the tools and machines used are outdated. Moreover, the skill curricula are often obsolete and not as per the demand of the industries.

In India, the labour force participation of the women is very low especially in rural areas. In addition to this, the participation of females in vocational education and training in the country is also low as compared to male counterparts. Furthermore, the labour market outcomes of vocational training in terms of employability for women is lower than the male counterparts as 83.7 per cent of men who received vocational training reported to be employed as compared to only 51.7 per cent of women[13]. This highlights the gender gap issue in the existing vocational training and education system in the country in terms of participation and employability. Vocational training and education seem to be viable alternative to bridge the skill gap which is one of the major reasons for the low employability among the Indian graduates. However, the issue of employability is also present in case of vocational education and training graduates with variance among the type of vocational training received as the employability among apprenticeship graduates is reported to be higher than ITI graduates (K.S. Rao, Shachi Joshi, A.K. Mathur, Bimal K. Sahoo, 2014). The Periodic Labour Force Survey 2017-18 suggests that around 75 per cent of the individuals who have received vocational training are employed and the percentage of unemployed individuals is also low at 6.9 per cent. However, these figures

[13] Annual Periodic Labour Force Survey (*Annual_Report_PLFS_2018_19_HL.Pdf*, n.d.)

hide the important fact that higher percentage of individuals i.e. around 18.9 per cent, who have received vocational training are actually out of the labour force. This figure is more critical for the vocational training graduates belonging to urban areas as 20.9 per cent of individuals are out of the labour force against 18.2 per cent of individuals from rural areas.

3.7. New education policy and Vocational Education

The latest national education policy 2019 highlights the issue of low penetration of vocational education among youth in the country. The Five-Year Plan (2012–2017) estimated that only a very small percentage of the Indian workforce in the age group of 19–24 (less than 5%) received formal vocational education. Whereas in countries such as the USA the number is 52%, in Germany 75%, and South Korea it is as high as 96%. The statistics isn't very different for vocational training which has been there in the country since early independence days with the emergence of ITIs since 1969 with the aim of promoting industrialization in India. The government figures suggests that low percentage of working population has received vocational training. Moreover, majority of the individuals undertaking vocational education and training rely more on informal mode of training than formal mode. This suggests the overall scenario of vocational training and education in the country which is very disappointing given the huge skill gap and labour force in the country.

The policy further discusses the reason for low per cent of youth undertaking vocational education in the country and one of the reasons turns out to be the issue of vertical mobility. Earlier, the vocational education in the country was restricted to the drop outs beyond upper primary and senior secondary level. The students with vocational education subjects found out it difficult to carry on with these subjects in higher education subsequently. However, the government with the introduction of Bachelors of vocation and Master of Vocation courses back in 2014 has more or less solved the problem as these new higher education avenues for the students of vocational subjects in schools has opened the window of opportunity in terms of vertical mobility. Another reason for the

same is the perceived inferiority of vocational education in the society. This can be tackled through re-imagination of delivery of vocational education to the prospective students in future. The policy proposes the integration of vocational education across schools in phased manners along with early vocational education exposure to the children since lower grades. The other alternatives for overcoming the social status hierarchy associated with vocational education are measures such as clearing the misunderstandings of the positioning of vocational schools and creating influential brand culture of vocational schools, meeting the employment needs of the students, establishing and implementing curriculum of vocational schools and developing new enterprise school cooperation with multiple modes (Chunyang, n.d.).

The policy aims at increasing the exposure of vocational education among learners in schools and higher education to at least half of the learners by 2050 in order to realize the upcoming demographic dividend. The policy proposes parallel vocational education courses along with academic courses in schools and colleges by integrating vocational education in all school and higher institutions in phased manner for which institutions will collaborate with ITIs, polytechnics, local industry, industry and NGOs. Although the expansion of vocational education in the country is the need of the hour for which the stigma around vocational education needs to be eliminated. But proposed policy through above framework seems to rely heavily on supply side and give almost no attention to the lacuna on the demand side. Policy is almost silent on the measures to expand the demand for vocational education graduates, the existing skill gap among the graduates of vocational education and training, the unemployment and poor wage issues of the vocational education and training graduates. Blind expansion of vocational education without adequate attention to the demand side problems would further lead to deterioration in the existing condition and there will be emergence of new class of skilled and trained unemployed youths in the country.

Summary

This chapter focused on discussing the existing system of vocational education and training in the country in a comprehensive manner. Although the government has been working proactively in the area of vocational education and training so as to improve the overall skill development in the country, the existing system is yet not fully effective in realizing the goal of skilled labour force. As discussed previously, the existing system of vocational education and training suffers from number of issues ranging from inferiority to unemployment among the vocational education and training graduates. The new education policy also reinforces the skill India agenda of the government wherein attempt has been made to address number of issues in the existing vocational education and training. However, the policy fails to focus on the demand side issues. It is important to resolve all the existing challenges in the present system of vocational education and training in comprehensive and integrated manner so that the goal of skilled labour force is realized in future.

Chapter- 4

Methodology of the study

The present chapter presents a detailed plan of the methods used in the study to fulfill the objectives of the study.

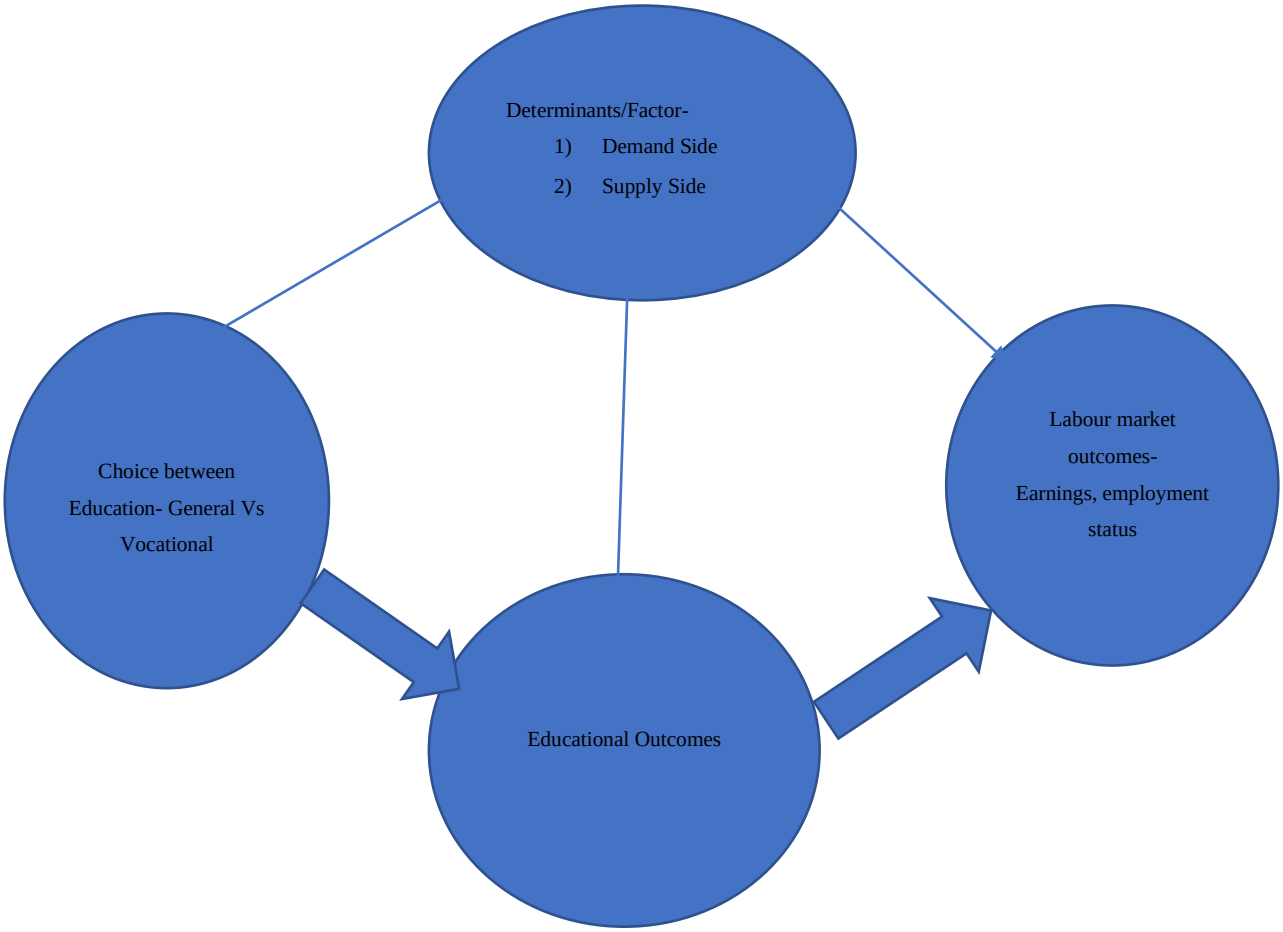
4.1 Conceptual framework

The present study focuses on comparing labour market outcomes of graduates from vocational education with the graduates from general education. In order to determine the labour market outcomes of vocational education vis a vis general education, the variables used are mainly employment status and earning of the graduates in the present study. As mentioned earlier, this analysis of labour market outcomes also involves analysis of determining the factors affecting participation in vocational education vis-à-vis general education. In other words, there are number of factors affect the choice between general and vocational education which in turn affects the educational outcomes in terms of accumulation of general and specific skills and knowledge which determines the labour market outcome of a graduate (Fasih, 2008). Education is not directly associated with the labour market outcomes. It is the educational outcomes which are derived from the determinants of education, which affects the labour market outcomes.

The following figure showcase the graphical representation of the proposed conceptual framework. In the figure, the first panel contains determinants or factors influencing the choice between vocational and general education which include both demand side factors such as family background, individual characteristics as well as supply side factors such as college, course fee, employment prospectus etc. However, the scope of study has been restricted to only demand side factors. Moving on, the choice between the course of study along with other factors such as personal traits and family background affects the education outcomes in terms of knowledge and skills. As suggested by previous studies, vocational education is based on providing more trait skills than general skills and knowledge as compared to general education. Finally, these educational outcomes i.e.,

presence of combination of knowledge and skills in turn affects the labour market outcomes such as earnings, employment status, transition rate, work condition etc.

Fig. 4.1. Graphical Representation of Conceptual Framework



Source: Author

4.2. Population and Sample

At present, UGC is implementing three schemes under NSQF for the purpose of skill development namely, Community Colleges, B.Voc Degree Programme and Deen Dayal Upadhyay Centre. The present study is focused on comparing the labour market outcomes of vocational education vis-à-vis general education. As per the latest annual

report of UGC, 2018-19, under the B.Voc degree programme, there are 330 number of institutions' approved to offer B.Voc course in the country out of which 195 institutions' received grants. And, under Deen Dayal Upadhyay Centres for Knowledge acquisition and upgradation of Skilled Human Abilities and Livelihood (DDU KAUSHAL) Kaushal Kendras, there are 28 institutions approved.

Table 4.1. Status of various skill development schemes by UGC in 2018-19

Name of the scheme	Institutions	No. of Students	Grant released (cr)
Community colleges	172	12000	27.74
B.Voc Degree Institutions	330	22000	103.08
DDU Kaushal Kendras	18	4000	11.78

Source: Annual Report, UGC 2018-19

4.2.1 Population:

In order to fulfill the primary objective of the study to determining labour market outcomes of B.A. programme and B.Voc graduates, Delhi has been chosen as the population. The criterion for choosing Delhi are two folds. First is the feasibility during the COVID times as the travelling restrictions across the country it wasn't possible to get the data relating the graduates from both the courses and closure of various colleges and university also added to the existing difficulty in data collection. Moreover, second relates to the educational and job opportunities which Delhi offers are numerous. Delhi had the second highest hiring opportunity in 2016 and 2018 and has the most demand for hiring[14]. Moreover, it ranks first in the supply of maximum employable talent across country in 2021.

[14] India Skill Report, 2020 and 2021 (*ISR_Report_2020.Pdf,* n.d.)

The population for the study consists of the graduates or passed outs from B.A. programme and B.Voc from same colleges in Delhi University belonging to the year 2016-19 namely so as to remove institutional bias arriving causing any variation in the labour market outcomes :

1. Kalindi College
2. Ramanujan College
3. Jesus and Merry College

4.2.2 Sample:

In order to collect the data, the online questionnaire was sent to all students representing the whole population. However, the sample for the study has been restricted to the respondents who filled in the online questionnaire. The response of only 60 students from B.A. programme and 76 students from B.Voc was received. In case of B.A. programme, the data from kalindi college wasn't received due there were no respondents from the college in case of B.A, programme. Moreover, in case of Jesus and Merry college, the response received for B.Voc in healthcare and management was nil. Thus, the after the necessary data cleaning, the sample of 60 students from each course namely B.A. prog and B.Voc has been used for the purpose of the study.

Table 4.2. Sample from B.Voc

College	Female	Male	Grand Total
Jesus and Merry College	4		**4**
B.Voc (Retail Management and IT)	4	-	4
Kalindi College	16		**16**
B.Voc (Printing Technology)	5	-	5
B.Voc (Web Designing)	11	-	11
Ramanujan College	12	28	**40**
B.Voc (Banking Operations)	9	19	28

B.Voc (Software Development)	3	9	12
Grand Total	32	28	**60**

Source: Primary Data collected by the Author

Table 4.3. Sample from B.A. programme

Colleges	**Female**	**Male**	**Grand Total**
Jesus and Merry College	**14**	**-**	**14**
Ramanujan College	**9**	**37**	**46**
Grand Total	**23**	**37**	**60**

Source: Primary Data collected by the Author

4.3. Data sources

The present study is primarily based on the primary data collected from the graduates of B.Voc and B.A. programme courses from the Delhi University belonging to 2016-19 batch.

Secondary data sources include NSSO 68th round and Periodic Labour Force Survey.

4.4. Determinants of Choice

The first objective of the present study is to determine the factors which affect the choice or the participation of an individual between vocational and general education. In order to find out the determinants of choice of education for undergraduate programme, binomial logistic regression analysis is used for the study.

4.4.1. Dependent Variable

The dependent variable consists of two categories which is B.A. Programme and B.Voc. this analysis will help in getting more knowledge about the individuals choosing vocational education over general education, which in turn could help in targeting more potential students to opt for vocational education.

4.4.2. Independent variables

As used in previous studies, there are number of socio economic variables which play important role in determining the choice between the course(Kumar et al., 2019c). These variables can be broadly classified into supply and demand side factors. The supply side factors include course, college, course fee, employment prospects, future earnings whereas demand side factors include factors relating to personal traits and socio-economic background such as gender, age, category, family income, domicile and many more. The present study has been restricted to analyzing the labour market outcomes based on the demand side factors. Thus, the supply side factors affecting choice of course has been excluded. The independent variables used in the econometrics modelling are further classified into scale and categorical variable. The categorical variables include gender, domicile, category, stream in grade 12, family income, vocational subject and stream in grade 12 and scale variable includes age and percentage in grade 12.

4.4.3. Model Estimation:

In order to determine the participation in general as well as vocational education, binary logistic regression has been used. The binary model is given by:

$$\ln\left(\frac{P(B.Voc)}{P(B.A.Prog)}\right) = \beta_0 + \beta_i X_i$$

where, P is the probability of the event happening, Xi's are the independent variables discussed previously.

H_0= social, economic and individual characteristics have no impact on the choice between general and vocational education

4.5. Labour Market Outcomes

The primary objective of the present study is to analyze the labour market outcomes of vocational education graduates and compare them with the labour market outcomes of general education graduates. Labour market outcomes is a broader area which includes number of components such as transition period, employment status, wages or earnings, employment sector and many more. However, in the present study, the determinants of only two labour market outcomes namely annual earnings and employment status has been determined using econometric analysis. Moreover, the other labour market outcomes such as transition period, employment sector has been discussed using descriptive analysis.

In order to fulfill the above objectives, following are the identified dependent variables or the regressand:

1. **Employment Status** – It refers to the present activity status of the individuals. It includes three categories- employed, unemployed and out of the labour force.
2. **Wages/Salary/Income-** It refers to the annual earning of an individual based on his/her employment status.

4.6. Employment Status

In the study, (Hanushek et al., n.d.), the effects of age, years of schooling and type of education has been used to find out the effect on the employment status. The control variable includes literacy score. In addition, the mother's qualification found out to be insignificant thus not added in the model. According to various studies done previously, the employment status of an individual depends on number of factors or variables which

can be grouped into supply side and demand side factors. The supply side factors include course, gradation score, category, domicile, age etc. On the other hand, demand side factors include macroeconomic conditions such as GDP, unemployment rate, globalization, foreign direct investment (FDI). However, for the purpose of the present study, the econometrics analysis has been restricted to supply side factors in labour market.

4.6.1. Variables in the Model:

(i) Dependent Variable

Employability status is the dependent variable, which showcase the present activity status of the graduates. It consists of three categories which are – employed, unemployed and out of the labour force.

(ii) Independent variable

Independent variables consist of supply side factors which has effect on employment status of a graduate. It includes categorical variables such as course type, domicile, category and scale variable namely graduation score.

4.6.2. Model Estimation:

As suggested by previous study where multinomial regression model has been used extensively for finding the effect of education on the labour market outcomes. In the present study multinomial regression model has been used to determine the effect of type of education on the employment status of the graduates given the other control variables. The multinomial regression model is used for finding out the probability of categorical dependent variable based on the multiple independent variables.

In the study (Aggarwal et al., 2011) on education and labour market outcomes, the research method involves static as well as dynamic model. The static model did not take into account, the impact of policy changes with respect to education, thus dynamic model had been accompanied with the static one. Dynamic model is based on the Keane and

Wolpin (1997) wherein the return to the activity in a period depends on the past experience in terms of number of years of schooling and labour market choices.

The presence of categorical dependent variable with more than two categories necessitates the use of multinomial logistic regression model. The dependent variable showcasing employment status consists of three unordered categories, namely employed, unemployed and out of labour force.

Assuming that out of labour force i.e. OLF is designated as reference category. The probability of activities in other categories has been compared to the probability of membership in the reference category.

The model is given by:

$$\text{In}\left(\frac{P(Employed)}{P(Out\ of\ Labour\ Force)}\right) = \beta_0 + \beta_i X_i$$

$$\text{In}\left(\frac{P(Unemployed)}{P(Out\ of\ Labour\ Force)}\right) = \delta_0 + \delta_i X_i$$

Where, P is the probability of the event happening, Xi's are the independent variables used in the model.

H_0 = The effect of independent variables on the outcome variables is zero

4.7. Annual Earnings

The choice for a particular course depends on important side factor which is returns in the labour market in terms of salary and wages. Previous studies focusing on determining labour market outcomes of education have extensively used the returns to education in terms of salary and wages for the purpose of study(Oosterbeek & Webbink, 2007).

The first issue which was encountered while determining the returns to vocational education vis-à-vis general education was the presence of multicollinearity. Initially after taking the cue from the earlier studies, mincer wage equation was intended to be used in the present study. Miner wage equation involves experience as an important independent

variable. Earlier studies where it wasn't possible to get the data on the experience, the researchers used age as a proxy for the experience. Similarly, in the present study, an attempt was made to use age as a proxy for experience as the study is focused on the fresh graduates who do not have any substantial experience in the labour market. However, this method was abandoned due to the issue of multicollinearity which arrived when course type and age were simultaneously used in the mincer wage equation.

The second issue involves the selection problem. In determining returns to education, only wages of those who are in labour force or are available for work are considered whereas those who are out of labour force automatically become unemployed. The individual who are in labour force have certain characteristics or attributes which are different from those who are absent in labour market (Dey & Devi, 2019). Therefore, the normal OLS regression involves issue of sample selection error due to the presence of selectivity as only those who are currently employed are being taken for the purpose of calculating labour market returns. The estimates of returns to education are observed for only those who are working, which makes our sample non-random, leading to the issue of sample selection (Woolridge). Since randomness is one of the important assumptions of the regression model, this observation is violated due to the presence of selectivity in the sample. The violation of this important OLS assumption results into biased estimates.

As suggested by number of studies, in order to solve this issue, heckmen's sample selection model is being used by various researchers (Aggarwal et al., 2010). Thus in the present study in order to remove the sample selection bias, hackmen's sample selection model has been used. Under the heckman's correction, the returns to education are determined after estimating the probability of being employed is estimate which addresses the selection on observables.

4.7.1. Model Estimation

Heckman's two step procedure involving estimation of wage function in two stages:

1st stage- participation equation determining the probability of an individual in the workforce and is given by

$$Y_i = Z_i x + u_i$$

Where, the dependent variable (Y) = 1, if individual participates in work

=0, otherwise

And Z is a set of control variables and u is the error term. The set of control variables include domicile, family income and number of siblings.

2nd stage: Estimation of wage equation using selectivity term obtained in the first stage as an additional regressor:

$$\text{In } W_i = \alpha + \beta voc_i + \delta X_i + \theta \lambda_i + \varepsilon_i$$

Where, voc is dummy having value 1= if individual is from B.Voc

= 0 if individual is from B.A. Programme

X is the set of control variables including gender and course type.

H_0 = there is no difference between the earnings of graduates from vocational and general education

Chapter 5

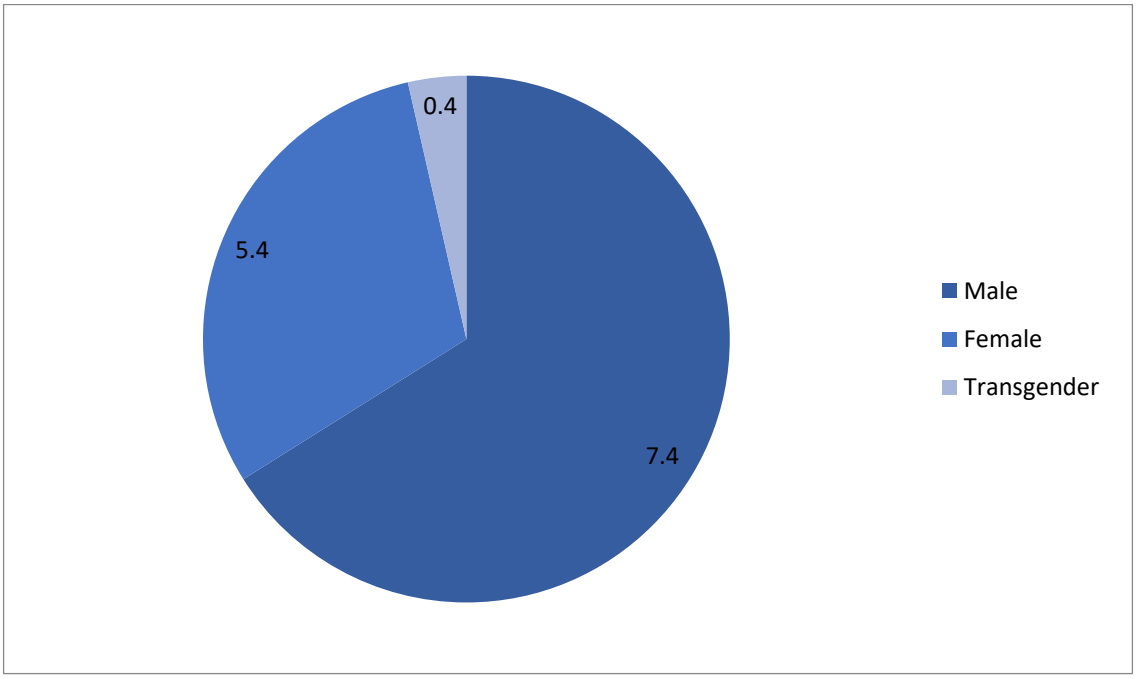
Analysis of Data

5.1. Introduction

The present chapter is based on the descriptive analysis of data consisting of primary as well as secondary data sources. As previously discussed, primary data source consisted of the data received through online questionnaire from the graduates of B.A programme and B.Voc from Delhi University. Whereas, the data from secondary sources consist of the data from government report namely NSSO 68th round and Report on Skill Development and Labour Force, 2015-16.

5.2. Analysis of Secondary Data

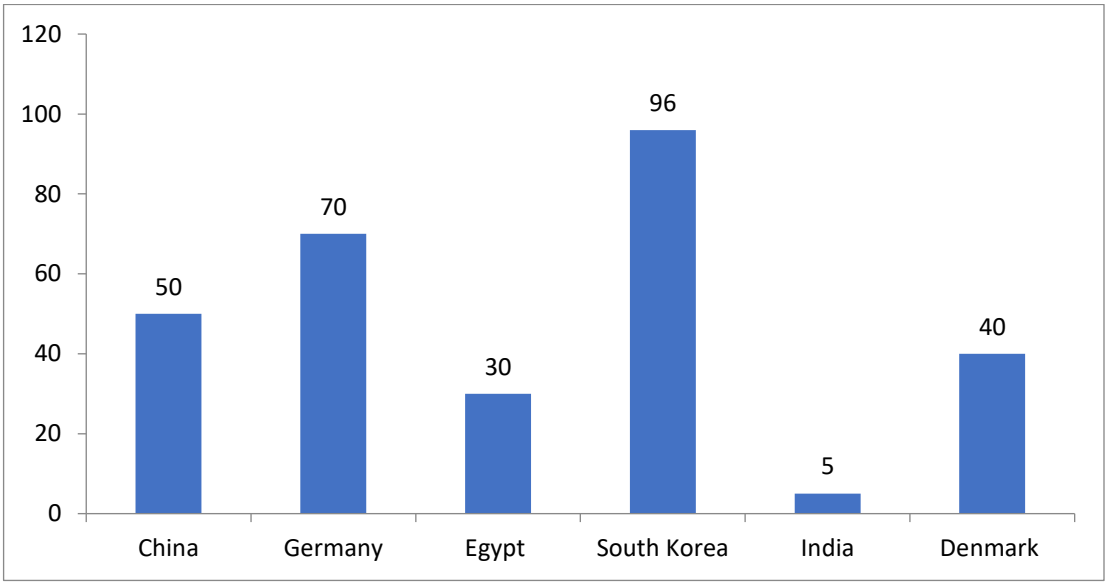
Fig 5.1 Persons who received Vocational training (%).



Source : Report on Skill Development and Labour Force, 2015-16

The percentage of male who received vocational training in the country is just 7.4 per cent whereas the present situation is more acute for women and transgender out of whom only 5.4 per cent and 0.4 per cent have reported to have received vocational training.

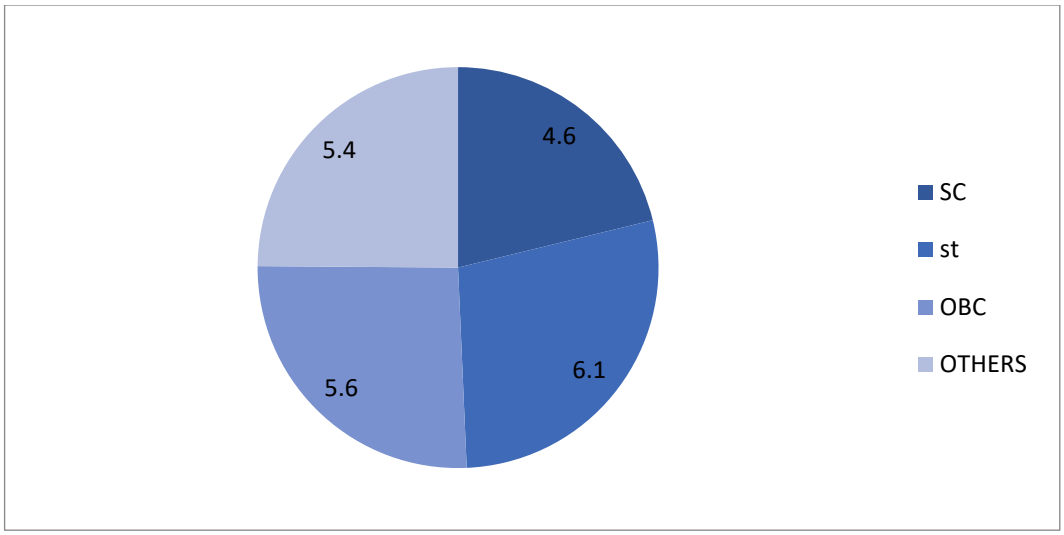
Fig 5.2 Students in Vocational Education Courses across Globe (%)



Source: New Education Policy, 2020 Ministry of Education

In South Korea, 96 per cent of students are enrolled in various vocational education courses. This percentage is higher for other countries as compared to India where only 5 per cent of students are enrolled in vocational education courses.

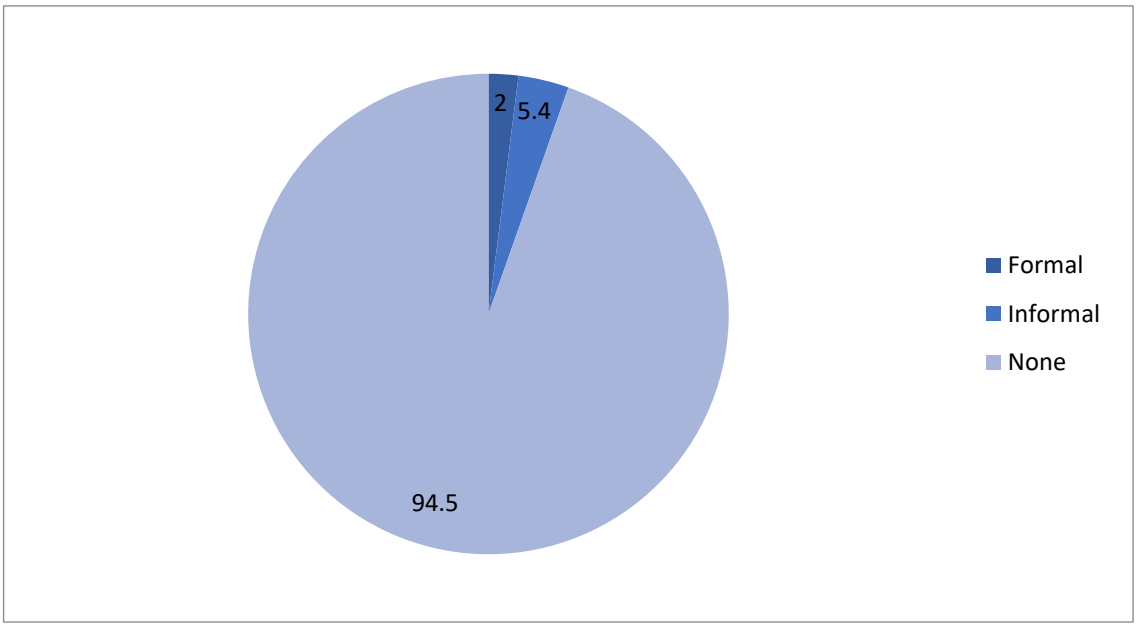
Fig 5.3. Persons received vocational training across categories (%)



Source : Report on Skill Development and Labour Force, 2015-16

People from ST categories reported to have high number of vocational training graduates (6.1 per cent) followed by OBC, others and SC wherein 5.6, 5.4 and 4.6 per cent of people

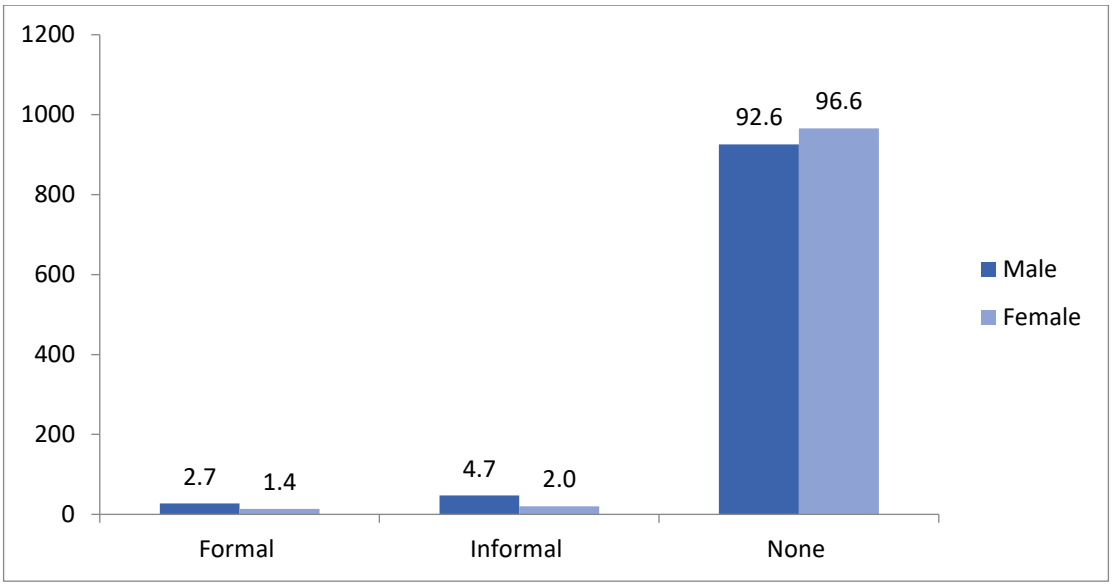
Fig 5.4. Type of training received by individuals (%)



Source : Report on Skill Development and Labour Force, 2015-16

Out of the total individuals surveyed only 2.4 percent received formal vocational training whereas those who received informal vocational training constituted 5.4 per cent. However, large percentage of individuals didn't receive any kind of training i.e. 94.5 per cent.

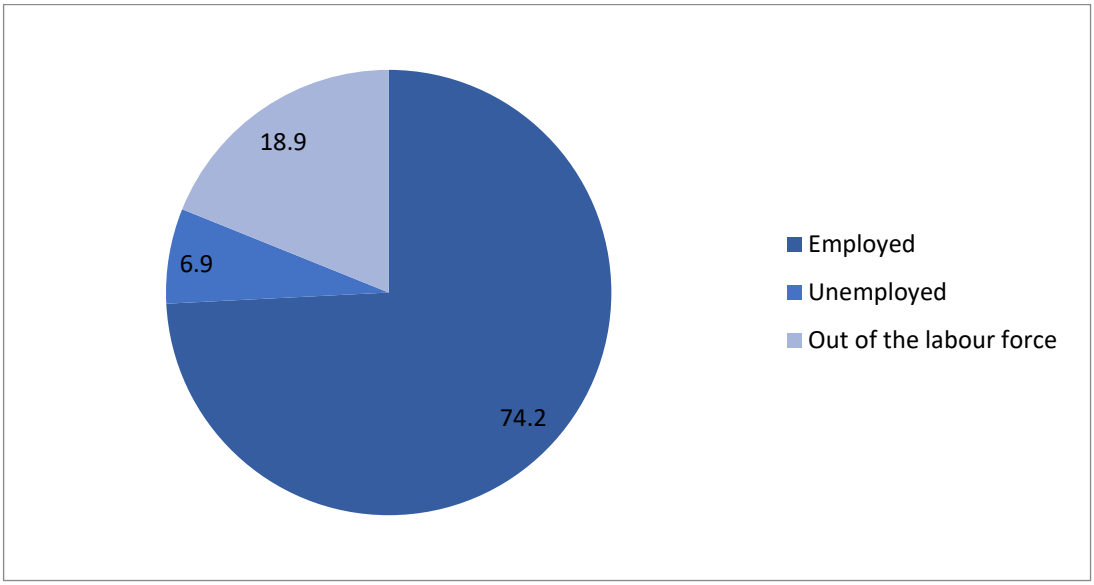
Fig 5.5. Type of vocational training received by men and women (%)



Source : Report on Skill Development and Labour Force, 2015-16

The percentage of the male and female who didn't receive any sort of vocation training is high for both at 92.6 and 96.6 per cent respectively. However, the percentage of women with no training is higher as compared to men. On the other hand, the prevalence of informal training is higher among both the men and women at 4.7 and 2 per cent respectively as compared to the formal training which is only 2.7 and 1.4 per cent respectively.

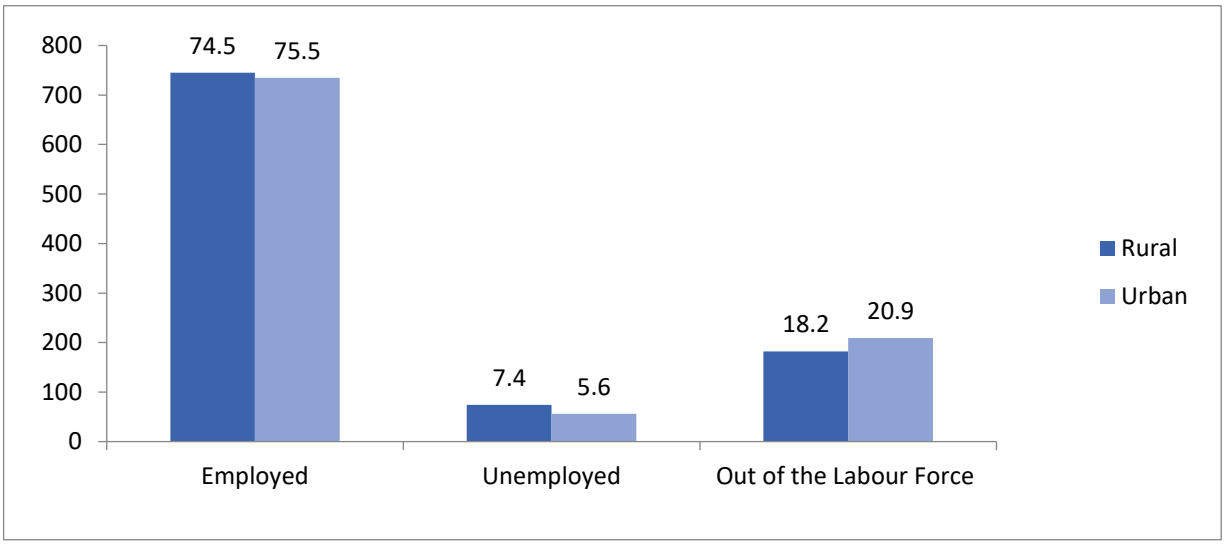
Fig 5.6. Activity status of person who received vocational training (%)



Source: Report on Skill Development and Labour Force, 2015-16

Out of the total 74.2 per cent of people who received vocational training are reportedly employed and 6.9 per cent remained unemployed. However, the about 18.9 per cent of vocational training graduates preferred to remain out of the force.

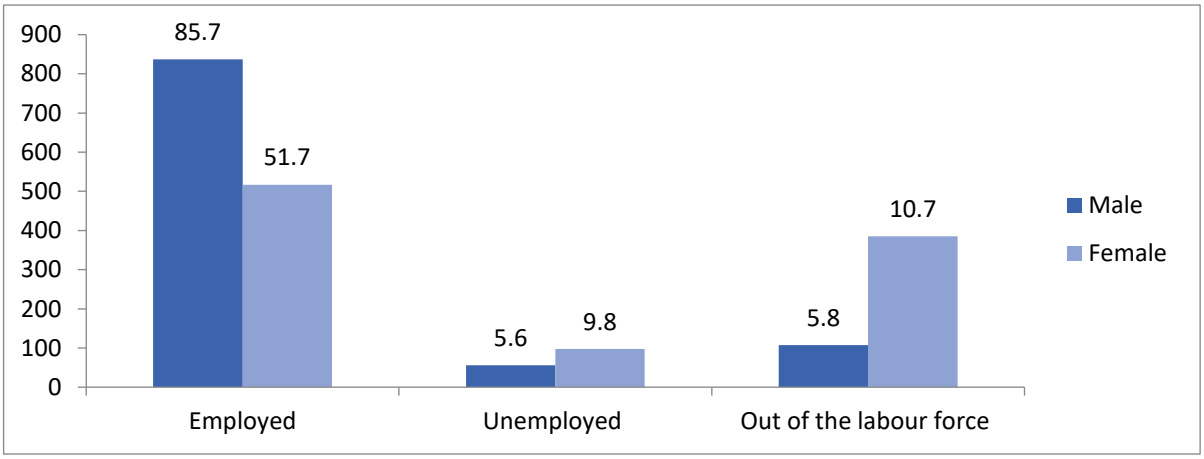
Fig 5.7. Activity statutes among the vocational training graduates in rural and urban areas



Source : Report on Skill Development and Labour Force, 2015-16

The percentages of people who received vet and employed in rural and urban areas are 74.5 and 75.5 per cent respectively. Thus, percentage of people who received vet and reportedly employed is minutely greater in rural areas as compared to the urban areas. At the same time, the unemployment in rural areas among the vocational training graduates is 7.4 per cent which is greater than those in urban areas. Further, greater percentage of people who received vocational training and are situated in urban areas have reported being out of the labour force as compared to those who are in rural areas.

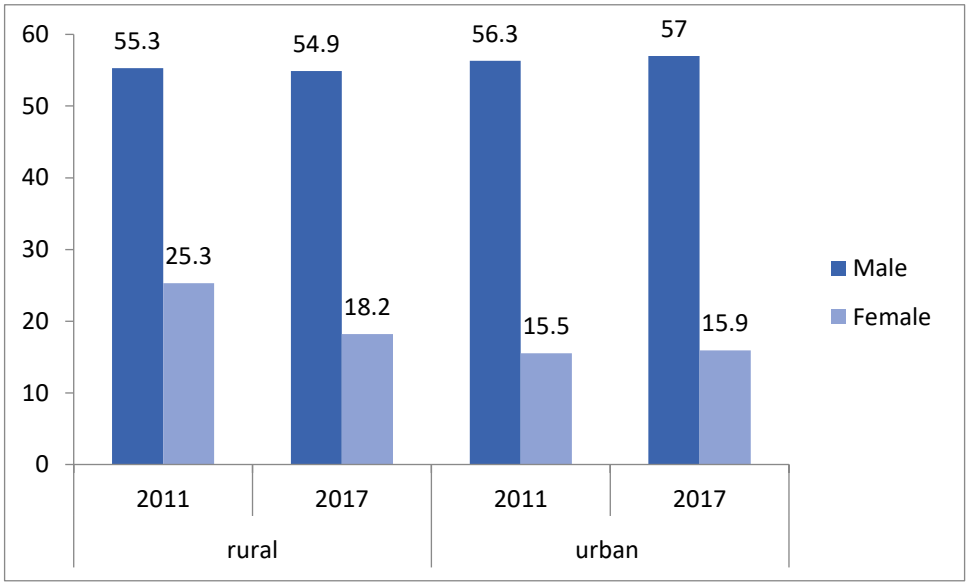
Fig 5.8 Activity status among men and women who received VET



Source : Report on Skill Development and Labour Force, 2015-16

There is a huge gap among the graduates of vocational training with respect to the gender. 84.7 per cent male who received vocational training are employed in comparison to only half of the women vocational training graduates. Moreover, the percentage of women who are out of the labour force is around 11 per cent much higher than the male counterparts. This reflects the similar trend which is observable in the Indian labour market, wherein the labour force participation rate of female in both urban as well as rural areas is low as compared to the men.

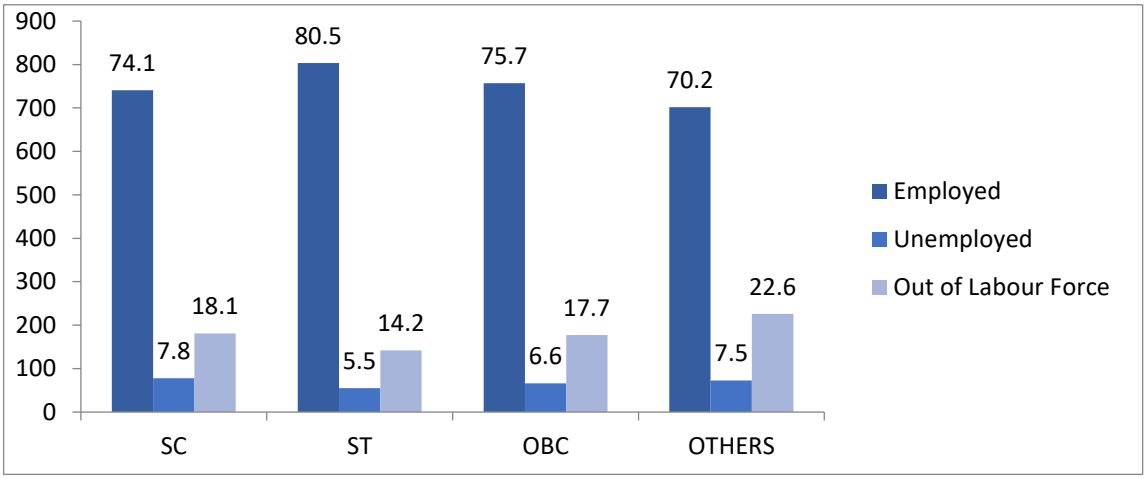
5.9 Fig Labour Force Participation rate among men and women in rural and urban areas



Source: Periodic Labour Force Survey, 2017-18

Labour force participation rate is significantly lower for females than for males in both rural and urban areas. During 2017-18, about 54.9 per cent of rural males and 18.2 per cent of rural females was in the labour force. During the same period, about 57 per cent of urban males and 15.9 per cent of urban females were in the labour force.

Fig 5.10 Activity status of those received vocational training across social categories (%)

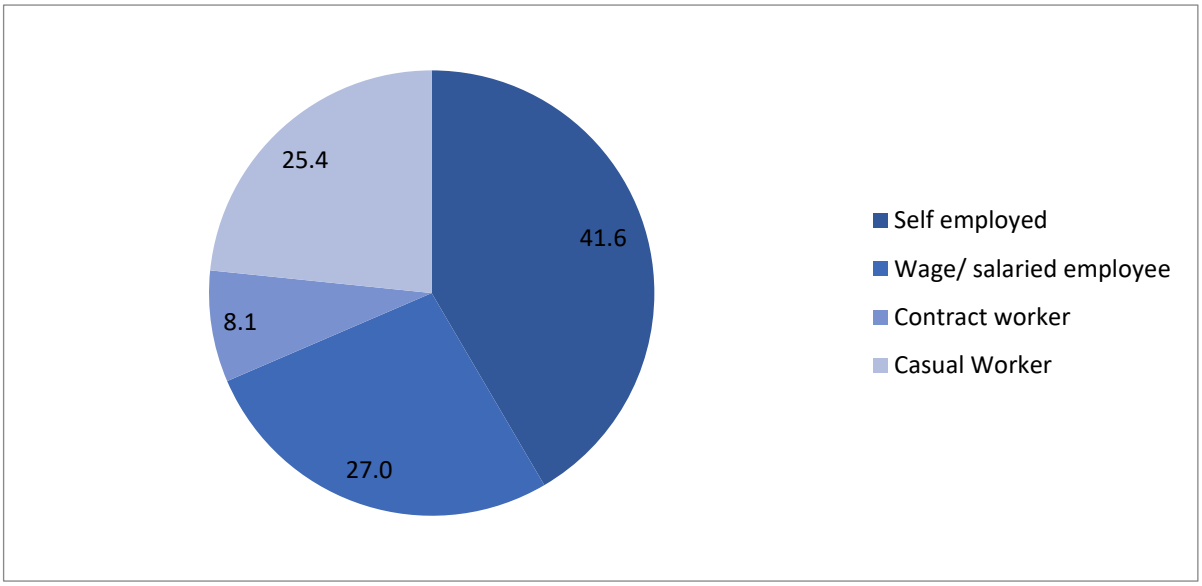


Source: Report on Skill Development and Labour Force, 2015-16

The percentage of vocational training graduates from ST categories who are employed is 80.5 is highest compared to other categories. And, it is lowest in case of those from "other" categories. Thus, it suggests that vocational training is helpful in increasing the employability among the marginalized section of the society. Similarly, the status of unemployment is lowest among the ST followed by OBC, others and SC. Vocational training graduates from the SC categories have the highest unemployment at 7.8 per cent.

The percentage of those individuals who received vocational training and reported to be out of the labour force is higher than the unemployment percentage across all the categories. The highest percentage of the individuals from "others" categories are not in the labour force.

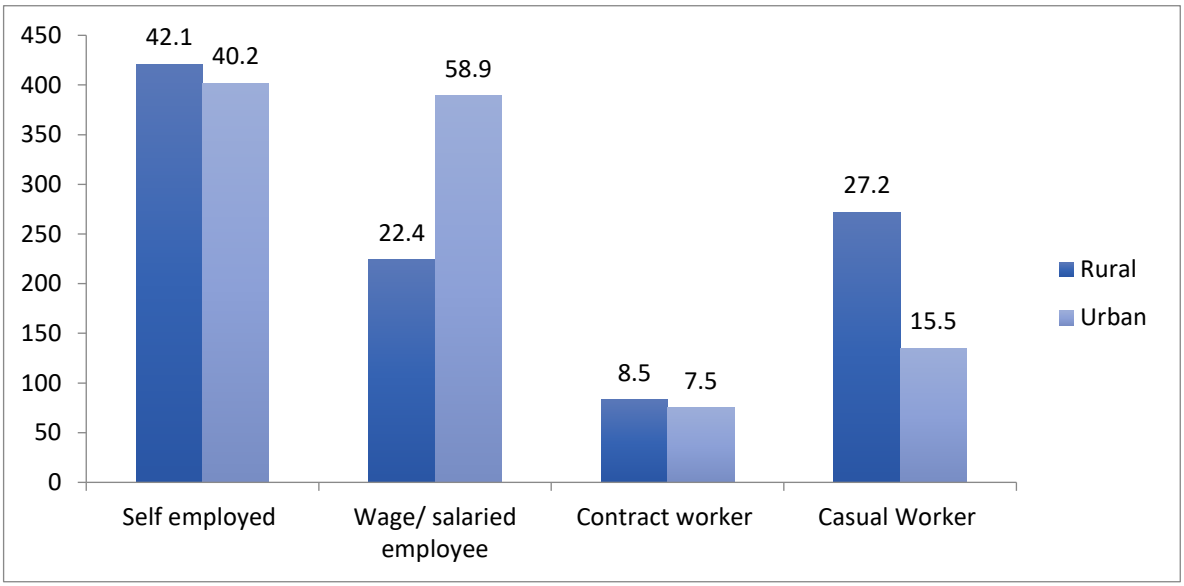
Fig 5.11. Type of employment among the graduates of vocational training



Source: Report on Skill Development and Labour Force, 2015-16

Highest percentages of the graduates of vocational training are self-employed i.e., 41.6 per cent, followed by those who were employed in wage and salaried work. Lowest percentage of vocational training graduate i.e., 8.1. per cent were casual workers.

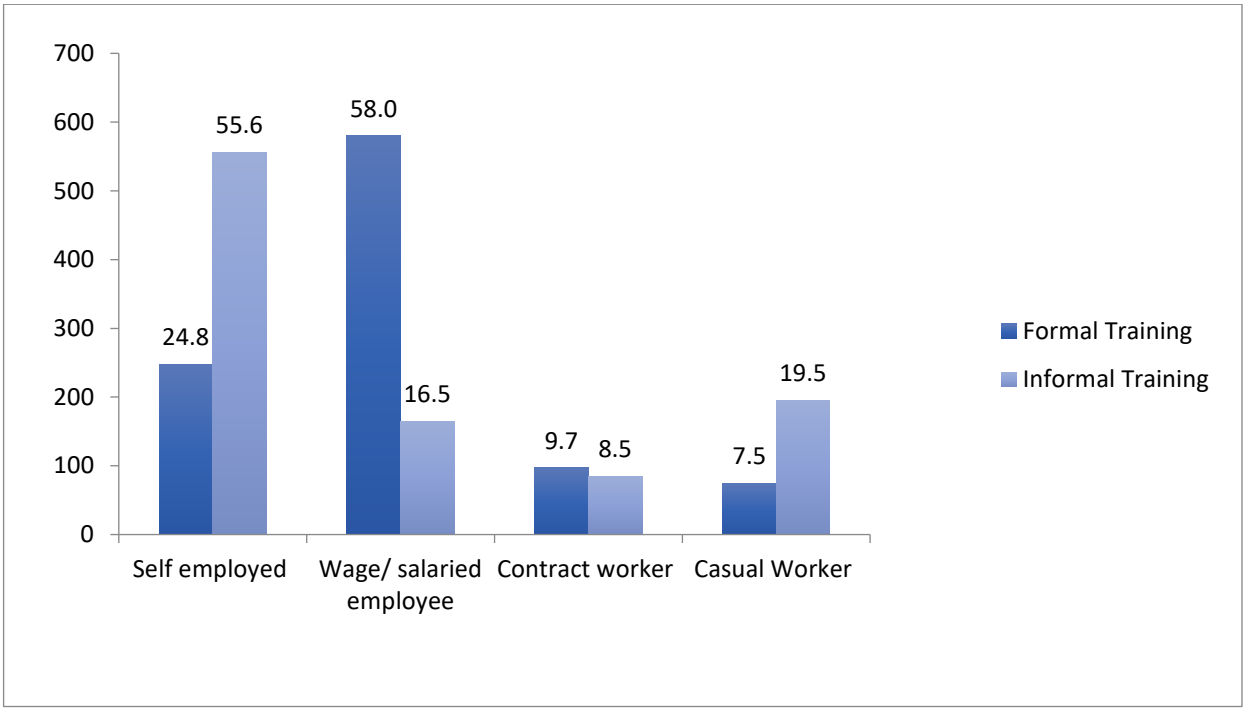
Fig 5.12. Type of employment among vocational training graduates in rural and urban areas.



Source: Report on Skill Development and Labour Force, 2015-16

In rural areas, high percentage of vocational training graduates are self-employed as compared to urban areas. Whereas in urban areas, the percentage of individuals who are salaried employees with vocational training is greater than those from rural areas. Further, the presence of casual workers as well as contract workers with vocational training is higher in rural areas as compared to the urban areas.

Fig 5.13. Type of employment among the informal and formal vocational training graduates

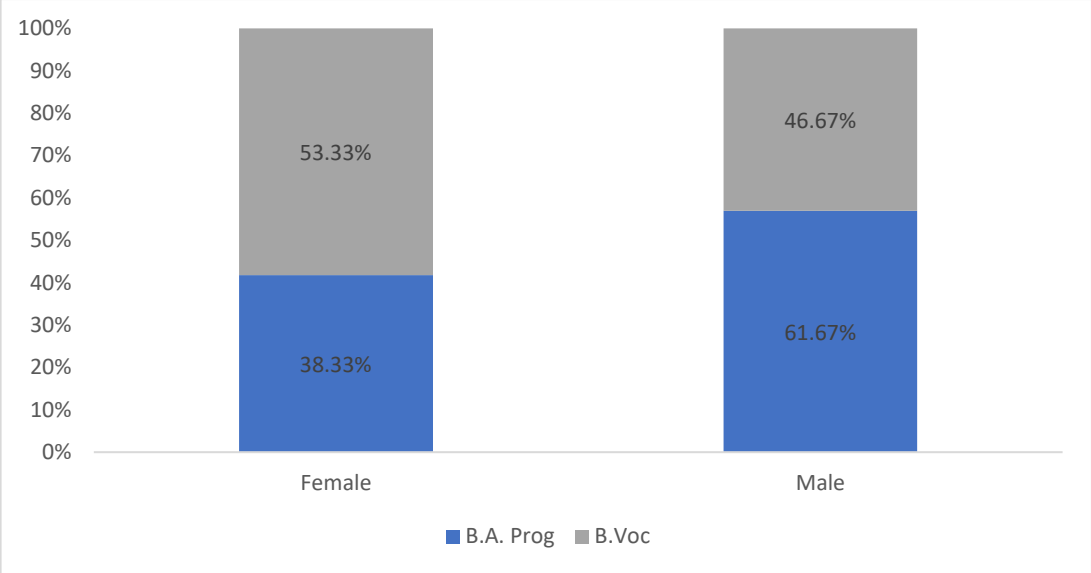


Source: Report on Skill Development and Labour Force, 2015-16

The percentage of individuals with formal training who are salaried employees is higher than those with informal training. Whereas, the percentage of individuals with informal training who are self-employed very high in comparison with those having formal training. Thus, informal training promotes entrepreneurship among individuals as highest numbers of informal training graduates are in self-employment whereas, formal training enables individuals to find salaried employment.

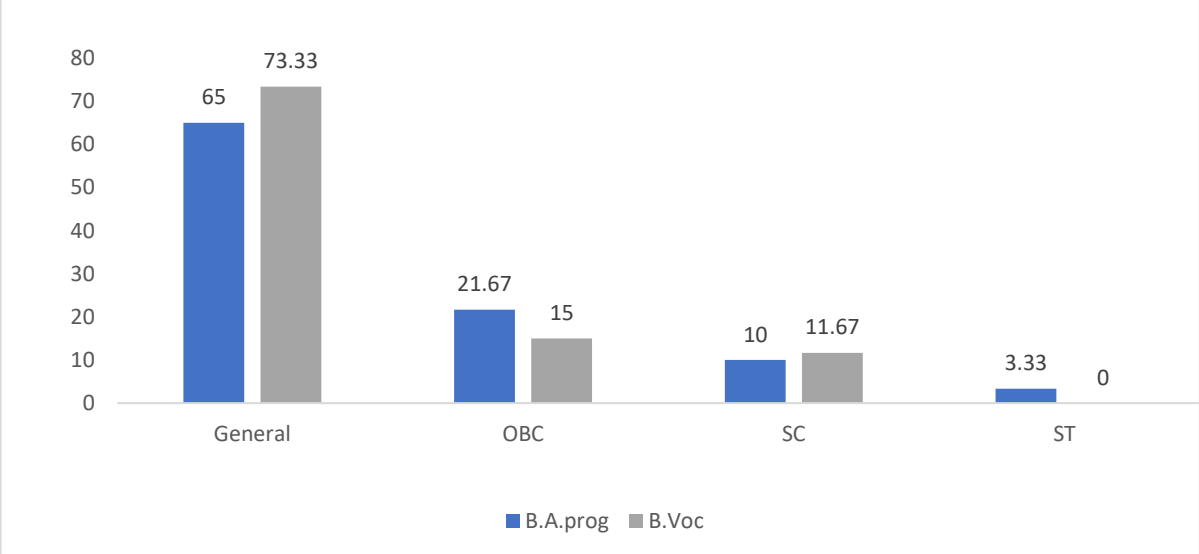
5.3. Analysis of Primary Data

Fig 5.14. Percentage of Graduates by Gender (%)



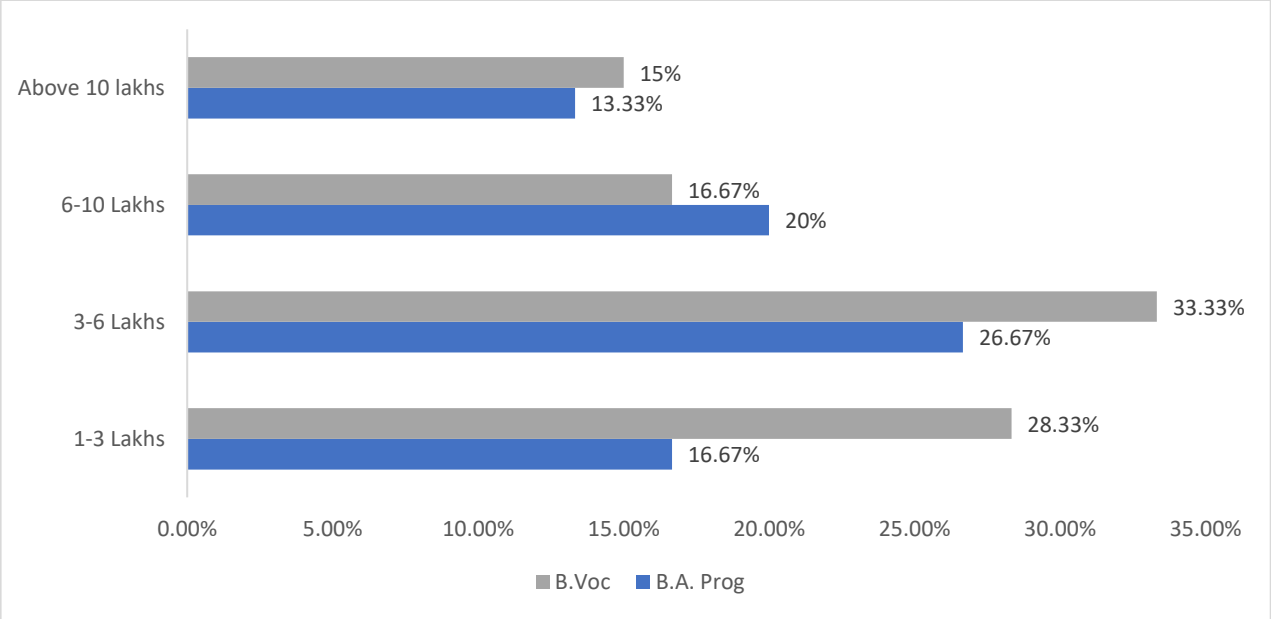
In B.A. prog, more than half i.e. around 62 per cent of the graduates were male whereas remaining 58 per cent were females. On the other hand, in case of B.Voc, around 55 per cent of graduates were females and rest 47 per cent were males.

Fig 5.15. Percentage of Gradates from various categories as per course (%)



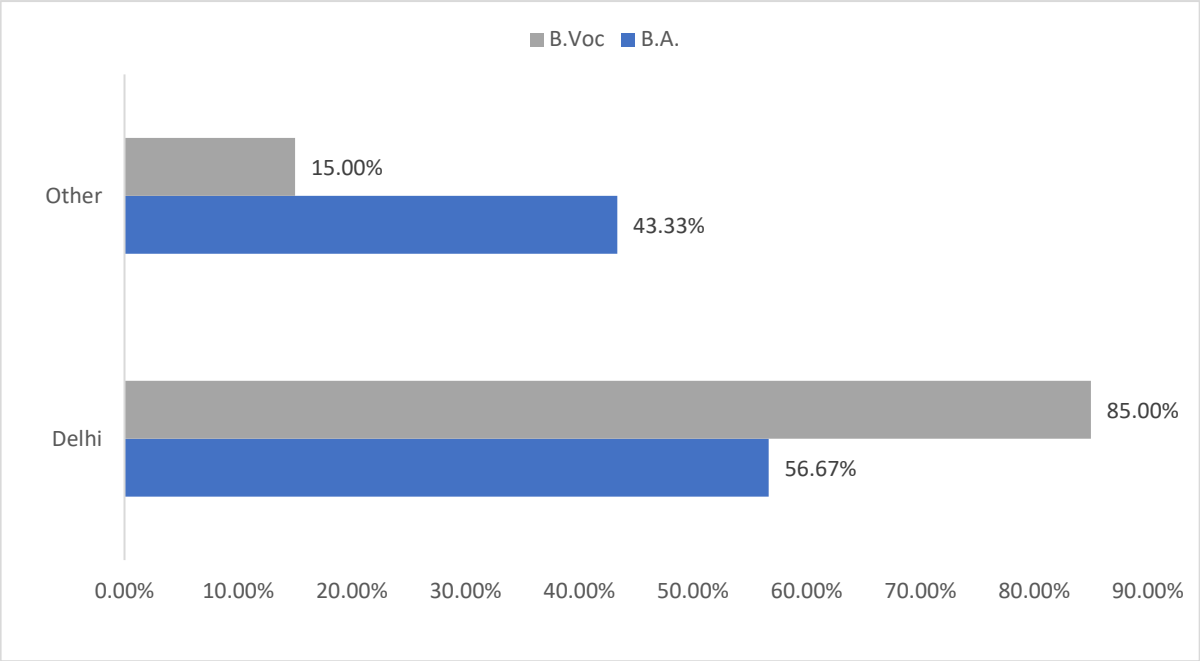
In both the courses, similar pattern of social B.A. prog background of graduates emerged as most of graduates belonged from general category followed by OBC and SC. However, in case of B.Voc, there were no graduate from ST category.

Fig.5.16. Graduates belonging to different financial background as per course (%)



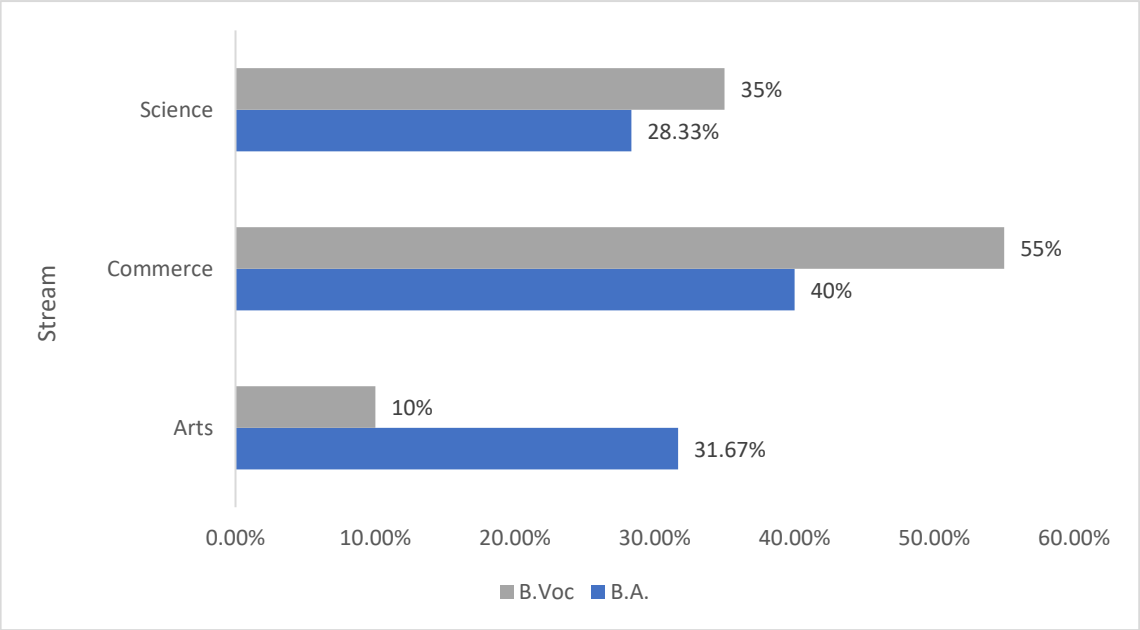
In both the courses, highest percentage of graduates belonged to income group of 5-6 lakhs. However, the percentage of graduates belonging to lowest income group of 1-5 lakh is higher in case of B.Voc than B.A. programme. Similar pattern is observed in case of high income group with annual family income of 10 lakhs and above, wherein the percentage of B.Voc graduates is more than that of B.A. programme.

Fig. 5.17. Domicile of Graduates as per course (%)



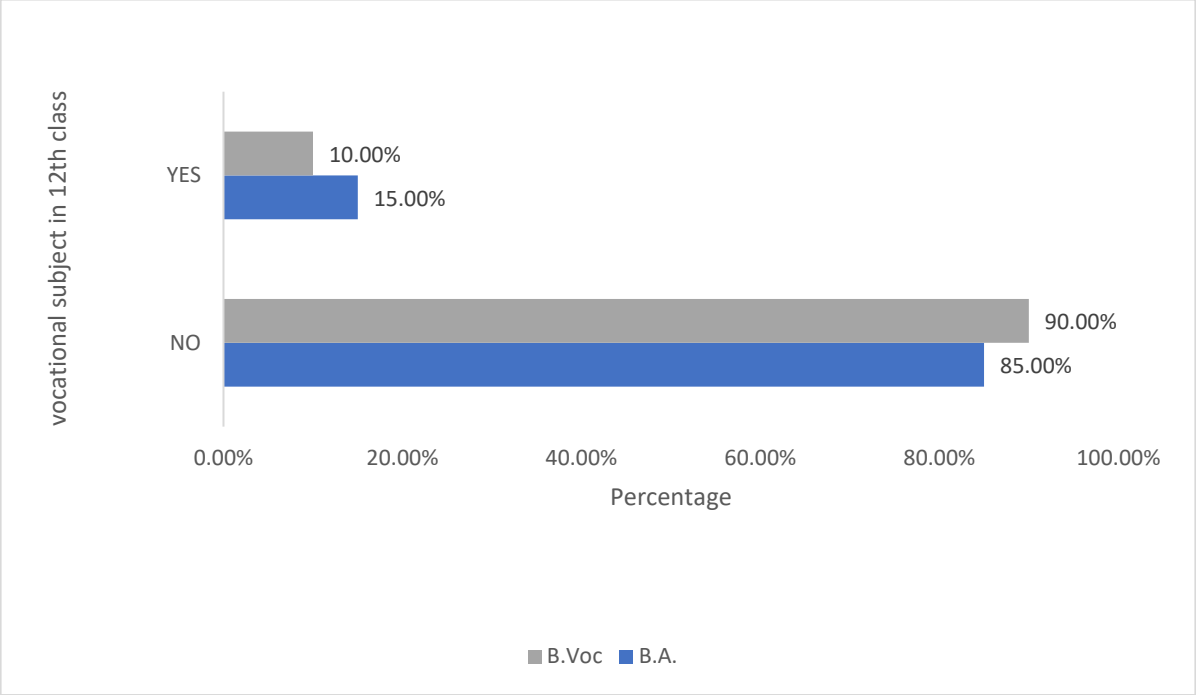
In case of B.Voc, 85 per cent of graduates belonged to Delhi and remaining were from outside Delhi. In case of B.A., around 57 per cent of graduates belonged to Delhi and the rest were from outside Delhi.

5.18. Fig Graduates in various streams as per course (%)



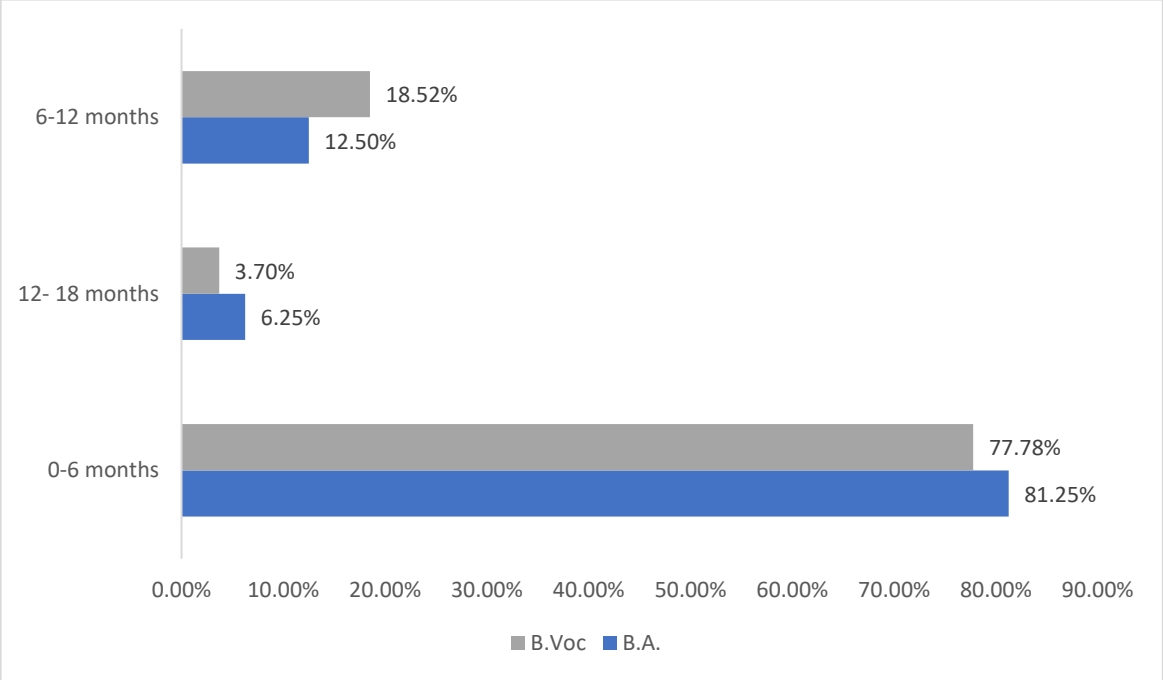
In both B.A. prog and B.Voc, highest percentage of graduates belonged to commerce stream. In case of B.A. graduates with science stream represented the lowest percentage whereas in B.Voc, it was graduates from arts stream.

Fig 5.19. Graduates with vocational subject as per course (%)



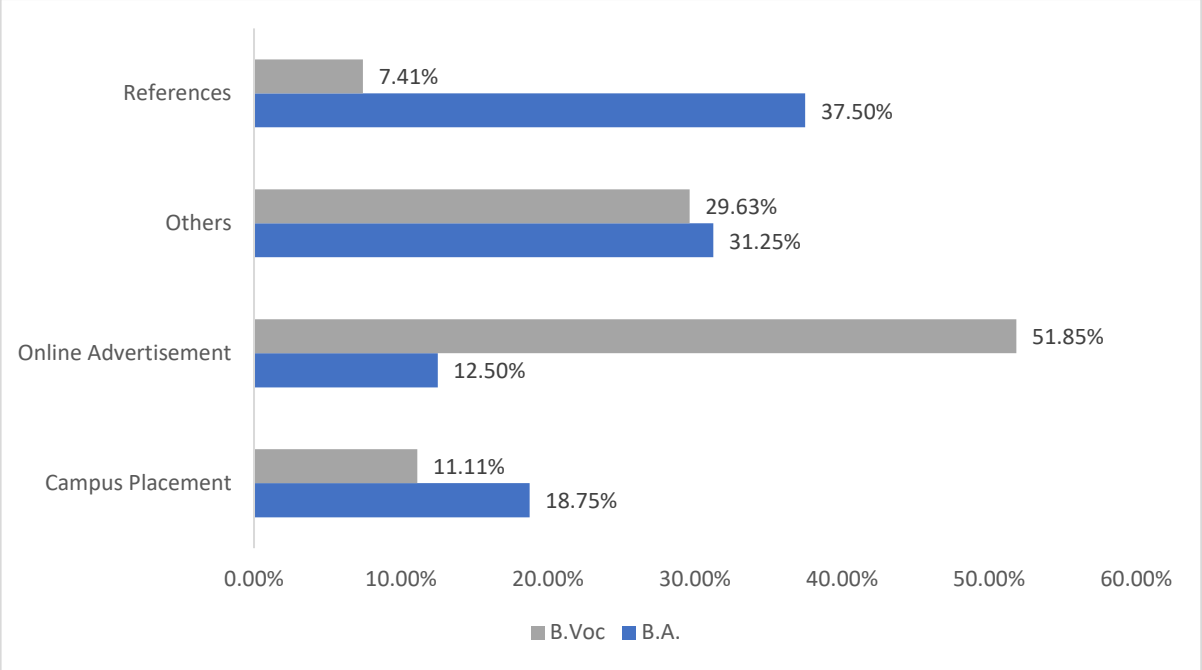
High number of graduates from both B.A. and B.Voc did not have vocational subject in class 12th. However, more higher percentage i.e. 15 per cent of graduates from B.A. had vocational subject against only 10 per cent of B.Voc graduates.

Fig. 5.20. Transition period among the Graduates as per course (%)



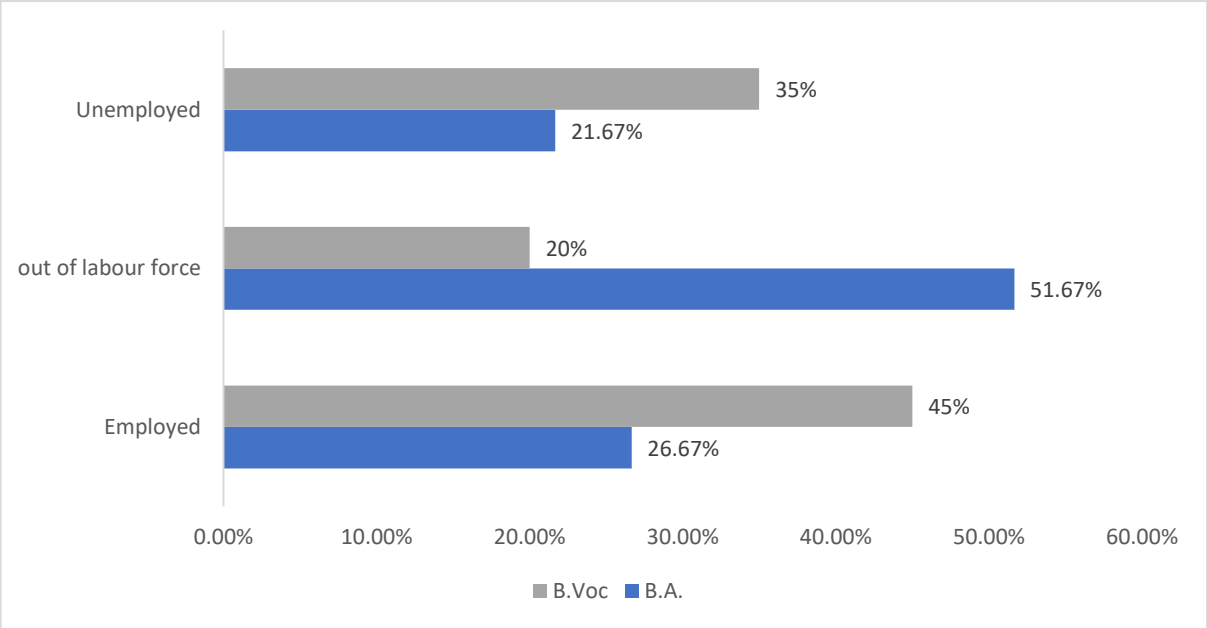
Almost 97 per cent of the employed B.Voc graduates got intital job within one year after compelting their course, whereas in case of B.A. around 94 per cent of employed graduates got their job within a year. Thus, higher percentage of graduates from B.A. waited more than a year to get job as comapred to the B.Voc graduates.

Fig 5.21. Sources of Job Placement as per course (%)



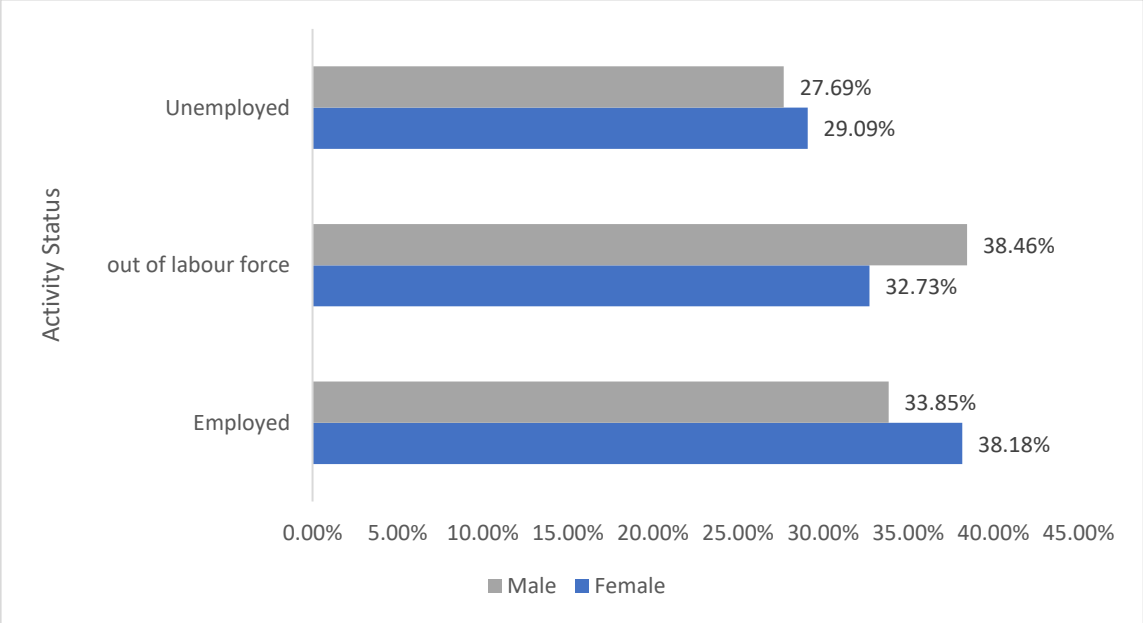
Almost half of the employed graduates from B.Voc got their job through online advertisement. Whereas in case of B.A. references was the most citied source of job placement among the employed graduates.

Fig 5.22. Activity Status among the Graduates as per course (%)



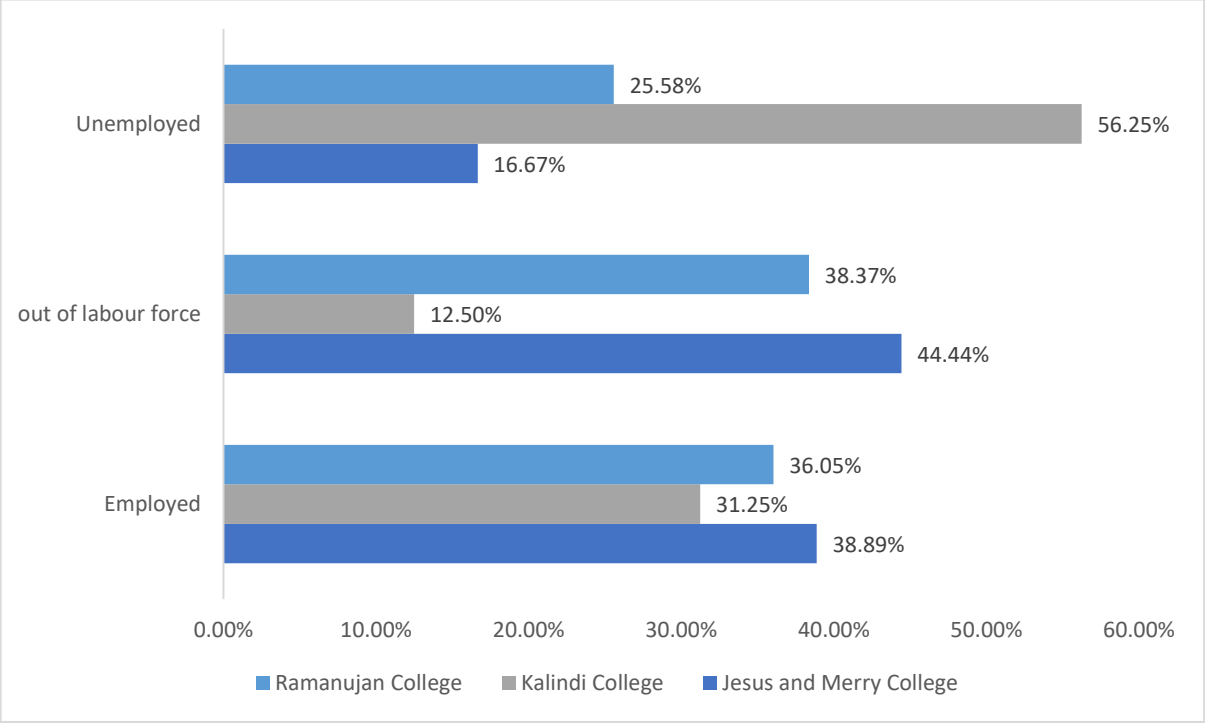
In case of B.Voc, highest percentage of graduates were employed followed by those who are unemployed and graduates under out of labour force comprised of only 20 per cent of the total B.Voc graduates. At the same time, half of the graduates from B.A. were out of labour force followed by employed and unemployed graduates. Thus the employment and unemployment rate was high for the graduates of B.Voc as compared to the B.A. graduates.

Fig 5.23. Activity Status among Graduates as per Gender (%)



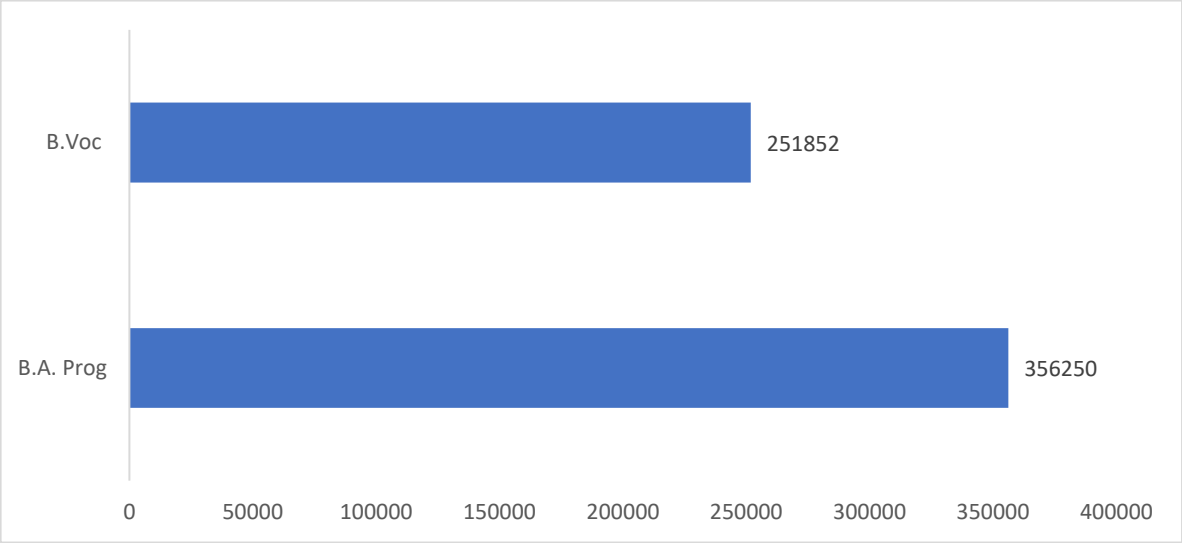
The employment status according to gender reflects that female employment was higher as compared to male employment rate. Ironically, unemployment rate was also higher among the female graduates as compared to male counterpart. However, in case of out of labour force category, males constituted higher per cent than females.

Fig 5.24. Activity Status among Graduates as per College (%)



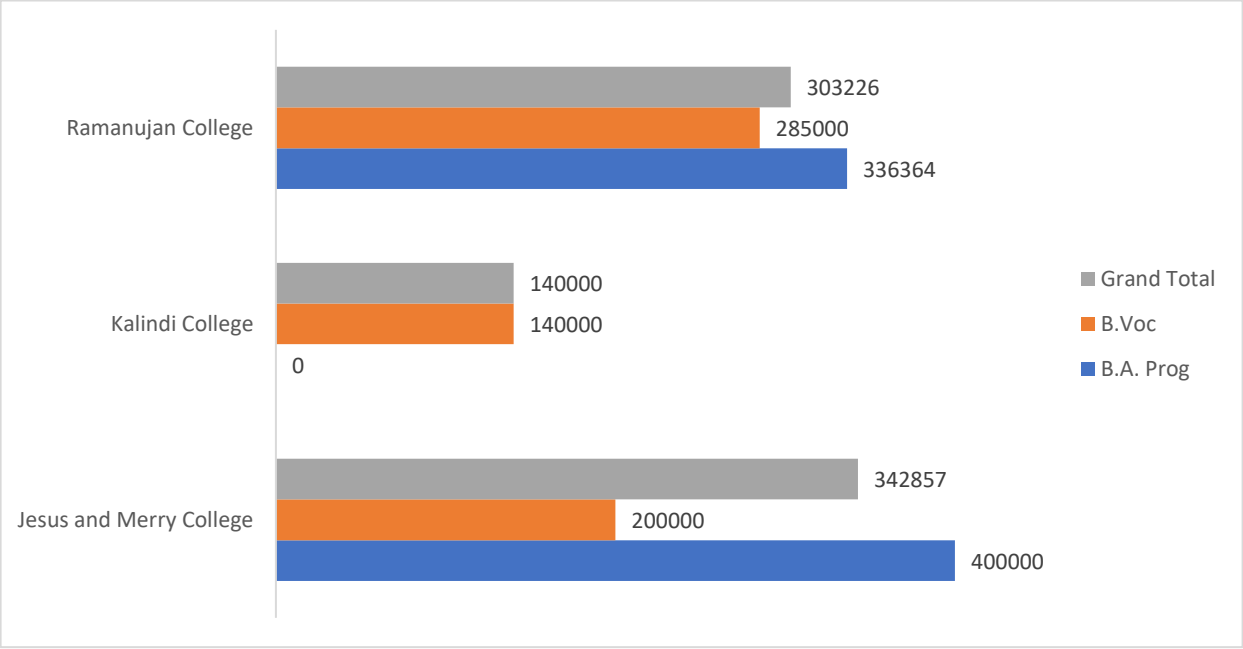
Among the three colleges., the employment rate was highest among the graduates of Jesus and Merry college followed by Ramanujan college and kalinda college. Similarly, the percentage of graduates belonging to out of labour force category was highest in Jesus and Merry college followed by Ramanujan college and kalinda college. Moreover, the unemployment rate was highest among the graduates of kalinda college followed by Ramanujan and Jesus and Merry college.

Fig 5.25. Average Annual Salary among B.Voc and B.A. Graduates



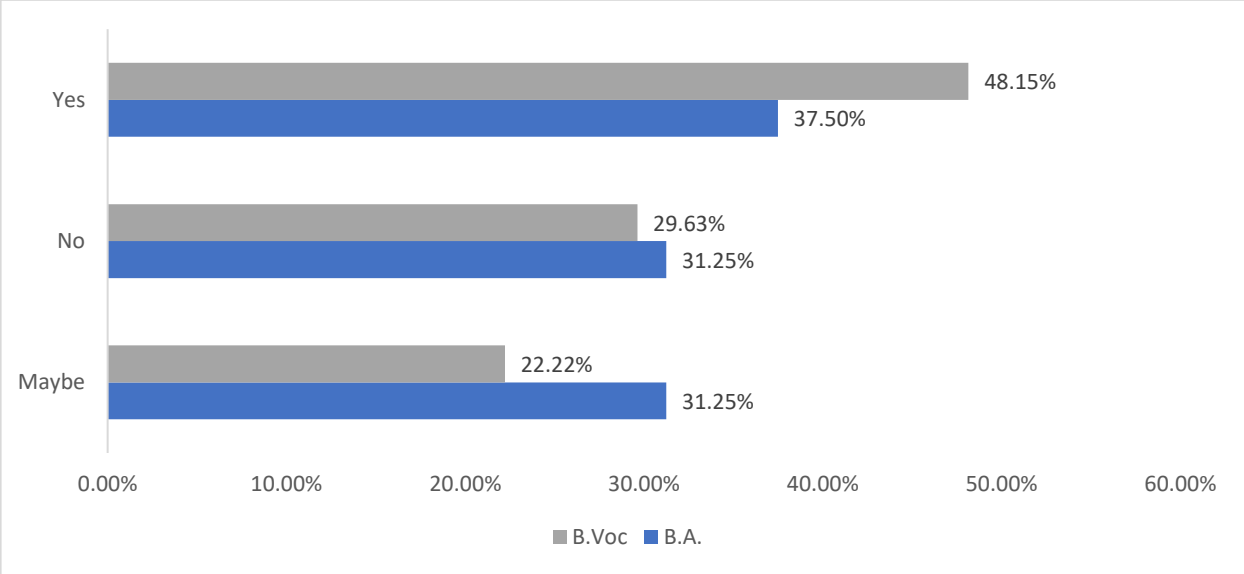
The average annual salary of B.A. graduates is higher than that of B.Voc graduates.

Fig 5.26. Average Annual Salary of B.Voc and B.A. prog Graduates as per college and course



The average annual salary of Jesus and Merry College is highest as compared to the graduates of other colleges. In case of B.Voc, the average annual salary of graduates from Ramanujan College is highest followed by graduates from Jesus and Merry College and Kalindi College. On the contrary, in case of B.A. the average annual salary of graduates from Jesus and Merry College is highest followed by graduates from Ramanujan College.

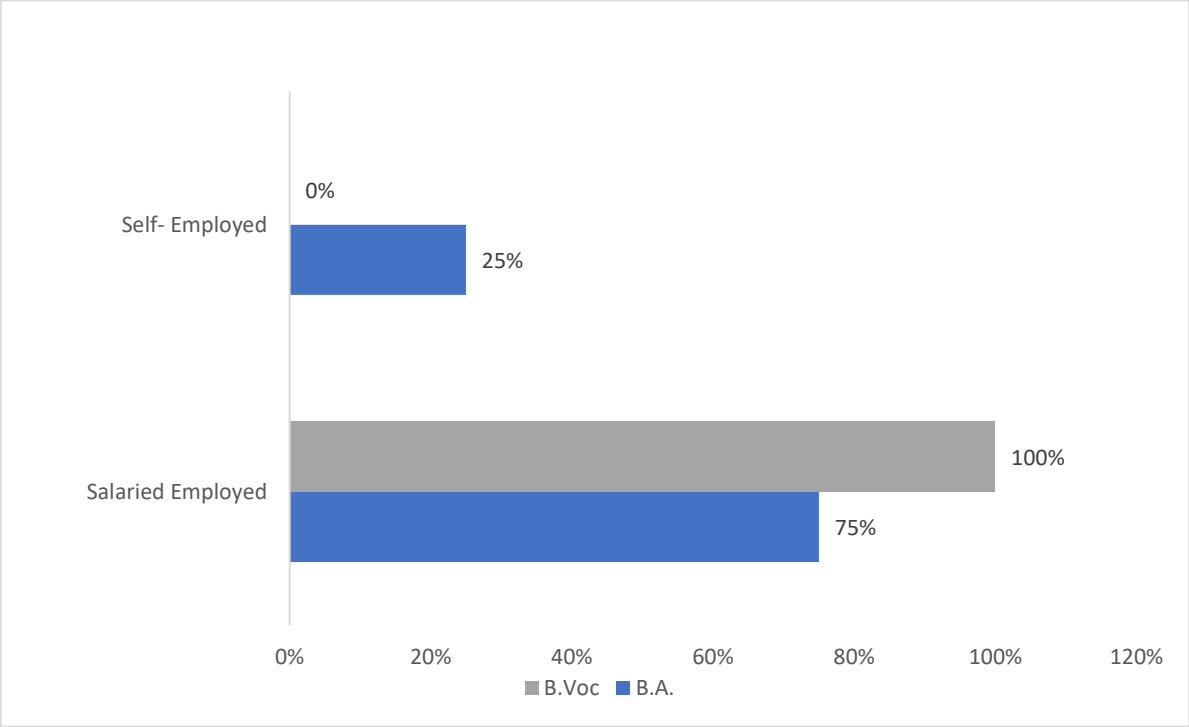
Fig 5.27. Usefulness of Skills and Knowledge as per course (%)



The survey of usefulness of the skills and knowledge revealed that almost half of the employed graduates from B.Voc agreed to the fact that the skills and knowledge received during their undergraduate study were helpful in the actual work settings afterwards. However, in case of B.A. just 58 per cent of employed graduates agreed to the usefulness of skills and knowledge received during their undergraduate study.

Moreover, around 51 percent of employed graduates from B.A. didn't not find the skills and knowledge received during their undergraduate study useful in contrast to around 29 per cent of employed B.Voc graduates.

Fig 5.28. Type of Employment among the Graduates (%)



In case of B.A prog, two third of the employed graduates were engaged in salaried employment whereas 25 per cent of the employed graduates were self-employed. However, in case of B.Voc, all of the employed graduates were salaried employed and none was in any kind of self-employment.

5.4. Conclusion

In this chapter descriptive analysis of primary and secondary data has been done in order to understand various features of vocational education and training vis a vis general education in the country. The analysis suggests that in vocational training, ST and OBC graduates were higher in number whereas in case of vocational and general education, majority of graduates belonged to general and OBC categories. In vocational training and general education, males were in larger number than females but in case of vocational education females graduates outnumbered male graduates. Majority of the

vocational education and training graduates were employed whereas majority of general education graduates were out of labour force. Moreover, employment rate of graduates from rural areas in case of vocational training is higher than the graduates from rural areas. In case of vocational training, employment rate among the men were higher than women whereas among the graduates of vocational education, employment rate among the women is higher than men. The transition period of B.Voc is smaller as compared to transition period of B.A. prog, indicating the better school to work transition in case of B.Voc. In case of vocational training, high percentage of graduates were self-employed followed by salaried employed whereas in case of vocational and general education, majority of the graduates were salaried employed. Further, annual salary of the general education graduates is higher than the vocational education graduates. And most of the graduates from general and vocational education agreed to the usefulness of skills received during undergraduate course in the actual work setting.

Chapter 6

Findings, summary and conclusion

The present chapter is based on the findings of the research. It consists of three parts in which foremost part deals with the findings from the econometrics analysis carried out to answer the research question so as to address individual objective. The second part deals with the summary of findings from both descriptive as well as econometrics analysis. The final part, provides logical conclusion as well as policy recommendations.

6.1. Findings

6.1.1. Descriptive Analysis of Primary Data

The descriptive analysis of the primary data has been done comprehensively in the previous chapter. However, a short summary of descriptive results is presented in the following table. The descriptive analysis of the primary data shows that in B.A. prog., higher percentage of the respondents were male whereas in case of B.Voc, females were marginally higher than the males. The average age of the respondents from both the courses was nearly similar. Nearly half of the respondents from B.A. prog. belonged to Delhi and rest 43.33 per cent were from other states. In B.Voc, significantly high percentage of respondents belonged to Delhi while only 15 per cent were from other states. In both B.A. prog and B.Voc, general category respondents constituted the majority followed by respondents from OBC category. Further, the respondents from ST category were absent in case of B.Voc. Further, in B.A. prog and B.Voc, highest percentage of the respondents had family income ranging from 3 to 6 lakhs.

In both the courses, largest percentage of respondents were from commerce steam followed by humanities and science in case of B.A. prog and B.Voc respectively. Most of the respondents from B.A. prog and B.Voc didn't have vocational subject in grade 12 whereas the percentage of respondents from B.A. prog with vocational subject were surprisingly higher than respondents from B.Voc. In case of average percentage in grade

12, the respondents from B.A. prog. had slightly higher average percentage as compared to the respondents from B.Voc.

The descriptive analysis of the labour market outcomes shows that yearly transition rate of B.Voc graduates is higher than B.A. prog graduates. Further, most of the graduates from B.A. prog got their job through references whereas its online advertisement in case of B.Voc graduates. However, the campus placement is better in case of B.A. prog than B.Voc. In terms of employment status, most of the graduates from the B.Voc courses are employed contrary to B.A. prog., wherein almost half of the graduates are out of labour force. However, surprisingly unemployment rate is also higher in case of B.Voc graduates in comparison to B.A. prog graduates. The monetary return to B.A. prog is higher than B.Voc as the average annual salary of the graduates from B.A. prog is higher than the average annual salary of B.Voc graduates. Contrary to the graduates of B.Voc who are totally engaged in salaried employment, majority of employed graduates from B.A. prog are salaried employed while remaining 25 per cent are self-employed.

Table 6.0. Descriptive Analysis

Variable	B.A. programme	B.Voc
Gender		
Male (%)	61.67	46.67
Female (%)	38.33	53.33
Domicile		
Delhi (%)	56.67	85
Other States (%)	43.33	15
Category		
General (%)	65	73.33
OBC (%)	21.65	15
SC (%)	10	11.67
ST (%)	3.33	-
Stream		
Science (%)	28.33	35
Commerce (%)	40	55

Arts (%)	31.67	10
Family Income		
1-3 lakhs (%)	16.67	28.33
3-6 lakhs (%)	26.67	33.33
6-10 lakhs (%)	20	16.67
Above 10 lakhs (%)	13.33	15
Vocational subject in Grade 12		
Yes (%)	15	10
No (%)	85	90
Mean Percentage in Grade 12	78.57	75.24
Mean Age	22.51	22.53
Transition Rate		
0-6 Months (%)	77.28	81.25
06-12 Months (%)	12.50	18.25
12-18 Months (%)	6.25	3.70
Placement Source		
Campus Placement (%)	18.75	11.11
Online Advertisement (%)	12.50	51.85
References (%)	37.50	7.41
Other Sources (%)	31.25	29.63
Activity/Employment Status		
Employed (%)	26.67	45
Unemployed (%)	21.67	35
Out of Labour Force (%)	51.67	20
Average Annual Salary	356250	251852
Type of Employment		
Self Employed (%)	25	-
Salaried Employed (%)	75	100

Source: Author's calculation from Primary Data

6.1.2 Determinants of Choice of Course

In order to find out the determinants of choice of between general and vocational education, an econometrics analysis has been carried out using binomial logistic regression model. The result of the analysis has been attached in the appendix. However, a summary of the result has been presented in the following table. The model summary (refer to appendix) gives information about pseudo R2 which shows the explained variation. The explained variation in the dependent variable based on our model ranges from 32.4% to 43.2%, depending on the type reference the Cox & Snell R^2 or Nagelkerke R^2 methods. Further, Hosmer and Lemeshow test has the significance > 0.05, thus the model fit is significant**.**

The following table shows that the independent variables namely, domicile, stream, family income, percentage in class 12th added significantly to the model prediction unlike other variables since p value is < 0.05 for these variables. It is observed from the following results that being from commerce and arts streams than science stream increase the odds of receiving B.Voc over B.A. programme by 27.05 and 18.96 times respectively. The coefficient of domicile indicates that the predicted logged odds of choosing B.Voc are lower by 0.15 for graduates belonging to Delhi than other states. The coefficient of family income shows compared to graduates falling in the group of family income of less than 1 lakhs, the log odds of choosing vocational education i.e. B.Voc over B.A. programme are higher by 9.55 in case of graduates belonging to 3-6 lakhs family income category and 5.09 in case of graduates belonging to 6-10 lakhs family income category. The predicted log odds of choosing B.Voc on an average decease by 0.92 with one percent increase in class 12th total percentage. Moreover, the results shows that it cannot be indicated that a graduate having vocational subject in grade 12th is more likely to choose B.Voc over B.A. programme as the coefficient although positive is not statistically significant.

Table 6.2. Odds- ratio estimates of factors predicting participation in Vocational Education in comparison to General Education

S.No.	Variables	Odds- Ratio	P- value
1	Domicile (base- Other States)		
	a) Delhi	0.152	0.002*
2	Stream (Base- Science Stream)		
	b) Commerce Stream	27.054	0.001*
	c) Arts Stream	18.96	0.002*
4	Family Income (Base – Less than 1 lakh		
	d) 3-6 Lakhs	9.553	0.011**
	e) 6-10 Lakhs	5.094	.036**
6	Class 12th Percentage	0.916	.018**

***P< 0.01 **P< 0.05 where *P & **P denotes significance at 1 % and 5 % respectively**

Source: Author's Calculation (refer to Appendix)

6.1.3 Employment Status

In the Multinomial Logistic Model, the traditional .05 criterion of statistical significance was employed for all tests. Addition of predictors to a model with only intercept, significantly improved the fit between model and data, $\chi 2$ (8, N=)= 25.816, Nagelkerke R square = 0.218, p = .011. The likelihood table given in the appendix shows which of the independent variable are statistically significant in the model.

Accordingly, domicile, course type and category are statistically significant variables. As observed from the following table that the odds ratio of being employed than being out of labour force is 4.29 times higher if a graduate belonged to Delhi as compared to graduates from other states. Further, there is 0.26 percent higher chance of graduates from Delhi being employed in the labour market.

In case of social categories, the odds ratio of being employed than being out of labour force is higher for the graduates from ST category as compared to the graduates from other categories. Similarly, as indicated from the marginal effects, the graduates from ST category have higher probability of being employed.

Further, for course type, the odds ratio of being employed than being out of labour force is 3.26 times higher for the graduates from B.Voc than B.A. programme. Moreover, the marginal effects column shows that there are 0.09 percent higher chances of B.Voc graduates being employed in the labour market.

Table 6.3. – Odds- ratio estimates of factors predicting employment status in labour Market vis-à-vis out of labour force

S.No.	Variables	Employed Odds- Ratio	Marginal Effect (dy/dx)	Unemployed Odds- Ratio	Marginal Effect (dy/dx)
1.	Course Type (Base – B.A. Prog)				
	B.Voc	3.263**	0.09	4.651*	0.16
2.	Domicile (Base- others)	4.297**	0.26	1.984	0.01
3.	Category (Base- ST)				
	General	7.76**	-0.14	6.919**	-0.18
	OBC	9.937**	-.024	8.676**	-0.14
	SC	6.228**	-0.17	8.904	-0.20

***P< 0.01 **P< 0.05 where *P & **P denotes significance at 1 % and 5 % respectively**

Source : Author's Calculation (refer to Appendix)

6.1.4 Returns to General and Vocational Education

The following table present the result of Heckman Selection model which shows the impact of course type on annual earnings of the graduates. The coefficient of the course type and gender variable is negative but highly significant. It shows that the graduates from B.A. programme are expected to earn 1,58,643 more annually as compared to the graduates of B.Voc in Delhi university. Similarly if the the graduate is male, then he is expected to receive 1,50,623 more annually as comapred to the female counterpart.

Moreover, moving to selection equation, it shows that how different factors affect the participation of the graduates in labour market. The only significant variable is the domicle which is very low. According to the following table, if a gradute belongs to Delhi, then his participation in the labour market is marginally higher i.e. 0.76 than those who are not from Delhi.

However, it is important to note that the Mills' lambda has been found to be statistically significant which indicates that the income equation and selection equation are not independent of each other and that the use of Heckman two-step model is indeed warranted. Another indication that the income equation and the LFP equation are not independent is that the value of rho which shows the correlation between the error terms of the two equations is very high at 0.75.

Table 6.3. Result of Heckman Two-Step Selection: Impact of Course on Annual Earnings.

Variables	Coefficient	Z- value	P- value
Outcome Equation: Dependent Variable = Annual Income			
Gender (Dummy variable = 1, if Male, O Female	-150634.4	-2.50	0.012**
Course Type (Dummy Variable= 1 if B.Voc, 0 B.A. prog)	-158643	-2.55	0.011**
Constant	302359	1.92	0.055
Selection Equation: Dependent Variable – Labour Force Participation Rate			
Domicile	-0.761	-2.64	0.008*
Family Income	-.0104	-0.98	0.325
Siblings	-0.099	-0.76	0.449
Constant	0.222	0.56	0.574
Rho	0.75149		
Mills Lambda	185936.5	1.19	0.232

***P< 0.01 **P< 0.05 where *P & **P denotes significance at 1 % and 5 % respectively**

Source: Author's Calculation (refer to Appendix)

6.2. Summary

The foremost objective of the present study is to determine the factors affecting the choice between vocational and general education. The results from the econometric analysis using primary data suggests that the variables such as domicile, stream, family income and percentage in class 12^{th} have significant impact on the choice of course between vocational and general education. Thus, it leads to rejection of the null hypothesis that social, economic and individual characteristics have no impact on the choice between general and vocational education. However, it cannot be said concretely that other variables such as social category and presence of vocational subject in grade 12 have impact on the choice of course. Moreover, the impact of stream has the highest impact on the choice of course as having commerce and arts streams is associated with higher chances of choosing vocational course over general at undergraduate level. The effect of domicile on the choice of course is smallest as compared to the other variables such as family income and percentage. The findings shows that the chances of graduates from Delhi choosing Vocational Education is lower than graduates from other states. Moreover, previous studies have also highlighted the impact of gender on the choice of course as being male is associated with higher participation in vocational education and training (Kumar et al., 2019a). The results from the econometric analysis also shows that being male increase the chance of choosing vocational education over general education. However, the result of the variable gender is not statistically significant so such a statement cannot be made with surety.

The other objectives of the present study are to analyze the labour outcome of vocational graduates and compare the same with graduates from general education. In order to fulfill these objectives, comprehensive descriptive analysis followed by econometrics analysis has been carried out. The descriptive analysis suggests that in case of vocational training graduates, higher percentage of individuals were employed. Similarly, the employment rate among the graduates of vocational education is higher than the graduates of general education. This is further supported by the econometric analysis using the multinomial logistic model, which shows that the chances of being employed is higher for the

vocational education graduate than the general education graduate when the control variables namely domicile, category and course are included in the model. Thus, it leads to the rejection of the null hypothesis that the independent or control variables have no effect on the outcome variable. These findings are in tandem with the earlier studies which suggested that the vocational education and training have better economic returns (Ahmed, 2016b; Dey & Devi, 2019; Duraisamy, 2002; Kumar et al., 2019a; Tripney & Hombrados, 2013b). Thus, it suggests that the skills imparted through the vocational education are as per the requirement of the industries and the problem of unemployment is not a serious concern for the vocational education graduates unlike the general education graduates.

Vocational education and training programmes are often considered beneficial for the easy transition to the labour market. The transition rate shows the effectiveness of vocational education and training in smooth education to work transition. The descriptive analysis shows that the transition rate among the graduates of vocational education is higher as compared to the general education graduates. Moreover, higher percentage of general education graduates waited more than a year to get their initial job. Further, the majority of the employed graduates from vocational education got their jobs through online advertisement and only few got jobs their jobs through campus placement. On the contrary, higher percentage the employed graduates of general education got jobs through campus placement. Thus, campus placement has been more beneficial for the graduates from general education than vocational education stream. Moreover, all the employed graduates from vocational education were placed in salaried employment and no one was engaged in any kind of self-employment activity whereas one-fourth of the employed general education graduates were reported to be self-employed. The earlier studies has also highlighted similar trend where vocational training graduates were more likely to join salaried employment and opportunities for self-employment among the vocational training graduates were poor (Ahmed, 2016b; Dey & Devi, 2019).

Wage and salary often referred to as the earnings are one of the most important measure of labour market outcomes. Empirical studies in the past have shown heterogeneity in the

returns to vocational education training in terms of salary and wages with many reporting increase in salary of vocational education and training graduates whereas others deviating from such findings (T. Agrawal, 2012; Dey & Devi, 2019; Kumar et al., 2019a; Malamud & Pop-Eleches, 2010b; Meer, 2007). The descriptive results shows that the average salary of graduates from general education is higher than the average salary of graduates from vocational education. A more detailed econometric analysis was done with controlling for other variable which might affect the returns of the graduates. Moreover, in order to tackle the issue of selectivity, hackman's two step model has been used. The first step result showcasing the factors affecting the participation in the labour market, suggests that graduates belonging to Delhi have marginally higher labour force participation as compared to the graduates belonging to other states. And the second step, conforms to the findings from the descriptive analysis that vocational education leads to lower average annual salary as compared to general education. This result leads to the rejection of the null hypothesis that there is no difference between the earnings of the graduates from vocational and general education. Further, these findings are inconsistent with the majority of earlier studies wherein the returns to education in terms of salary and wages are higher for vocational education and training than general education (T. Agrawal, 2012; Dey & Devi, 2019; Kumar et al., 2019a) . However, few past studies have also observed no improved earnings from vocational education and training (Malamud & Pop-Eleches, 2010b; Meer, 2007). Further, the male graduates are expected to receive higher annual salary as compared to the females. This suggests the possible wage gap despite higher employment rate among the women.

Lastly, higher percentage of vocational education graduates who are currently employed reported to be satisfied with the skills and knowledge imparted during their undergraduate study as compared to the employed graduates from general education.

Thus, it can be concluded that socio-economic characteristics of an individual such as domicile and family income along with individual characteristics namely stream and percentage in grade 12 have impact on the individual's choice between general and vocational education. Moreover, the analysis of labour market outcomes of the vocational

education vis-à-vis general education shows mixed results. On the one hand, choice of vocational education as a graduate degree is associated with higher employment and transition rate in the labour market whereas on the other the average annual income of the vocational education graduates is lower than the graduates from general education.

6.3. Conclusion

The ambitious goal of the government to make India a $5 trillion economy by 2024-25 has necessitated the productive and efficient utilization of the existing labour force in the country. At present, India is on the cusp of demographic dividend as it is home to the world's largest young population with the population below the age of 25 years comprising of around 600 million people (Wheebox, 2020). The availability of large number of young workforce presents unique opportunity to the country in terms of demographic dividend. However, the poor level of skill development in the country has endangered this demographic dividend in the country. Moreover, with emergence of Forth Industrial Revolution i.e. Industry 4.0, the demand for skilled labour force is undergoing continuous changes which has further aggravated the present challenge of skilling large labour force in the country (Chenoy et al., 2019)..

In order to promote skill development so as to address the needs of skilling and re-skilling the huge labour force in the country, the government of India has been working proactively to improve the overall skilling ecosystem in the country. In this direction, the government of India has taken several initiatives for revamping and reforming existing system of vocational education and training in the country which includes newly established Ministry of Skill Development and Entrepreneurship through which government has initiated number of schemes such as Pradhan Mantri Kaushal Vikas Yojana, Skill India Mission, Rozgar Mela and others. Moreover, the newly formulated "New Education Policy, 2020" also reiterates the skill development objective of the government through the target of exposing half of the learners in schools and higher education to the vocational education by 2025 (Ministry of Education , 2020). Further, the government has also initiated programmes for vocational education namely, B.Voc and

M.Voc, with an objective to improve the employment prospects among the graduates at undergraduate and post graduate level through focusing more on the skill than knowledge component. The primary objective of the government through these policy initiatives is to promote skill development among the labour force so as to comprehensively address the issue of skill gap and skill mismatch in the labour market.

However, the important question which arises is how far these policy interventions by the government been successful in addressing the issues related to the skill development in the country? The findings suggests that despite the proactive efforts of the government over the years, the level of skill development among the workforce still remains poor. The latest periodic labor force survey revealed that only 11.3 per cent of the individuals in the age group 15-59 years received vocational training during the year 2018-19 whereas 88.7 per cent did not receive any vocational training. Further, out of the total vocationally trained individuals, only 2.4 per cent received formal training whereas 8.9 per cent received non-formal training (Ministry of Statistics and Programme Implementation , 2018-19). Moreover, those undertaking vocational education and training also suffer from the issue of poor labour market outcomes (Joshi et al., 2014).

In order to comprehensively determine and analysis the labour market outcomes of graduates from vocational education, the present study raised three fundamental questions. The very first question sought to determine the factors which affect the participation in vocational education in comparison to the general education at undergraduate level. The findings shows that factors such as stream, family income, domicile and percentage in class 12^{th} have impact on the choice between vocational and general education programmes at undergraduate level. Second question focused on finding the effect of vocational and general stream on the employability of a graduate. The findings from the study suggests that vocational education is associated with higher chances of being employed as well as unemployed in comparison to being out of labour force. The third question tried to find out the returns to vocational education in comparison to general education. The findings suggests that at undergraduate level, the returns to general education are higher than the vocational education as the graduates

from general education are expected to earn more annually as compared to the graduates from vocational education.

Hence, it can be concluded that despite the robust initiative of the launching graduate programmes in different vocational streams at undergraduate level, the labour market outcomes of graduates from these vocational education courses fails to satisfy the aspiration of these young graduates. However, large number of existing empirical evidences suggests that participation in vocational education and training leads to improved earning as the graduates of vocational education and training are equipped with work specific skills which makes adapting in the actual working condition easier than the graduates of general education (Ahmed, 2016b; Hanushek et al., n.d.; Moenjak & Worswick, 2003a). However, the contrasting findings of the present research points out towards existing loopholes in the effective implementation of the vocational education courses at the undergraduate level. The academia-industry collaboration is one of the important components of the bachelor's degree in vocational education launched by UGC. However, the low level of earning among the graduates from vocational education with more job ready skills than the general education graduates suggest poor industry participation in these courses due to which these graduates are not able to communicate their skills sets to their potential employers and thus are unable to receive monetary returns as per their acquired skills. This also points out towards the possibility of these graduates from vocational streams being employed in domains other than their undergraduate study which leads to less than expected salary. Moreover, the campus placement for the graduates from vocational education is also poor which further adds to the difficulty of finding a job and securing better salary in the labour market.

Therefore, there is a need to address existing challenge to vocationalization comprehensively so as to achieve the objective of skilled labour force in order to ripe the benefits of demographic dividend in the country. However, if the challenges to vocationalization in the country are not addressed effectively it could turn the "demographic dividend" into "demographic disaster".

6.4. Policy Recommendations

The existing system of vocational education and training system suffers not only from quantitative issue in terms of low prevalence of skill education and training among the labour force but also contains number of qualitative issues such as poor infrastructure, lack of qualified trainers, lack of incentives for skill training and others. Thus, the government should move beyond absolute numbers and focus more on addressing these qualitative issues in effective and comprehensive manner.

The government in order to address the issue of low level of prevalence of skill development in the country should focus on the determinants which affects the participation in vocational education. Any further programme for the vocational education and training should be targeted towards the individuals with characteristics which leads to higher participation in these programmes.

Further, the labour market outcomes are important supply side determinants of participation in vocational education and training programmes. Thus, efforts are required to improve the labour market outcomes among the individuals with vocational education and training through improved industry collaboration and campus placement. It is also important to ensure that the graduates with vocational education degrees are getting wages and salary at par with their skill sets. Otherwise, it could cause distress among the graduates. Promoting entrepreneurship among the graduates with vocational education is also required to improve the labour market outcomes. In this direction the government should initiate schemes for providing soft loans and mentorship to these graduates.

6.5. Limitations of the Study

The present study is based on the quantitative research methodology with small sample size. Due to the presence of small sample size, the findings from the study cannot be accurately generalized to the larger population. Moreover, the present study is restricted to determine the supply side factors affecting labour market outcomes of the graduates where demand side factors such as employment growth, gross domestic product and others factors are not included in the study.

6.6. Directions for future research

The future research on labour market outcome of vocational education in comparison to general education should be replicated at a broader level. Further, there are many issues which could not be addressed in the present work which therefore require further research. First, the demand side factors should be added for a comprehensive analysis of the factors affecting labour market outcomes of graduates. Second, an investigation is further required to understand the various causes of the poor labour market outcomes among the graduates from general as well as vocational stream. Third, an analysis into the labour market outcomes of different vocational courses offered at undergraduate level is required to separate the feasible courses from the implausible ones.

Bibliography

3060779_UGC-ANNUAL-REPORT--ENGLISH--2018-19.pdf. (n.d.). Retrieved March 11, 2021, from https://www.ugc.ac.in/pdfnews/3060779_UGC-ANNUAL-REPORT--ENGLISH--2018-19.pdf

Aggarwal, A., Freguglia, R., Johnes, G., & Spricigo, G. (2011). Education and labour market outcomes: Evidence from India. In *Working Papers* (No. 615663; Working Papers). Lancaster University Management School, Economics Department. https://ideas.repec.org/p/lan/wpaper/615663.html

Agodini, R., Uhl, S., & Novak, T. (2004). Factors That Influence Participation in Secondary Vocational Education. MPR Reference No. 8879-400. In *Mathematica Policy Research, Inc.* Mathematica Policy Research, Inc. https://eric.ed.gov/?id=ED518742

Agrawal, R. & Indrakumar. (2014). Role of Vocational Education in Shaping Socio-Economic Landscape in India. *Indian Journal of Industrial Relations*, *49*(3), 483–498. https://www.jstor.org/stable/24546992

Agrawal, T. (2012). Vocational education and training in India: Challenges, status and labour market outcomes. *Journal of Vocational Education & Training*, *64*(4), 453–474. https://doi.org/10.1080/13636820.2012.727851

Ahmed, T. (2016a). Labour market outcome for formal vocational education and training in India: Safety net and beyond. *IIMB Management Review*, *28*(2), 98–110. https://doi.org/10.1016/j.iimb.2016.05.002

Ahmed, T. (2016b). Labour market outcome for formal vocational education and training in India: Safety net and beyond. *IIMB Management Review*, *28*(2), 98–110. https://doi.org/10.1016/j.iimb.2016.05.002

Annual_Report_PLFS_2018_19_HL.pdf. (n.d.). Retrieved April 14, 2021, from http://mospi.nic.in/sites/default/files/publication_reports/Annual_Report_PLFS_2018_19_HL.pdf

Apprenticeship Training | Directorate General of Training. (n.d.). Retrieved February 25, 2021, from https://dgt.gov.in/Apprenticeship_Training

Archer, W., & Davison, J. (2008). *What do employers think and want?* 20.

Becker, G. (1993). Nobel Lecture: The Economic Way of Looking at Behavior. *Journal of Political Economy*, *101*(3), 385–409. https://econpapers.repec.org/article/ucpjpolec/v_3a101_3ay_3a1993_3ai_3a3_3ap_3a385-409.htm

Becker, G. S. (1993). *Human capital: A theoretical and empirical analysis, with special reference to education* (3rd ed). The University of Chicago Press.

Benhabib, J., & Spiegel, M. M. (1994). The role of human capital in economic development evidence from aggregate cross-country data. *Journal of Monetary Economics*, *34*(2), 143–173. https://doi.org/10.1016/0304-3932(94)90047-7

Burgess, S. (2016). Human Capital and Education: The State of the Art in the Economics of Education. In *IZA Discussion Papers* (No. 9885; IZA Discussion Papers). Institute of Labor Economics (IZA). https://ideas.repec.org/p/iza/izadps/dp9885.html

Chenoy, D., Ghosh, S. M., & Shukla, S. K. (2019). Skill development for accelerating the manufacturing sector: The role of 'new-age' skills for 'Make in India.' *International Journal of Training Research*, *17*(sup1), 112–130. https://doi.org/10.1080/14480220.2019.1639294

Chowdhury, S. R. (2014). Skill Mismatches in Indian Labor Market: Policy Priorities & Challenges Ahead. *Indian Journal of Industrial Relations*, *49*(3), 422–438. https://www.jstor.org/stable/24546988

Chowdhury, S. R. (2020). *Skill Mismatches in Indian Labor Market: Policy Priorities & Challenges Ahead*. 18.

Chunyang, J. (n.d.). *Study on Measures of Improving the Attraction of Vocational Education: [1] Reflection Based on Foster's "Vocational School Fallacy."* 8.

Craftsmen Training Scheme(CTS) | Directorate General of Training. (n.d.). Retrieved February 25, 2021, from https://dgt.gov.in/CTS

Curtis, D. D., Australian Council for Educational Research, Longitudinal Surveys of Australian Youth (Program), Australia, & Department of Education, S., and Training. (2008). *VET pathways taken by school leavers*. Australian Council for Educational Research.

Dasra. (n.d.). Leveragin the Divident- Enhancing Employability in India.

Dev, S. M. (2018). Labour Market Inequalities in India: Dimensions and Policies. *Indian Journal of Human Development*, *12*(2), 217–235. https://doi.org/10.1177/0973703018791386

Dey, S., & Devi, P. (2019). Impact of TVET on Labour Market Outcomes and Women's Empowerment in Rural Areas: A Case Study from Cachar District, Assam. *Indian Journal of Human Development*, *13*(3), 357–371. https://doi.org/10.1177/0973703019895232

Duraisamy, P. (2002). Changes in returns to education in India, 1983-94: By gender, age-cohort and location. *Economics of Education Review*, *21*(6), 609–622. https://ideas.repec.org/a/eee/ecoedu/v21y2002i6p609-622.html

El-Hamidi, F. (2006). General or Vocational Schooling? Evidence on School Choice, Returns, and “Sheepskin” Effects from Egypt 1998. *The Journal of Policy Reform*, *9*(2), 157–176. https://doi.org/10.1080/13841280600772861

Eric A. Hanushek, Ludger Woessmann,Lei Zhang. (2011). *General Education, Vocational Education, and Labor-Market Outcomes over the Life-Cycle*. 52.

Fajaryati, N., Budiyono, Akhyar, M., & Wiranto. (2020). The Employability Skills Needed To Face the Demands of Work in the Future: Systematic Literature Reviews. *Open Engineering*, *10*(1), 595–603. https://doi.org/10.1515/eng-2020-0072

Fasih, T. (2008). *Linking education policy to labor market outcomes*. World Bank.

Felipe, J. (2018). *Asia**s Industrial Transformation: The Role of Manufacturing and Global Value Chains (Part 1* (0 ed., ADB Economics Working Paper Series) [ADB Economics Working Paper Series]. Asian Development Bank. https://doi.org/10.22617/WPS189457-2

Fersterer, J., Pischke, J.-S., & Winter-Ebmer, R. (2008). Returns to Apprenticeship Training in Austria: Evidence from Failed Firms*. *Scandinavian Journal of Economics*, *110*(4), 733–753. https://doi.org/10.1111/j.1467-9442.2008.00559.x

Golsteyn, B. H. H., & Stenberg, A. (2017). Earnings over the Life Course: General versus Vocational Education. *Journal of Human Capital*, *11*(2), 167–212. https://doi.org/10.1086/691798

Gopanapalli, S. M. (2019). Vocational training in India: determinants of participation and effect on wages. *Springer.*

Grootaert, C. (1990). Returns to formal and informal vocational education in Côte d’Ivoire: The role of the structure of the labor market. *Economics of Education Review*, *9*(4), 309–319. https://doi.org/10.1016/0272-7757(90)90013-U

Guidelines for recognition of Centre of Excellence in skilling ecosystem..pdf. (n.d.). Retrieved May 3, 2021, from https://www.msde.gov.in/sites/default/files/2019-09/Guidelines%20for%20recognition%20of%20Centre%20of%20Excellence%20in%20skilling%20ecosystem..pdf

Gustman, A. L., & Steinmeier, T. L. (1982). The Relation between Vocational Training in High School and Economic Outcomes. *Industrial and Labor Relations Review*, *36*(1), 73–87. JSTOR. https://doi.org/10.2307/2522294

Gylfason, T. (2001). Natural resources, education, and economic development. *European Economic Review*, *45*(4–6), 847–859. https://doi.org/10.1016/S0014-2921(01)00127-1

Hajela, R. (n.d.). *Shortage of Skilled Workers: A Paradox of the Indian Economy*. 30.

Hanushek, E. A., & Kimko, D. D. (2000). Schooling, Labor-Force Quality, and the Growth of Nations. *American Economic Review*, *90*(5), 1184–1208. https://doi.org/10.1257/aer.90.5.1184

Hanushek, E. A., Woessmann, L., & Zhang, L. (n.d.). *General Education, Vocational Education, and Labor-Market Outcomes over the Life-Cycle*. 52.

Heckman, J., Lochner, L., & Todd, P. (2003). *Fifty Years of Mincer Earnings Regressions* (No. w9732; p. w9732). National Bureau of Economic Research. https://doi.org/10.3386/w9732

Heckman, J., & Polachek, S. (1974). Empirical Evidence on the Functional Form of the Earnings-Schooling Relationship. *Journal of the American Statistical Association*, *69*(346), 350–354. https://doi.org/10.1080/01621459.1974.10482952

Hendricks, L. (2002). How Important Is Human Capital for Development? Evidence from Immigrant Earnings. *American Economic Review*, *92*(1), 198–219. https://doi.org/10.1257/000282802760015676

Hotchkiss, L. (1993). Effects of Training, Occupation, and Training-Occupation Match on Wage. *The Journal of Human Resources*, *28*(3), 482–496. JSTOR. https://doi.org/10.2307/146156

IBEF. (n.d.). *Role-of-Manufacturing-in-Employment-Generation-in-India.pdf*. Retrieved July 27, 2020, from https://www.ibef.org/download/Role-of-Manufacturing-in-Employment-Generation-in-India.pdf

International Labour Office. (2016). Key Indicators of the Labour Market.

ISR_Report_2020.pdf. (n.d.). Retrieved February 22, 2021, from https://wheebox.com/assets/pdf/ISR_Report_2020.pdf

Izushi, H., & Huggins, R. (n.d.). *Empirical analysis of human capital development and economic growth in European regions*. 50.

Jain, B. (1992). Vocational Education in India: Problems and Policies. *Indian Journal of Industrial Relations*, *28*(1), 25–36. https://www.jstor.org/stable/27767229

Jain, T., Maitra, P., & Mani, S. (2019). Barriers to skill acquisition: Evidence from English training in India. *World Development*, *114*, 314–325. https://doi.org/10.1016/j.worlddev.2018.10.011

Jayan Jose Thomas. (2018). Economic Growth without Employment: The Story of Indian Manufacturing. In *Indian Economy Since Independence* (39th ed.).

Joshi, S., Pandey, G., & Sahoo, B. (2014). *Comparing Public and Private Vocational Training Providers* (pp. 86–128). https://doi.org/10.1093/acprof:oso/9780199452774.003.0003

Juster, F. T., & Beaton, A. E. (1974). *Education, income, and human behavior*. McGraw-Hill.

Kapila, U. (2018). *Indian Economy Since Independence* (29th ed.). Academic Foundation.

Kaushik, M. K. (n.d.). *Vocational Education in India*. 4.

K.S. Rao, Shachi Joshi, A.K. Mathur, Bimal K. Sahoo. (2014). The Vocational Training System: A Learner's Perspective. In *India's Skill Challenge*.

Kumar, R., Mandava, S., & Gopanapalli, V. S. (2019a). Vocational training in India: Determinants of participation and effect on wages. *Empirical Research in Vocational Education and Training*, *11*(1), 3. https://doi.org/10.1186/s40461-019-0078-y

Kumar, R., Mandava, S., & Gopanapalli, V. S. (2019b). Vocational training in India: Determinants of participation and effect on wages. *Empirical Research in Vocational Education and Training*, *11*(1), 3. https://doi.org/10.1186/s40461-019-0078-y

Kumar, R., Mandava, S., & Gopanapalli, V. S. (2019c). Vocational training in India: Determinants of participation and effect on wages. *Empirical Research in Vocational Education and Training*, *11*(1), 3. https://doi.org/10.1186/s40461-019-0078-y

Lavrijsen, J., & Nicaise, I. (2017). Returns on vocational education over the life cycle: Between immediate labour market preparation and lifelong employability. *International Review of Education*, *63*(2), 257–280. https://doi.org/10.1007/s11159-017-9630-9

Lindahl, M., & Krueger, A. B. (2001). Education for Growth: Why and for Whom? *Journal of Economic Literature*, *39*(4), 1101–1136. https://ideas.repec.org/a/aea/jeclit/v39y2001i4p1101-1136.html

Malamud, O., & Pop-Eleches, C. (2010a). GENERAL EDUCATION VERSUS VOCATIONAL TRAINING: EVIDENCE FROM AN ECONOMY IN TRANSITION. *The Review of Economics and Statistics*, *92*(1), 43–60. JSTOR.

Malamud, O., & Pop-Eleches, C. (2010b). General Education versus Vocational Training: Evidence from an Economy in Transition. *The Review of Economics and Statistics*, *92*(1), 43–60. https://econpapers.repec.org/article/tprrestat/v_3a92_3ay_3a2010_3ai_3a1_3ap_3a43-60.htm

Mathur, A. K., Sharma, S. K., & Saha, P. (n.d.). The Vocational Training System: Learner's Perspective. In *India's Skills Challenge*. Oxford University Press. Retrieved April 15, 2021, from https://oxford.universitypressscholarship.com/view/10.1093/acprof:oso/9780199452774.001.0001/acprof-9780199452774-chapter-5

Mazumdar, S. (n.d.). *Growth and Structural Changes in Output in India since Independence: A Study Report*. 87.

Meer, J. (2007). Evidence on the returns to secondary vocational education. *Economics of Education Review*, *26*(5), 559–573. https://doi.org/10.1016/j.econedurev.2006.04.002

Mehrotra, S. (2014). Quantity & Quality: Policies to Meet the Twin Challenges of Employability in Indian Labor Market. *Indian Journal of Industrial Relations*, *49*(3), 367–377. https://www.jstor.org/stable/24546983

Mehrotra, S., Gandhi, A., Saha, P., & Sahoo, B. K. (n.d.). *Joblessness and Informalization: Challenges to Inclusive Growth in India*. 22.

Mehrotra, S., & Ghosh, D. (2014). International experience with national training funds lessons for India. *Economic and Political Weekly*, 77–85.

Mehrotra, S., Raman, R., Kumra, N., & Röß, D. (n.d.). *Vocational Education and Training Reform in India*. 60.

Ministry of Education . (2020). *New Education Policy*. Ministry of Human Resource and Development.

Ministry of Skill Development and Entrepreneuship . (2015). *National Policy For Skill Development and Entrepreneuship* . Ministry of Skill Development and Entrepreneuship.

Ministry of Skill Development and Entreprenuership . (2019-20). *Annual Report* . Ministry of Skill Development and Entreprenuership.

Ministry of Statistics and Programme Implementation . (2018-19). *Annual Periodic Labour Force Survey*. National Statistical Office .

Moenjak, T., & Worswick, C. (2003a). Vocational education in Thailand: A study of choice and returns. *Economics of Education Review*, 9.

Moenjak, T., & Worswick, C. (2003b). Vocational education in Thailand: A study of choice and returns. *Economics of Education Review*, *22*(1), 99–107. https://doi.org/10.1016/S0272-7757(01)00059-0

Mouzakitis, G. S. (2010). The role of vocational education and training curricula in economic development. *Procedia - Social and Behavioral Sciences*, *2*(2), 3914–3920. https://doi.org/10.1016/j.sbspro.2010.03.616

NEP_Final_English_0.pdf. (n.d.). Retrieved March 6, 2021, from https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

Nigam, D., Ganesh, M. P., & Rana, S. (n.d.). REVIEW OF THE EXPANSION OF HIGHER EDUCATION IN INDIA: CARDINAL CONCERNS IN THE TRAVERSE. *Journal of Critical Reviews*, 6.

Nss_report_no_566_21sep15_0.pdf. (n.d.). Retrieved May 12, 2021, from http://mospi.nic.in/sites/default/files/publication_reports/nss_report_no_566_21sep15_0.pdf

Oosterbeek, H., & Webbink, D. (2007). Wage effects of an extra year of basic vocational education. *Economics of Education Review*, *26*(4), 408–419. https://doi.org/10.1016/j.econedurev.2006.07.013

Ozturk, I. (2008). The Role of Education in Economic Development: A Theoretical Perspective. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1137541

Paul Comyn. (2020). *Linking Employment Services, Skills Development & Labor Market Needs: Issues for India*. 12.

Pilz, M., & Regel, J. (2021). Vocational Education and Training in India: Prospects and Challenges from an Outside Perspective. *Margin: The Journal of Applied Economic Research*, *15*(1), 101–121. https://doi.org/10.1177/0973801020976606

PMKVY 2.0 Impact Evaluation Report – Executive Summary.pdf. (n.d.). Retrieved May 4, 2021, from https://skillsip.nsdcindia.org/sites/default/files/kps-document/PMKVY%202.0%20Impact%20Evaluation%20Report%20%E2%80%93%20Executive%20Summary.pdf

Policy_1986_eng.pdf. (n.d.). Retrieved May 12, 2021, from http://psscive.ac.in/assets/documents/Policy_1986_eng.pdf

Prateek Kukreja. (2018, September). *Skill Mismatch and Returns to Education in Manufacturing: A Case of India's Textile and Clothing Industry*. https://icrier.org/pdf/Working_Paper_364.pdf

Psacharopoulos, G. (1985). Returns to Education: A Further International Update and Implications. *The Journal of Human Resources*, *20*(4), 583. https://doi.org/10.2307/145686

Psacharopoulos, G., & Patrinos, H. (1993). Secondary Vocational Education and Earnings in Latin America. *Journal of Vocational Education & Training*, *45*, 229–238. https://doi.org/10.1080/0305787930450304

Psacharopoulos, G., & Patrinos, H. A. (2018). Returns to investment in education: A decennial review of the global literature. *Education Economics*, *26*(5), 445–458. https://doi.org/10.1080/09645292.2018.1484426

Rao, K. S., Sahoo, B., & Ghosh, D. (2014). *The Indian Vocational Education and Training System* (pp. 37–85). https://doi.org/10.1093/acprof:oso/9780199452774.003.0002

Report-Education and National Development-Vol-4-Planning, Administration, Finance.pdf. (n.d.). Retrieved May 12, 2021, from http://14.139.60.153/bitstream/123456789/186/1/Report-Education%20and%20National%20Development-Vol-4-Planning%2C%20Administration%2C%20Finance.pdf

Santosh Mehrotra, Ankita Gandhi, Bimal K Sahoo. (2013). *Estimating India's skill gap on a realistic basis for 2022*. ResearchGate. https://www.researchgate.net/publication/295598089_Estimating_India's_skill_gap_on_a_realistic_basis_for_2022

Schultz, T. W. (1961). Investment in Human Capital. *The American Economic Review*, *51*(1), 1–17. JSTOR.

Sengupta, A. (2017). *Mismatch between Skills and Jobs in Indian Labour Market During the Post-Reform Era: Estimates with Unit Level Data*. 31.

Shachi Joshi, Gayatri Pandey, Bimal K. Sahoo. (2014). Comparing Public and Private Vocational Training Providers. In *India's Skill Challenge*.

Sharma, T. P. (2018). Labour and Employment in Fat Growing India- Issues of Employment and Inclusiveness. In U. Kapila, *Inidan Economy Since Independence* (pp. 437-468). Academic Foundation.

Sheikh, Y. A. (2017). Higher Education in India: Challenges and Opportunities. *Journal of Education and Practice*, 4.

Singh, M. (2020). *Combining Work and Learning in the Informal Economy: Implications for Education, Training and Skills Development*. 23.

Sodhi, J. S. (2014). A Study of Skill Gaps in the Informal Sector. *Indian Journal of Industrial Relations*, *49*(3), 456–470. https://www.jstor.org/stable/24546990

Sodhi, J. S. (2020). *A Study of Skill Gaps in the Informal Sector*. 16.

Srivastava, D. A. (2012). *Skills for Employability: South Asia*. 62.

Tanima Banerjee. (2016). *Impacts of Vocational Education and Training on Employment and Wages in India Manufacturing Industries*.

Thomas, J. J. (2014). *The Demographic Challenge and Employment Growth in India*. *6*, 3.

Thomas, J. J. (2017). Economic growth without employment: The story of Indian manufacturing. In *Employment Policy in Emerging Economies* (pp. 83–101). Routledge. https://doi.org/10.4324/9781315688329-5

Tilak, J. B. G. (1988a). Vocational education in south Asia: Problems and prospects. *International Review of Education*, *34*(2), 244–257. https://doi.org/10.1007/BF01874549

Tilak, J. B. G. (1988b). Vocational education in south Asia: Problems and prospects. *International Review of Education, 34*(2), 244–257. https://doi.org/10.1007/BF01874549

Tripney, J. S., & Hombrados, J. G. (2013a). Technical and vocational education and training (TVET) for young people in low- and middle-income countries: A systematic review and meta-analysis. *Empirical Research in Vocational Education and Training*, *5*(1), 3. https://doi.org/10.1186/1877-6345-5-3

Tripney, J. S., & Hombrados, J. G. (2013b). Technical and vocational education and training (TVET) for young people in low- and middle-income countries: A systematic review and meta-analysis. *Empirical Research in Vocational Education and Training*, *5*(1), 3. https://doi.org/10.1186/1877-6345-5-3

Trostel, P. A. (2005). Nonlinearity in the Return to Education. *Journal of Applied Economics*, *8*(1), 191–202. https://doi.org/10.1080/15140326.2005.12040624

Trostel—2005—Nonlinearity in the Return to Education.pdf. (n.d.). Retrieved May 8, 2021, from https://www.tandfonline.com/doi/pdf/10.1080/15140326.2005.12040624

T.S. Papola and Alakh N. Sharma. (2018). Labour and Employment in Fast Growing India: Issues of employment and inclusiveness. In *Indian Economy Since Independence* (29th ed.).

UGC ANNUAL REPORT 2016-17-English.pdf. (n.d.).

UGC. (2018-19). Annual Report. *University Grant Commission*.

UNESCO. (2018). *Challenges for education from the two-tier demographic transition and education policy responses*.

Unni, J. (2016). Skill Gaps and Employability: Higher Education in India. *Journal of Development Policy and Practice*, *1*(1), 18–34. https://doi.org/10.1177/2455133315612310

Verick, S. S. (2018). *The Puzzles and Contradictions of the Indian Labour Market: What Will the Future of Work Look Like?* 37.

Walstab, A., & Lamb, S. (2008, June 13). *Participation in vocational education and training across Australia: A regional analysis*. National Centre for Vocational Education Research. https://www.ncver.edu.au/research-and-statistics/publications/all-publications/participation-in-vocational-education-and-training-across-australia-a-regional-analysis

Wheebox. (2020). India Skill Report 2020. Wheebox.

Wilson, R. A., & Briscoe, G. (n.d.). *The impact of human capital on economic growth: A review*. 64.

Appendix A

Choice of Course

A.1.Model summary

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	119.421[a]	.324	.432

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Model Fit

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	5.764	8	.674

Classification Table[a]

			Predicted		
			Course Type		Percentage Correct
	Observed		B.A. Prog	B.Voc	
Step 1	Course Type	B.A. Prog	47	13	78.3
		B.Voc	13	47	78.3
	Overall Percentage				78.3

a. The cut value is .500

A.2. Results from binary logistic regression model

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	Gender(1)	.148	.507	.085	1	.770	1.160	.429	3.132
	Domicile (1)	-1.881	.597	9.945	1	.002	.152	.047	.491
	Category			.289	3	.962			
	Category (1)	-19.145	27828.586	.000	1	.999	.000	.000	.
	Category (2)	-.180	.832	.047	1	.828	.835	.164	4.261
	Category (3)	-.378	.716	.279	1	.597	.685	.168	2.789
	What was your stream in class 12th?			12.622	2	.002			
	What was your stream in class 12th?(1)	3.298	.940	12.312	1	<.001	27.054	4.288	170.699
	What was your stream in class 12th?(2)	2.942	.927	10.072	1	.002	18.959	3.081	116.671
	Family Income			8.385	4	.078			
	Family Income(1)	1.418	1.006	1.985	1	.159	4.128	.574	29.670
	Family Income(2)	2.257	.891	6.411	1	.011	9.553	1.665	54.805
	Family Income(3)	1.628	.777	4.390	1	.036	5.094	1.111	23.358
	Family Income(4)	.596	.802	.553	1	.457	1.815	.377	8.737
	Age	.154	.212	.525	1	.469	1.166	.770	1.767
	Class 12th percentage	-.087	.037	5.563	1	.018	.916	.852	.985
	Vocational Subject in 12th (1)	.156	.751	.043	1	.836	1.169	.268	5.091
	Constant	-.099	5.905	.000	1	.987	.906		

a. Variable(s) entered on step 1: Gender, Domicile , Category , What was your stream in class 12th?, Family Income, Age, Class 12th percentage, Vocational Subject in 12th.

Appendix B

Employment Status

B.1. Model Summary

Model Fitting Information

Model	Model Fitting Criteria -2 Log Likelihood	Likelihood Ratio Tests Chi-Square	df	Sig.
Intercept Only	244.833			
Final	219.017	25.816	12	.011

Pseudo R-Square

Cox and Snell	.194
Nagelkerke	.218
McFadden	.098

Likelihood Ratio Tests

Effect	Model Fitting Criteria -2 Log Likelihood of Reduced Model	Likelihood Ratio Tests Chi-Square	df	Sig.
Intercept	219.017a	.000	0	.
Graduation%	220.684	1.667	2	.434
Domicile	225.623	6.606	2	.037
Category	222.987	3.971	6	.681
Course Type	228.724	9.707	2	.008

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

B.2. Results from Multinomial logistic regression

Parameter Estimates

Employment Status[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp (B)	
								Lower Bound	Upper Bound
Employed	Intercept	16.598	2.132	60.628	1	.000			
	Graduation%	.007	.024	.081	1	.776	1.007	.961	1.055
	[Domicile =0]	1.458	.592	6.064	1	.014	4.297	1.347	13.715
	[Domicile =1]	0[b]	.	.	0	.	.	.	.
	[Category =0]	-18.685	1.653	127.832	1	.000	7.678E-9	3.010E-10	1.959E-7
	[Category =1]	-18.427	1.724	114.295	1	.000	9.937E-9	3.389E-10	2.913E-7
	[Category =2]	-18.894	1.617	136.574	1	.000	6.228E-9	2.619E-10	1.481E-7
	[Category =3]	0[b]	.	.	0	.	.	.	.
	[Course Type =0]	1.183	.516	5.261	1	.022	3.263	1.188	8.965
	[Course Type =1]	0[b]	.	.	0	.	.	.	.
Unemployed	Intercept	18.657	1.340	193.870	1	.000			
	Graduation%	-.021	.020	1.106	1	.293	.979	.941	1.019
	[Domicile =0]	.685	.571	1.441	1	.230	1.984	.648	6.071
	[Domicile =1]	0[b]	.	.	0	.	.	.	.
	[Category =0]	-18.789	.776	586.476	1	.000	6.919E-9	1.512E-9	3.165E-8
	[Category =1]	-18.563	.941	388.829	1	.000	8.676E-9	1.371E-9	5.490E-8
	[Category =2]	-18.537	.000	.	1	.	8.904E-9	8.904E-9	8.904E-9
	[Category =3]	0[b]	.	.	0	.	.	.	.
	[Course Type =0]	1.537	.541	8.079	1	.004	4.651	1.612	13.424
	[Course Type =1]	0[b]	.	.	0	.	.	.	.

a. The reference category is: out of labour force.

b. This parameter is set to zero because it is redundant.

B.3. Marginal Effects

```
. margins, dydx( Graduation course Domicile_ SocialCategory )

Average marginal effects                        Number of obs     =        120
Model VCE    : OIM

dy/dx w.r.t. : Graduation course Domicile_ 1.SocialCategory 2.SocialCategory 3.SocialCategory
1._predict   : Pr(EmploymentStatus==out_of_labour_force), predict(pr outcome(0))
2._predict   : Pr(EmploymentStatus==Employed), predict(pr outcome(1))
3._predict   : Pr(EmploymentStatus==Unemployed), predict(pr outcome(2))
```

	Delta-method dy/dx	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Graduation						
_predict						
1	.0015245	.0034875	0.44	0.662	-.0053109	.0083599
2	.003667	.0045009	0.81	0.415	-.0051546	.0124886
3	-.0051915	.0036632	-1.42	0.156	-.0123713	.0019882
course						
_predict						
1	-.2563696	.0732197	-3.50	0.000	-.3998777	-.1128616
2	.0914093	.0880258	1.04	0.299	-.0811182	.2639367
3	.1649603	.0835573	1.97	0.048	.001191	.3287297
Domicile_						
_predict						
1	-.2346235	.0834221	-2.81	0.005	-.3981278	-.0711193
2	.2150469	.1075736	2.00	0.046	.0042066	.4258873
3	.0195766	.1005824	0.19	0.846	-.1775613	.2167144
0.SocialCategory	(base outcome)					
1.SocialCategory						
_predict						
1	.3799563	.1244973	3.05	0.002	.1359462	.6239665
2	-.2384106	.3634523	-0.66	0.512	-.9507639	.4739427
3	-.1415457	.3659223	-0.39	0.699	-.8587403	.5756489
2.SocialCategory						
_predict						
1	.3222824	.0907352	3.55	0.000	.1444448	.50012
2	-.1416945	.358168	-0.40	0.692	-.843691	.560302
3	-.1805879	.3560767	-0.51	0.612	-.8784855	.5173096
3.SocialCategory						
_predict						
1	.3782754	.0484262	7.81	0.000	.2833616	.4731891
2	-.1740836	.3479472	-0.50	0.617	-.8560476	.5078804
3	-.2041918	.347449	-0.59	0.557	-.8851793	.4767957

```
Note: dy/dx for factor levels is the discrete change from the base level.

.
```

Appendix C

Earnings

C.1. Results from Heckman's Two Step Selection Model

```
. heckman AnnualEarnings gender CourseType, select( Domicile FamilyIncome Siblings ) twostep

Heckman selection model -- two-step estimates   Number of obs     =       120
(regression model with sample selection)              Selected    =        43
                                                      Nonselected =        77

                                                Wald chi2(2)      =     12.47
                                                Prob > chi2       =    0.0020
```

AnnualEarnings	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
AnnualEarnings						
gender	-150623.4	60253.24	-2.50	0.012	-268717.6	-32529.25
CourseType	-158643	62141.35	-2.55	0.011	-280437.8	-36848.17
_cons	302359.1	157460.6	1.92	0.055	-6257.903	610976.2
select						
Domicile	-.7612659	.2886236	-2.64	0.008	-1.326958	-.1955739
FamilyIncome	-.104672	.1064097	-0.98	0.325	-.3132312	.1038872
Siblings	-.0999923	.1320611	-0.76	0.449	-.3588272	.1588426
_cons	.2224121	.395585	0.56	0.574	-.5529202	.9977445
/mills						
lambda	185936.4	155701.4	1.19	0.232	-119232.8	491105.6
rho	0.75149					
sigma	247423.51					

Appendix D

Questionnaire for B.Voc

Questionnaire forResearch

The following data is being collected for the research titled " Labour Market Outcomes: A Comparative Study of Vocational and General Education". The data is strictly meant for research purpose and shall be utilized at the discretion of the university.

* Required

1. Email *

2. Name

3. Age *

4. Father's Name

5. Mother's Name

6. Gender *

Mark only one oval.

- ◯ Female
- ◯ Male
- ◯ Transgender

7. Category *

Mark only one oval.

- General
- ST
- OBC
- ST

8. Domicile *

Mark only one oval.

- Delhi
- Other _____

9. What is your father's qualification?

Mark only one oval.

- Below Xth
- X (High School)
- XII(Intermediate)
- Graduate
- Post Graduate and Above

10. What is your mother's qualification?

- Below Xth
- X (High School)
- XII(Intermediate)
- Graduate
- Post Graduate and Above

11. What is your annual family income? *

Mark only one oval.

- Less than 1
- lakh 1-3 Lakhs
- 3-6 Lakhs
- 6-10 Lakhs
- Above 10 lakhs

12.How many siblings do you have?

- 1
- 2
- 3
- 4 and more

Educational Details

13. What was your stream in class 12th? *

Mark only one oval.

- Commerce
- Arts
- Science

14. Did you have a vocational subject in class 12th? *

Mark only one oval.

- YES
- NO

15. What is your total percentage in class 12^{th} ?

16. What is the name of the college you attended? *

Mark only one oval.

- Ramanujan College
- Kalindi College
- Jesus and Merry College

17. Which course did you study? *

Mark only one oval.

- B.Voc (Web Designing)
- B.Voc (Printing Technology)
- B.Voc (Software Development)
- B.Voc (Banking Operations)
- B.Voc (Retail Management and IT)
- B.Voc (Health Care Management)

18. What was your percentage or CGPA in B.Voc?

19. What was your medium of instruction? *

Mark only one oval.

- Hindi
- English

20. Did you receive any diploma or certification in vocational training/ education? *

Mark only one oval.

- YES
- NO

Employment Details

21. What is your present activity status*?

- Employed
- Looking for Job
- Not looking for Job
- Pursuing Higher Education

22. If pursuing higher education, then what is the name of the course and college you are currently enrolled in?

23. If Employed, then which sector are you working in? *

Mark only one oval.

- Formal Sector
- Informal Sector
- Not Applicable (NA)

24. Which kind of employment do you have? *

- Salaried Employed
- Self- Employed
- Working in family enterprice
- Others
- Not Applicable

25. Which sector are you working in? *

Mark only one oval.

- Agriculture and allied
- sector Manufacturing
- Sector Service Sector
- Not Applicable

26. What is your current job role in the organization you are working?

27. How long was your search period before getting the initial job after college? *

- 0-6 months
- 6-12 months
- 12- 18 months
- 18-24 months
- More than 24 months
- Not Applicable

28. How did you find your initial employment after college? *

- Campus Placement
- Online Advertisement
- References
- Others
- Not Applicable

29. What is your annual income/ salary? *

Other Details

30. What is your level of proficiency in English? *

Mark only one oval.

- High
- Medium
- Low

31. What are the general skills you have acquired during B.Voc? *

Check all that apply.

- [ ] Communication Skills
- [ ] Problem Solving Skills
- [ ] Logical Reasoning Skills
- [ ] Team Work
- [ ] Other: _____

32. What are the technical skills you have acquired during B.Voc ? *

Technical skills refers to your trade specific skills. Such as graphic designing, information and computer technology, coding for software development students.

_____

_____

_____

_____

_____

33. How did you get to know about B.Voc course in Delhi University? *

Mark only one oval.

- ◯ Online Advertisement
- ◯ Family
- ◯ Newspaper
- ◯ Other: _____

34. Why did you choose vocational education, not general education for your graduate degree? *

_____

_____

_____

_____

_____

35. Did the training you received during B.Voc helped you in the actual job afterward? *

Mark only one oval.

- Yes
- No
- Mayb
- e
- Not Applicable

36. What are the hurdles you faced during your job search or starting on your own after college?

37. Do you want to pursue M.Voc in the future?

Mark only one oval.

- Yes
- No
- Maybe

Questionnaire for B.A. Programme

The following data is being collected for the research titled " Labour Market Outcomes: A Comparative Study of Vocational and General Education". The data is strictly meant for research purpose and shall be utilized at the discretion of the university.

* Required

1. Email *

2. Name

3. Age

4. Father's Name

5. Mother's Name

6. Gender *

Mark only one oval.

- Female
- Male
- Transgender

7. Category *

Mark only one oval.

- Genera
- I SC
- ST
- OB
- C

8. Domicile *

Mark only one oval.

- ◯ Delhi
- ◯ Other: _____

9. What is your father's qualification?

Mark only one oval.

- ◯ Below Xth
- ◯ X (High School)
- ◯ XII (Intermediate)
- ◯ Graduate
- ◯ Post Graduate and Above

10. What is your mother’s qualification?

- ◯ Below Xth
- ◯ X (High School)
- ◯ XII(Intermediate)
- ◯ Graduate
- ◯ Post Graduate and Above

11. What is your annual family income? *

- Less than 1
- lakh 1-3 Lakhs
- 3-6 Lakhs
- 6-10 Lakhs
- Above 10 lakhs

12.How many siblings do you have?

- 1
- 2
- 3
- 4 and more

Educational Details

13.What was your stream in class 12th? *

Mark only one oval.

- Commerce
- Arts
- Science

14.Did you have a vocational subject in class 12th? *

Mark only one oval.

- Yes
- No

15.What was your total percentage of class 12th? *

16. What is the name of the college you attended? *

Mark only one oval.

- Ramanujan College
- Kalindi College
- Jesus and Merry College
- Other: _____

17. What was your percentage in B.A.? *

_____

18. What was your medium of instruction? *

Mark only one oval.

- Hindi
- English

19. Did you receive any diploma or certification in vocational training/ education? *

Mark only one oval.

- Yes
- No

Employment Details

20. What is your present activity status? *

Mark only one oval.

- Employed
- Looking for Job
- Not looking for Job
- Pursuing Higher Education

21. If pursuing higher education, then what is the name of the course and college you are currently enrolled in?

22. If Employed, then which sector are you working in? *

Mark only one oval.

- Formal Sector
- Informal Sector
- Not Applicable (NA)

23. Which kind of employment do you have? *

Mark only one oval.

- Salaried
- Employed Self-
- Employed
- Working in family enterprice

others

Not Applicable

24. Which sector are you working in? *

Mark only one oval.

- Agriculture and allied sector
- Manufacturing Sector
- Service Sector
- Not Applicable

25. What is your current job role in the organization you are working?

26. How long was your search period before getting the initial job after college? *

Mark only one oval.

- 0-6 months
- 6-12 months
- 12- 18 months
- 18-24 months
- More than 24 months
- Not Applicable

27. How did you find your initial employment after college? *

Mark only one oval.

- Campus Placement
- Online Advertisement
- References
- Others
- Not Applicable

28. What is your annual income/ salary? *

Other Details

29. What is your level of proficiency in English? *

Mark only one oval.

- High
- Medium
- Low

30. What are the general skills you have acquired during B.A? *

Check all that apply.

- [ ] Communication Skills
- [ ] Problem Solving Skills
- [ ] Logical Reasoning Skills
- [ ] Team Work
- [ ] Other: _____

31. Why did you choose general education, not vocational education for your graduate degree? *

_____

_____

_____

_____

32. Did the skills you acquired during B.A helped you in the actual job afterward? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Maybe
- ◯ Not Applicable

33. What are the hurdles you faced during your job search or starting on your own after college?

34. Do you want to pursue M.A in the future?

Mark only one oval.

- Yes
- No
- Maybe