

Skill Development and Innovation in Industrial Training Institutes, India: A Gender-Based Perspectives

Dr. Subhash Kumar

Assistant Professor, Govind Ballabh Pant Social Science Institute (GBPSSI) (A Constituent Institute of the University of Allahabad), Jhusi, Prayagraj, Uttar Pradesh.

Abstract

The vocational education institution like Industrial Training Institutes (ITIs) have been the nodal institution for skill development and innovation at the basic level of low socioeconomic background which constitutes majority population and workforce. In this research, efforts have been made to understand the views and opinions of male and female ITI students on skills and innovation. There is a need to diversify from Schumpeterian definition to other forms of innovations that are happening in society to solve various socio-economic problems like frugal innovation, Grass-root innovation, Incremental innovation, and very recently Jugaad Innovation. This study is based on a primary survey (260 samples) conducted among ITI students in Delhi and Uttar Pradesh. This study employs qualitative as well as quantitative methods. The finding indicates that female ITI students are having equal aspirations along with male students for entrepreneurs and also have some understanding of Innovation. Keywords: Skills, Innovation, Industrial Training Institutes, Gender

1. Introduction

Skill and knowledge are the two driving forces for the economic growth and social development of any country. Countries with a higher level of skills fare better to cope with the challenges of emerging economies in the present-day world (Datta, 2015). As India moves progressively towards becoming a 'knowledge economy' it becomes increasingly important that the country should focus on the advancement of skills and these skills have to be relevant to the emerging economic environment (FIICI, 2010). Skills, Innovation, and entrepreneurship are the driving force for economic growth and employment generation in developing countries like India.

This paper has emphasized understanding the dynamics of skills and innovation in changing the needs of socio-economic development. Is the Schumpeterian definition of innovation fit into the industry and society or there is a diversion in its understanding. Social and grass-root innovation could be the game-changer for developing countries like India where the local solution is needed for local, regional and national problems in the 21st century. The dynamics of skills and innovation have become very crucial in various aspects of socio-economic development. Skill development has various dimensions. The employability skills and prospects of students are one of the most important aspects of skill development. Indian youth have been very innovative in day-to-day life. Whether students know about innovation, how do they define it? Whether they have motivation for innovative ideas or not?

Conceptually and theoretically this paper tries to define Innovation from Schumpeter's point of view like innovation which is happening at the firm level. Therefore, focus have been to understand the dynamics of skills and innovation among students of Industrial Training Institutes in the present context of development challenges.

2. Research Problems

Skill development is one of the most important components for policymakers in India recently. There are two main reasons for emphasizing skill development: The first is demographic dividend and the second is the skills gap in various sectors of the economy. India constitutes the youngest population in the world. According to NPSD&E (2015), 62% of India's population is in the working-age group (15-59 years), and more than 54% of the total population is below 25 years of age. Its population pyramid is expected to "bulge" across the 15–59 year age groups over the next decades. The expected average population in India by 2020 would be around 29 years as against 40 years in the USA, 46 years in Europe, and 47 years in Japan (NHEM, 2013).

As per the 66th Round of NSS (2009-10), the vocationally trained in the labor force in the age group of 15-59 years were around 10 percent of the total labor force in that age group. The National Policy on Skill Development (NPSD) in February 2009 has set the target to skill 500 million persons by the year 2022 in all sectors. The existing annual training capacity in the country is 4.5 million. It needs to be more than doubled to achieve the target. Skills shortage remains one of the major constraints to the continued growth of the Indian economy. However, very little research has been conducted to identify which specific skills are in high demand and which skills are in short supplies.

India rank 60th position on the global innovation index (hereafter GII) out of 127 countries in 2017. Whereas it reached to 40th position out of 132 in the Global Innovation Index 2022 ranking released by World Intellectual Property Organization (WIPO) (Dutta et al, 2022). India has improved its ranking over the years. However, India has a large informal sector whose innovations go unrepresented in global rankings. There are innovative activities taking place at the grass-root level which need to be captured. This paper would emphasize to know the understanding of ITI students on Innovation. There are differences of opinions between the male and female on innovation. This has been discussed in the data analysis part.

Female labor force participation is a driver of economic growth and therefore, participation rates indicate the potential for a country to grow more rapidly. Women's labor force participation and access to decent work are important and necessary elements of an inclusive and sustainable development process (Verick, 2014). Female labor force participation has been 34.1% in 1999-00 to 27.2% in 2011-12. The ability of the female to participate in the workforce depends on access to education, types of skills acquisition, economic and social factors, and enabling environment. There are challenges to women's participation in skill development and innovation. This will provide women access to better jobs or start up a business, entrepreneurship, and take advantage of new labor market opportunities as a country grows.

3. Theoretical Framework and Literature Review

The concept of innovation and entrepreneurship is one of the most distinctive contributions of Schumpeter to economics. He argued that anyone seeking profits must innovate. He believed that innovation is an essential driver of competitiveness and economic dynamics. For Schumpeter (1912), innovation is a *“process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one”*. He divided the innovation process into four dimensions: invention, innovation, diffusion, and imitation (Jones, 1999). The concept of innovation and entrepreneurship is one of the most distinctive contributions of Schumpeter to economics. He argued that anyone seeking profits must innovate. Schumpeter believed that innovation is considered an essential driver of competitiveness and economic dynamics. He also believed that innovation is the center of economic change causing gales of "creative destruction", which a term is created by Schumpeter in his book 'Capitalism, Socialism Democracy.' The Oslo Manual, developed jointly by Eurostat and the Organization for Economic Co-operation and Development (OECD) proposes types of innovation as; product (good or services), process, marketing method and new organizational method in business practice, workplace organization or external relation (Bloch, 2007). There is a need to diversify from Schumpeterian definition (scientific innovation, R&D, firm-level innovation) to other forms of innovation like social, grass-root, frugal and Jugaad innovation (Radjou et al, 2012).

In present times, scholars have highlighted the importance of social innovation. Kuznets (1996) suggested that “social inventions are the new methods of inducing human beings to compete and cooperate in the social progress”. Mulgan (2006) describes it as "innovative activities and services that are motivated by the goal of meeting a social need (p. 146)." Similarly, Mumford (2002) elucidates social innovation as the generation and implementation of new ideas of people and their interaction within the social systems.

Grassroots innovation is another concept that has been widely discussed in the context of sustainable and inclusive development. Grassroots innovation is synonymous with *Jugaad* innovation in the Indian context. Radjou et al. (2012) stated *Jugaad* (a Hindi word meaning an improvised solution born from ingenuity and cleverness) is being led to dramatic growth and how Western companies can adopt *Jugaad* innovation to succeed in our hypercompetitive world. They outline the six principles of *Jugaad* innovation: 'Seek opportunity in adversity, do more with less, think and act flexibly, keep it simple, include the margin, and follow your heart'.

Gupta (2016) emphasized that Grassroot innovation is an important treatise from a social crusader of our time. He firmly believes that innovation is an intrinsic attribute of the human spirit everywhere, people at the grassroots are minds at the margin, who are not marginal minds. Gupta advocates those small or large organizations, corporations, educational institutions, and public and private supply chains managers to engage creative communities at the grass-root level. Kumar and Bhaduri (2014) argue that 'grassroots innovation and *Jugaad* Innovation are overwhelmingly carried out by individuals without being influenced much by any organizational routine and structure'. Bhaduri and Kumar (2009) identified the motivation for grassroots innovation. They found that grassroots innovators are having extrinsic and intrinsic motivation. Radjou et al (2017) further stated that *Jugaad* innovation is a global

phenomenon. It is the Indian art of improving frugal solutions which are adopted in the start-up and corporate sector.

Skill Development and Innovation are crucial for socio-economic development and economic growth. Bloom (1956) classified skills as cognitive skills, affective skills, and psychomotor skills. Skill has instrumental value for economic growth, productivity and promotes human capital formation. Skill development and innovation have a direct link with each other. Skill is basic learning, which comes with informal or formal vocational training and ideas which transform into an innovative product. The growing importance of education and skill development and its relation to innovation to enhance human capability has been widely recognized. Skill development and innovation have a direct link. Skill is the basic learning which comes with informal or formal vocational training and ideas which transform into an innovative product. However, in skill development and innovation, different actors, institutions, knowledge play an important role. In India, the recent initiative for innovation has been taken up by institutions like National Innovation Foundation (NIF), NITI Aayog, and India Innovation Index (III), etc. National policy on skill development and entrepreneurship (2015) has a special emphasis on social and grass-roots innovation.

This paper has taken a case study of Industrial Training Institutes (ITI) to understand the dynamics of skills development and innovation from a gender perspective. ITIs are vocational training institutes established to give craftsmen training in different engineering and non-engineering trades. The main objectives for ITI establishment are to provide the skilled labor force required by the industrial sectors. ITI has been successfully imparting skills and training to young people in India. ITI is also a vocational institution which is located at the juncture of secondary education level which offers certificate courses varying from six months to two years. The role of ITI has been very crucial for skill development since its beginning to date. There are various studies conducted that have found that ITI is playing a very significant role in supplying a skilled workforce for industrial needs but various issues have been reported. Two important studies are ILO (2003) and World Bank (2006). This study suggested that ITI should train the less educated young people with lower job expectations for the unorganized economy, which would have a significant impact on the workforce in the Indian market. The relative supply of workers with technical/vocational qualifications has declined since the 1980s. Although productivity has been increasing and education levels rising, India still needs to improve the quality of education and training: there are significant improvements needed on quantitative indicators, while little is known about qualitative indicators (World Bank, 2006).

It is time to recognize various aspects of innovation, its linkage, and its importance for socio-economic development. There is a need to bring debates of women and innovation for development. The skills and innovation can't be completed unless views from another half of the population are not incorporated. Therefore, this paper has attempted to understand the dynamics of skills and innovation for socio-economic development with the following objectives and research questions.

4. Objectives

1. To understand the importance of skills and innovation for socio-economic development.

2. To explore the gender-based perspective on skills and innovation in industrial training institutes in India.

5. Research Questions

1. What is the role of skills and innovation for sustainable development?
2. What are the understandings of ITI students on Innovation?
3. What are the aims and aspirations of female ITI students on skills and entrepreneurship?

6. Methodology

Methodologically this paper is exploratory and uses both quantitative and qualitative methods. The primary data were collected from industrial training institutes in Delhi and Uttar Pradesh in which boys and girls were 120 samples each of a total of 260 samples. The questionnaire had both open and close-ended questions. The different types of questions were asked like string variables (MCQ); dichotomous types (yes/no), Likert scale (1-5 range), and descriptive questions (open-ended). The study follows deliberate sampling for selecting a particular ITI then follows random sampling for questionnaire survey. This research has used various tools and techniques like excel sheets and SPSS for data analysis.

7. Finding and Discussion

This study also seeks to understand the theoretical relation between skill development and innovation. How this concept has the potential to resolve various socioeconomic challenges like poverty and unemployment and leads towards sustainable development in India. This will also enhance human capital formation and sustainably accelerate economic growth. After analysis of data, it has been found that ITI students (both male and female) have sighted that employment opportunity is the main reason for joining skill development courses in vocational education institutions like ITI. On the question of challenges before ITI, students responded that lack of job opportunity is the biggest challenge for the students.

Higher numbers of female students wish to become entrepreneurs as compared to male students. More females want to go far higher education than males. It can be stated that females are competing and wish to explore new emerging sectors like start-up and entrepreneurship with skill development. This is a very significant finding that females are willing to join the mainstream workforce and competing in a new emerging market. Although females are restricted to certain women-specific skill development courses new opportunities should be open for all as stated by a female respondent. This study reveals that both males and females have the potential to develop capabilities and are willing to avail opportunities in the business sector. Vocational education was also considered and attached stigma of low status and blue-collar workers.

The students have shown an ambiguous response on soft skills. It is also the case that soft skill courses like personality development and English speaking are not conducted on regular basis. That's why there is variation in the response. It is also expected to develop employable skills which are the combination of hard and soft skills. These skills come through adequate training which leads to the enhancement of capability and human capital together.

This question was asked to understand the thinking of ITI students on innovation. Whether they know; whether they do; whether they think it is important; whether innovation is positive or negative; and do they think Jugaad and innovation as the same or different think. Another category was created based on the responses. These are Innovation for knowledge; Innovation for making new things; Innovation for reuse of used products by structural change; No idea.

The finding on innovation can be categorized into three types. The results of student's understanding of innovation can be classified into three categories. In the first category, around 20 % of students expressed their understanding of innovation which supports Schumpeterian definitions. In the second category around 11.5 % of students defined innovation as reuse of used products or changes and modification of existing products. This definition is very much associated with incremental innovation and frugal innovation. In the third category, around 14.6% of students considered and recognized innovation as Jugaad Innovation. The Jugaad Innovation supports Radjou et al (2015) definition of innovation. The students also responded differently to Jugaad Innovation. Finding on Jugaad innovation can be classified further into three categories; Jugaad as a positive phenomenon, Jugaad as temporary, and Jugaad as a negative connotation. It was 53.4% (140/260) responded stated as "I don't know". Only 13 students have reported that they have done some kind of innovation in their careers. This is very significant to state that around 50% of students have some understanding of Innovation but only a few have implemented it in their real life. It is very significant to report that majority of male and female students stated that innovation is a permanent solution for any existing issue whereas Jugaad innovation is a temporary solution.

However, students are not able to transform their understanding of innovation into any innovative products or processes. This is the real challenges before students. Creativity and innovative work are missing among ITI students in both males and females. This is the real challenge for an institution like ITI to create enabling environment for skills and innovation for resolving various socioeconomic challenges at the local, regional and national levels.

NITI Aayog's India three-year action agenda 2017-20 looks at innovation as growth enabler factors. The creation of an effective innovation ecosystem in priority sectors should be the key objective of innovation. How skills and innovation could be the way for sustainable development. This is a long-term objective for an individual, community, society, and nation as a whole.

8. Conclusions and Recommendations

It can be concluded that female ITI students possess high aspirations for skill development and entrepreneurship along with their male counterparts. The study also concludes that female ITI students have restricted to some women-specific skills, but wish to explore new emerging fields. Skill development is having an influential impact on career and employment for women. Student's understanding of innovation varies from Schumpeterian definition to frugal, grass-root to Jugaad innovation. It can be concluded that ITI students possess a basic understanding of innovation. Students consider innovation activities as a positive development for economic growth and employment generation whereas Jugaad innovation is a temporary phenomenon.

From the findings, the following recommendations would be crucial for sustainable growth towards skills development and innovation in India. We need to train youth to identify comparative advantages available in their region. ITI is well organized and well-established vocational education institution. It should become the hub and nodal center for skill development courses. This should also be the place of experiment making a synthesis of local skills coming from the culture and national skills demanding from industrial sectors. ITI could be a juncture for bridging the requirements of both informal and formal sectors of the economy in meeting the demand and supply of a skilled workforce. The government plan and policies should not only promote big R&D, but rather emphasis should also be to recognize social, grass-roots, and frugal innovation and promote them at the national level.

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