



Contribution of the ICT Sector to National Income and Employment

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THROUGH VIRTUAL MODE**

Reasons why India as a Outsourcing Destination

A large pool of skilled and technically qualified people

Fairly cheaper cost approximately 3-4 times cheaper than the US

Economic reform measures in 1990s

Opening of IT parks across the country

Partial privatization of telecommunication

Development of Special Economic Zones that helped IT companies get tax benefits; a large number of resources readily available in the country, low operating costs, tax breaks and sops offered by the government

ICT contributes to Sustainable Development Goal SDG 8 2030

“To achieve sustainable and inclusive growth; full and productive employment and decent work for all women and men, including young people and persons with disabilities.”

Objective of this paper is to explore the contribution of ICT sector on national economy in terms of income and employment, and emerging challenges. Additionally, this paper highlights some important policy suggestions for improvement and future growth of the ICT sector in India.

Research Questions: Is faster growth of digital technologies i.e. ICT sector in past decades has led to its increased contribution to national GDP, export earnings, Foreign Direct Investment and employment? In spite of faster growth in ICT sector compared to non-ICT, does the ICT sector offers better quality jobs?

Background & Motivation

Facts and figures

The estimate of the size of ICTs ranges from 4.5 to 15.5 per cent of the world GDP.

The global estimates of employment in ICTs stood at 39 million in 2015, with computer services accounting for more than one-third (38 per cent) share. Its share in total employment has been increasing and accounted for 2 per cent.

The investment in ICTs has increased substantially in both developed and developing countries worldwide.

The value of global production of goods and services of ICT crossed USD 1 trillion and stands at USD 1.3 trillion in 2018.

The share of global production of ICT goods and services has gone up to 6.5 percent of the total global GDP, and the sector employs around 100 million people around the world.

While the export of ICT services grew by 40 percent between 2010 and 2015, amounting to USD 467 billion, the trade in ICT goods stood over USD 2 trillion in 2015.

India has emerged as the leading hub in the world for digital services in particular ICT sector accounting for approximately 55 percent share of the US\$ 190 billion global outsourcing business in 2017-18

India emerges as the fourth largest start-up hub in the world, and is expected to be home for over 30000 start-ups by 2020

Brief Review of Literature and Digital India Programme

The available literature argued that ICT sector contributes significantly in national income and employment. By use of ICTs, many non-tradable services have become tradable. Although, such evidences were much stronger in the developed countries in the past, however, in recent decades, even developing countries like India have experienced similar trends. (Dasgupta & Singh, 2005; Yousefi, 2011; Sharma & Sehgal, 2010; Mitra et al, 2011; Mehta, 2018; ICRIER, 2018)

ICT sector is providing relatively more productive or high-income jobs compared to other traditional sectors. However, some studies have highlighted poor working conditions and a few studies also referred to workers engaged in ITes/BPM segment as 'Cyber Collies' and 'Dummies' (Basan & Rani, 2004; Abraham, 2007; Mehta, 2012; Kumar, 2001; Chandrashekhar, 2000; Babu, 2004; Joseph & Abraham, 2005; Vijayabaskar et al. 2001; Basan & Rani, 2004; Joshi, 2010; Sarkar & Mehta 2010; Sarkar & Mehta 2016; Mehta & Singh, 2017)

These studies also reveal how ICT sector which is one of the fastest growing segments, have high potential for contributing to the economy. They explain how India's ICT sector has shifted from revenue composition to a more sophisticated and high-end service, the outsourcing activities called Business Process Management (BPM).

e-Kranti: National e-Governance Plan (NeGP) 2.0 with the vision of "Transforming e-Governance for Transforming Governance"- March, 2015

Digital India-July 2015, with a vision to transform India into a digitally empowered society and knowledge economy.

The Digital India programme is centred on three key vision areas:

- Digital Infrastructure as a Core Utility to Every Citizen
- Governance & Services on Demand
- Digital Empowerment of Citizens

The focus is to bring transformation to realise:
Indian Talent + Information Technology = India Tomorrow

Common Service Centres (CSC) 2.0 scheme in 2015 to expand the outreach of CSCs to all Gram Panchayats across the country. CSC 2.0 scheme would consolidate service delivery through a universal technology platform, thereby making e-services, particularly G2C services accessible to citizens anywhere in the country. Key Features of CSC 2.0 scheme are:

- A self-sustaining network of 2.5 lakh CSCs in Gram Panchayats
- Large bouquet of e-services through a single delivery platform
- Standardization of services and capacity building of stakeholders
- Localised Help Desk support
- Sustainability of Village Level Entrepreneurs (VLE) through maximum commission sharing
- Encouraging more women as VLEs

The **Modified Decent Work Framework** designed by the International Labour Organization (ILO) has been used in the paper. The ILO's primary goal has been to promote opportunities for women and men, to obtain decent and productive work, conditions of freedom, equality, security and human dignity.

The ILO has four strategic objectives for decent work (Ghai, 2003) with gender equality

- **Employment Generation:** an economy that generates opportunities for investment, entrepreneurship, skills development, job creation and sustainable livelihoods.
- **Guaranteeing Right at Work:** to obtain recognition and respect for the rights of workers. All workers particularly disadvantaged or poor workers, need representation, participation and laws that work for their interests.
- **Extending Social Protection:** to promote both inclusion and productivity by ensuring that women and men enjoy working conditions that are safe, allow adequate free time and rest, take into account family and social values, provide for adequate compensation in case of lost or reduced income and permit access to adequate health care.
- **Social Dialogue:** Involving strong and independent workers' and employers' organisations are central to increasing productivity, avoiding disputes at work and building cohesive societies.

Sources of DATA

GDP from Central Statistical Organisation (CSO)

Output, revenue and export earnings from Department of Electronics and Information Technology (DEITY) and National Association of Software and Services Companies (NASSCOM)

Employment data from NASSCOM and National Sample Survey Organisation (NSSO)

Other sources such as published reports, economic surveys, and publications of Ministry of Electronics and Information Technology (MEITY), NASSCOM, TRAI, journal articles, newspaper articles and other relevant material from the web

The analysis is mainly based on data of IT-BPM segment, which constitutes more than three-fourth of the sector's export earnings and 65 percent of the domestic sales.

Dimensions and variables

Dimensions	Variables
Opportunity for work	Gender, locations, age, education/skill, occupations, regional presence
Security of work	Employment status, nature of job (formal/informal; public/private), contract period
Fair working conditions	Social security benefits, paid leave, average wage/salary, working hours, annual leaves
Freedom of association	Union/association presence and membership

Definition of ICT Sector

The definition of ICT is adopted from **OECD International Standard Industrial Classification (ISIC) Rev. 4.0** released in 2015 which classified ICT sector into three broad categories viz. manufacturing, trade and services. The United Nations Statistics Division has also accepted the OECD definitions for the analysis of ICT sector for its member countries.

The National Industrial Classification (NIC) Codes, 2008 at the four-digit level has been used in this paper. The analysis is based on data on employment and unemployment collected by the National Sample Survey Organisation (NSSO), Government of India for the year, 2011–12, and latest data on employment collected by NSSO through Periodic Labour Force Survey (PLFS) for the year, 2017-18. In addition, the Labour Bureau Survey's (2015-16) data, National Sample Survey (2011-12) and other relevant secondary literature have also been consulted for the analysis. This paper uses principal workers (as 15+ years) for the purpose of analysis.

Sources, Methodology and Framework

ICT definition based on new classification ISIC rev.4 [OECD]

(1) ICT Manufacturing

- 2610 Manufacture of electronic components
- 2620 Manufacture of computers and peripheral equipment
- 2630 Manufacture of communication equipment
- 2640 Manufacture of consumer electronics
- 2680 Manufacture of magnetic and optical media

(2) ICT Trade

- 4651 Wholesale of computers, computer peripheral equipment and software
- 4652 Wholesale of electronic and telecommunications equipment and parts

(3) ICT Services

- 5820 Software publishing
- 61: Telecommunications
 - 6110 Wired telecommunications activities
 - 6120 Wireless telecommunications activities
 - 6130 Satellite telecommunications activities
 - 6190 Other telecommunications activities
- 62: Computer programming, consultancy and related activities
 - 6201 Computer programming activities
 - 6202 Computer consultancy and computer facilities management activities
 - 6209 Other information technology and computer service activities
- 631 Data processing, hosting and related activities; web portals
 - 6311 Data processing, hosting and related activities
 - 6312 Web portals
- 951 Repair of computers and communication equipment
 - 9511 Repair of computers and peripheral equipment
 - 9512 Repair of communication equipment

This summary of findings section is divided into two parts-

- Contribution of ICT sector to GDP, Export, Foreign Direct Investment and Employment
- Productive and Decent Employment in ICT sector across Opportunity for work, Security of work, Fair working conditions and Freedom of association

Contribution of ICT Sector to GDP, Export, Foreign Direct Investment and Employment

- The country continues to remain one of the fastest-growing economy in the world, despite a slight drop in its GDP growth in the recent years, from 7.2 percent in 2017-18 to 6.8 percent in 2018-19
- In terms of the Purchasing Power Parity (PPP) adjustments, India's GDP at current international dollar ranks third in the world, only behind China and USA.
- The ICT sector has emerged as one of the most dynamic sectors in India's economic growth and is responsible for global recognition of the country as a 'software and information technology' power
- Service sector dominates the Indian economy, by contributing over 54 percent to country's Gross Value Added in 2019. This dominance of the sector is attributed to the emergence of ICT services, and regarded as 'growth engine' of the sector
- Due to strong ICT services, India has moved up the global value chain while delivering several critical services to numerous clients globally. Indian companies have set up delivery centres across the world and are catering to various countries by providing them these services
- In particular, the development of the ICT sector has led to generation of direct and indirect employment for a large pool of educated and skilled manpower in India
- Ministry of Electronics and Information Technology, Government of India has also asserted that the employment potential and prospects of the ICT sector are robust and promising.

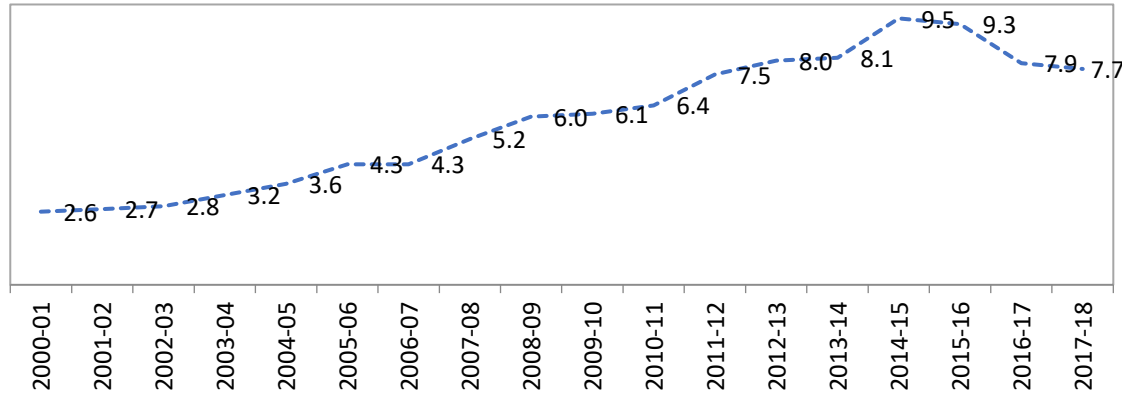
Productive and Decent Employment in ICT sector across Opportunity for work, Security of work, Fair working conditions and Freedom of association

Productive and Decent Employment in ICT sector has been analysed across **Opportunity for work, Security of work, Fair working conditions and Freedom of association**.

- **Opportunity of Work-** This dimension of decent work includes parameter of profile of workers such as gender and locations, age, social groups, education/skill levels, job type/occupations and regional presence of ICT sector.
- **Security of Work-** The security of work dimension of decent work includes parameters such as status of employment, formal and informal employment, and employment by type of enterprise, period of employment or contract period.
- **Fair Working Conditions-** The dimension of fair working conditions of decent work includes parameters such as paid leave, average earnings, working hours, annual leaves and social security benefits.
- **Freedom of Association-** The freedom of association dimension includes presence of union/association and its membership

Contribution of ICT Sector to GDP

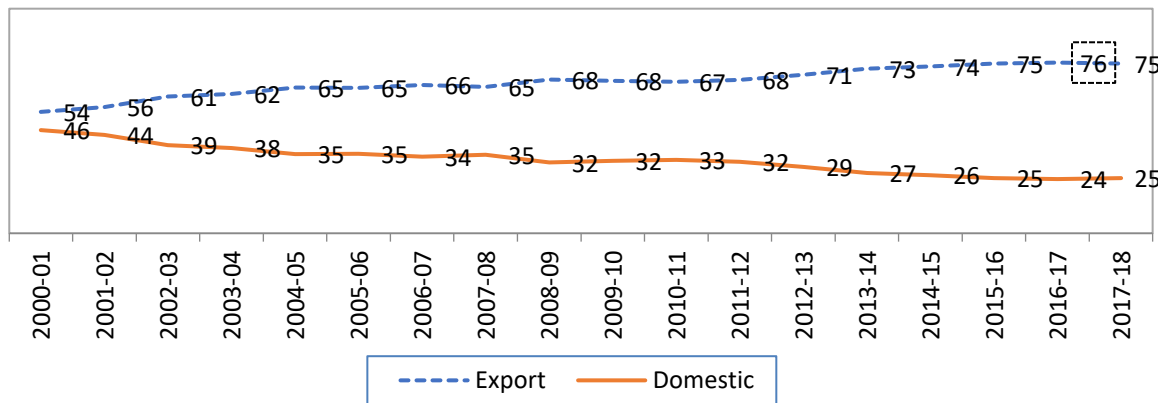
Figure 1: Contribution of ICT Sector to GDP (in percent)



Source: NASSCOM & MEITY, 2019

ICT sector caters to the overseas (export) as well as the domestic market. Exports contributed more than three-quarters (76 percent) of total revenue in 2017-18, leaving the share from domestic market at 24 percent.

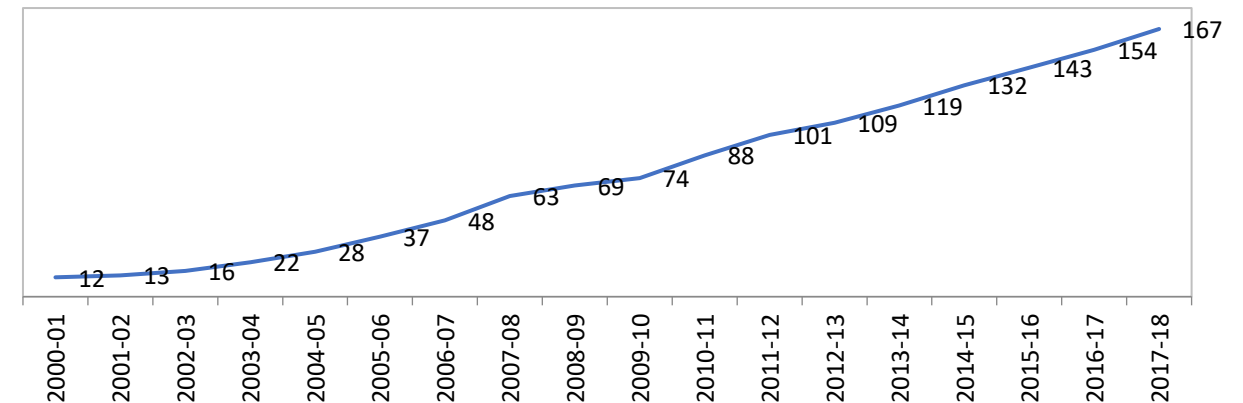
Figure 3: Distribution of Revenue by Export and Domestic (in percentage)



Source: NASSCOM & MEITY, 2019

The share of IT sector has declined by almost 2 percentage points to 7.9 in 2016-17 and 7.7 percent in 2017-18. This could possibly be due to global factors such as recession, particularly in the USA, and the depreciation of rupee value in terms of US dollar, resulting in a low value of export earnings.

Figure 2: Market Size of India's ICT Sector (in Billion US \$)



Source: NASSCOM & MEITY, 2019

India's IT-BPM sector is still growing at a double digit annual average growth rate, which is highest among all the sectors. The reasons for this growth rate includes comparative advantage it enjoys in the global IT sector in terms of the cost. With a large pool of workers having IT and language skills, it is an advantageous position to move towards producing high value-added goods and services.

Contribution of ICT Sector to Employment, Export, FDI

Figure 4: Export Revenue from ICT Sector (in Billion US\$)

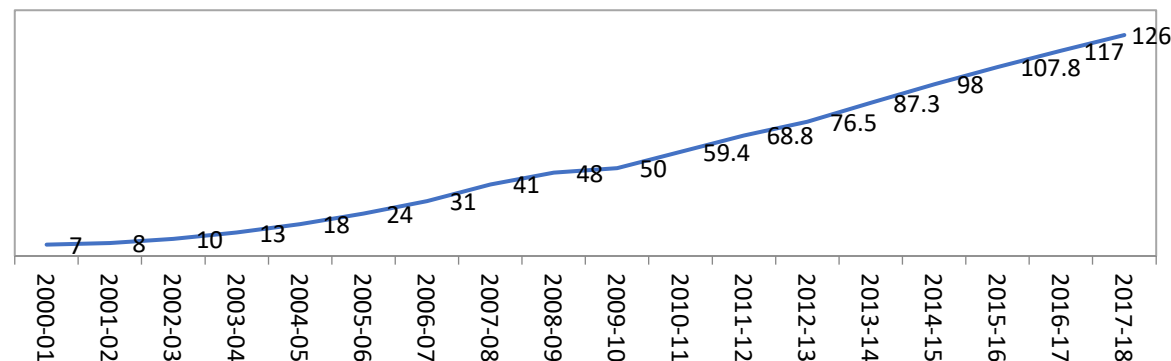


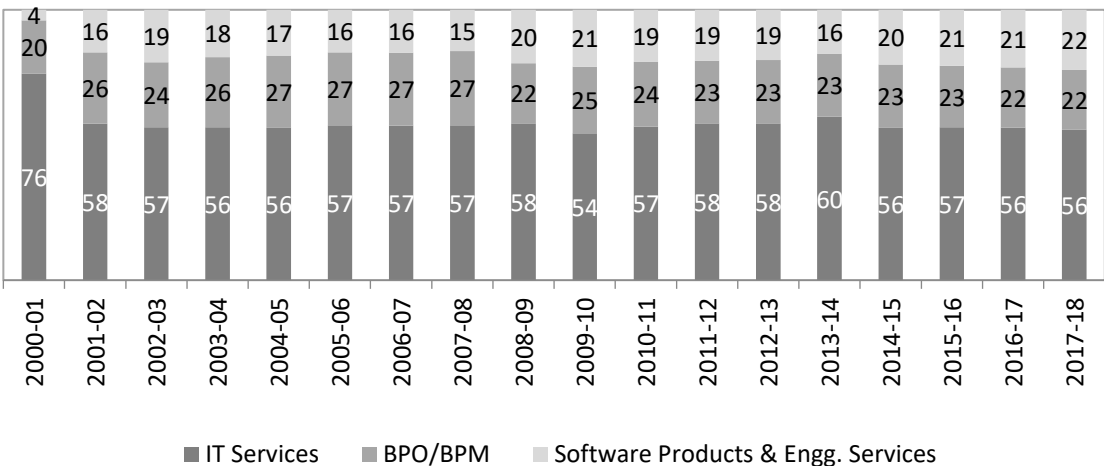
Figure 6: Employment in IT-BPM Sectors (in millions)



Contribution to FDI

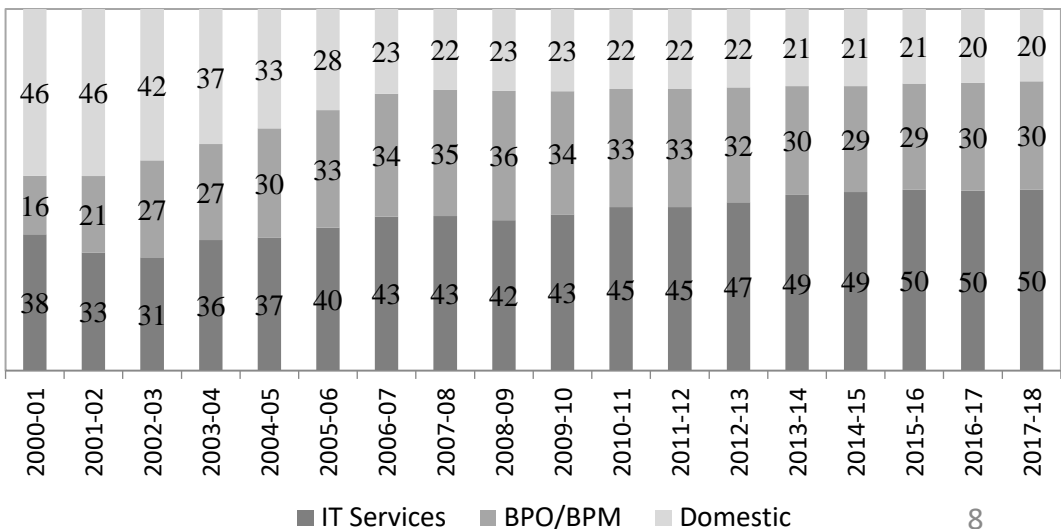
- The FDI inflows into the services sector (US\$ 28,264 million) accounted for more than 60 percent of the total FDI inflows (US\$ 44,366 million) into India.
- In 2018-19, the FDI from the ICT sector constituted 6,415 million US\$ in computer software and hardware and 2,668 million US\$ in telecom.
- The sector ranks 3rd in India in attracting FDI share and constitutes almost one-third (32.1 percent) of the total FDI inflow of services sector and one-fifth (20 percent) of the total FDI inflow in the country.

Figure 5: Export of IT-BPM Sector by Segments (in percentage)



Across the segments, majority of ICT workers are involved in IT-ITeS/BPM (84.7 percent) industry followed by manufacturing (9.2 percent) segment and trade (6.1 percent) (2017-18)

Figure 7: Segment wise Employment in ICT Sectors (in millions)



Productive and Decent Employment in ICT sector

Opportunity of Work- This dimension of decent work includes parameter of profile of workers such as gender and locations, age, social groups, education/skill levels, job type/occupations and regional presence of ICT sector.

Figure 8: Gender and Location-wise Employment (in %)

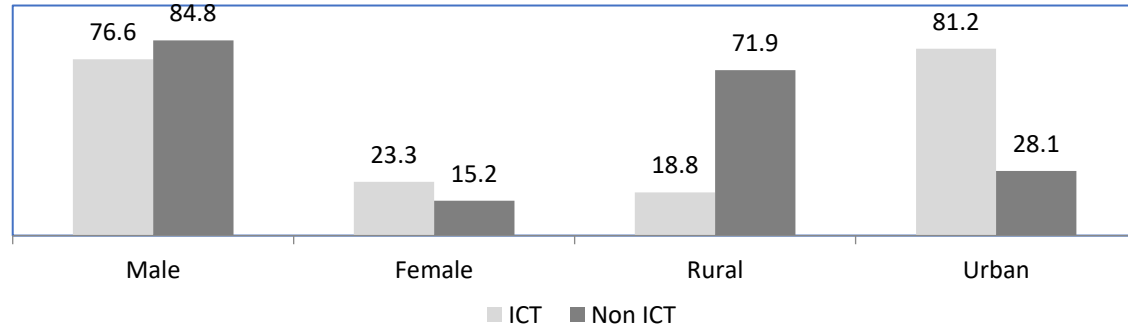


Figure 10: Social Group of ICT and Non-ICT Workers (in per cent)

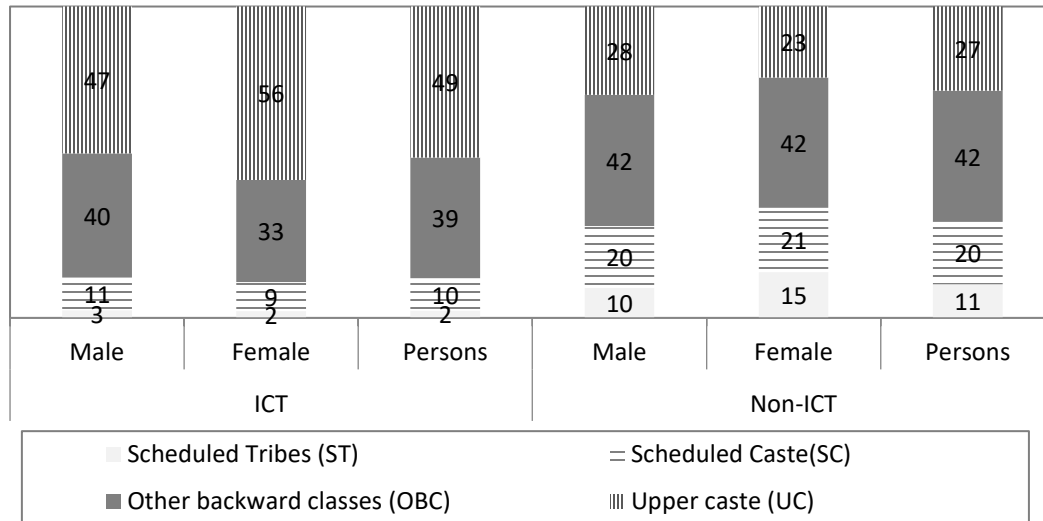


Figure 9: Age-Profile of ICT and Non-ICT workers (in percent)

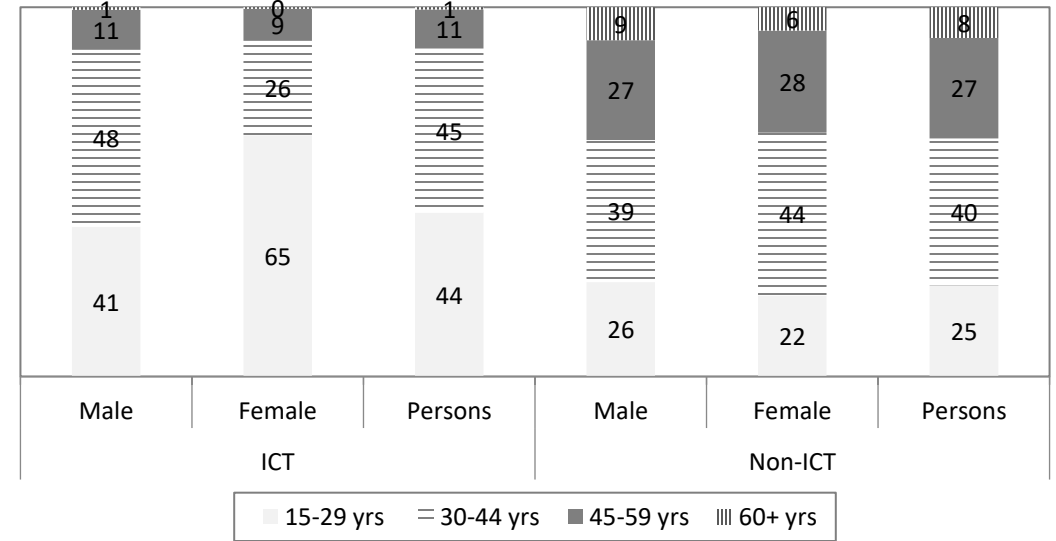
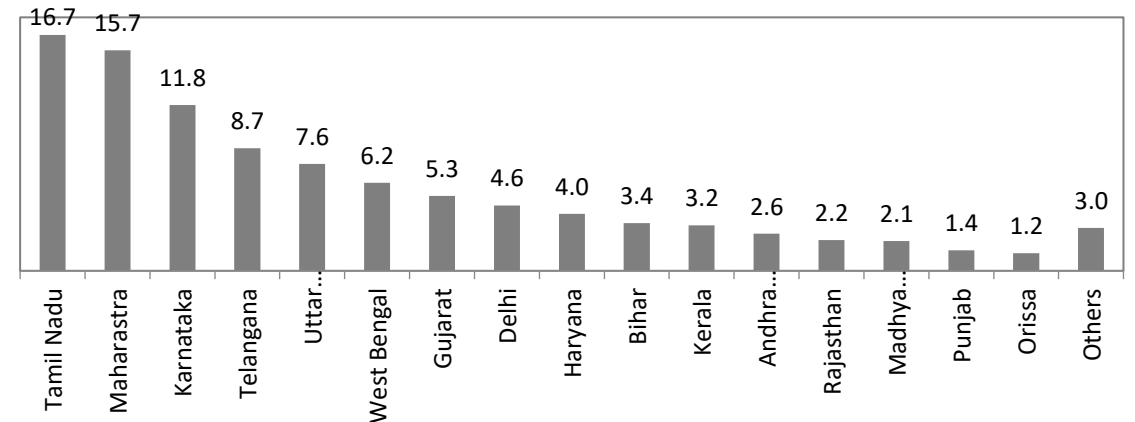


Figure 11: Location-wise Distribution of ICT Workers (in per cent)



Productive and Decent Employment in ICT sector

Figure 12: Education Levels of ICT and Non-ICT workers (in percent)

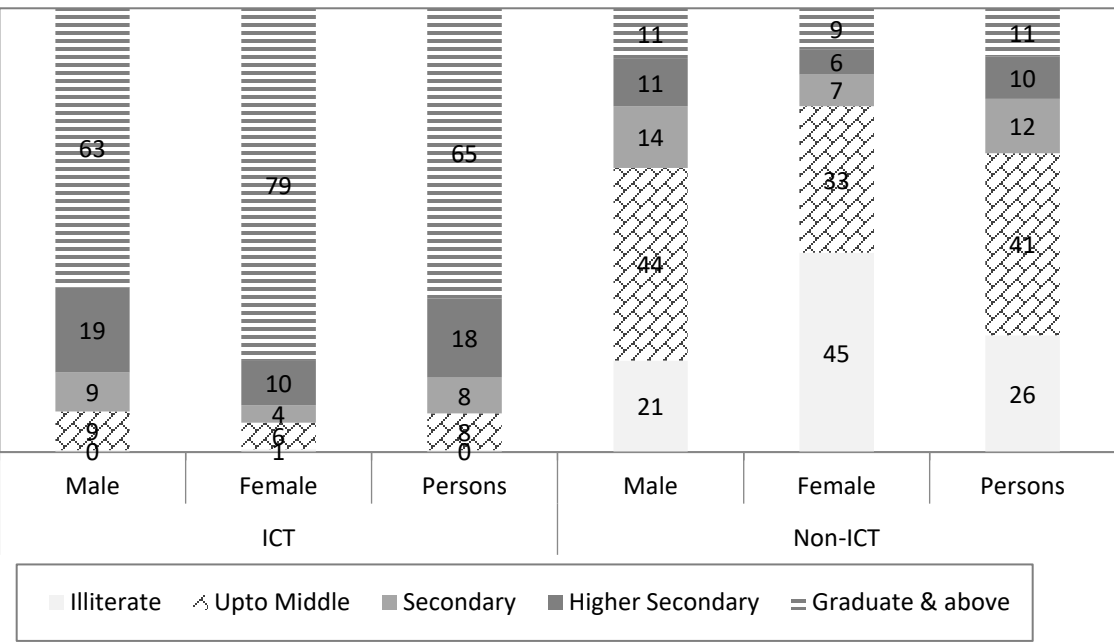


Figure 13: Educational Stream of ICT and Non-ICT Workers (in percent)

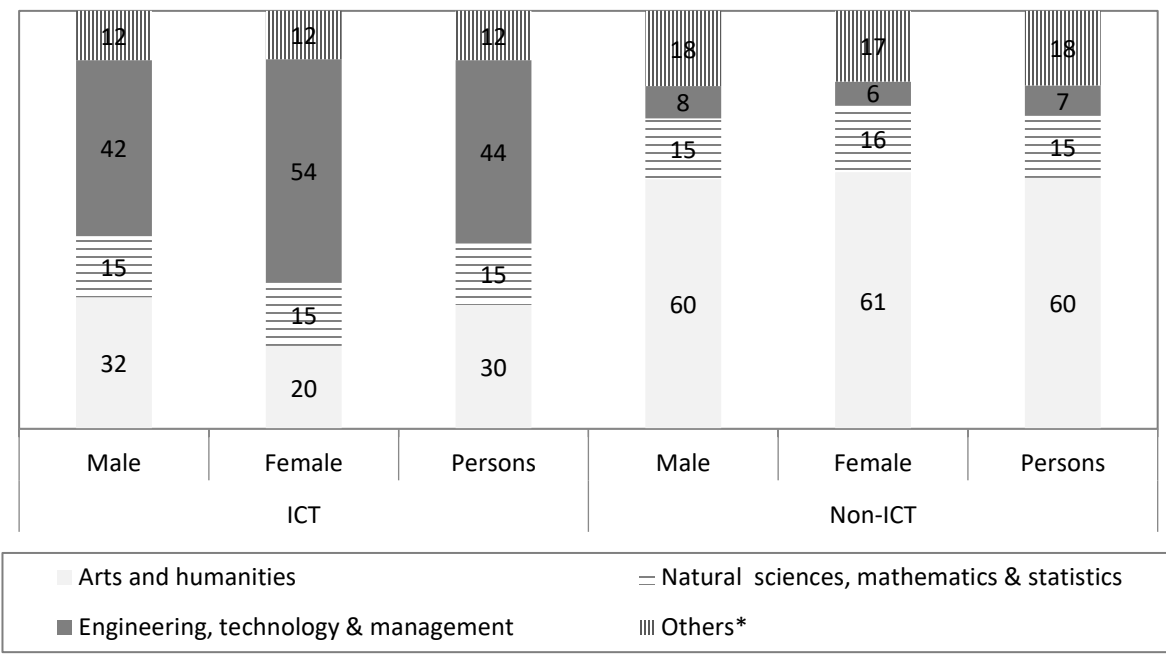


Figure 14: Job by Skill Type - ICT and Non-ICT Workers (in per cent)



Productive and Decent Employment in ICT sector

Security of Work- The security of work dimension of decent work includes parameters such as status of employment, formal and informal employment, and employment by type of enterprise, period of employment or contract period.

Figure 15: Employment Status of ICT and Non-ICT workers (in per cent)

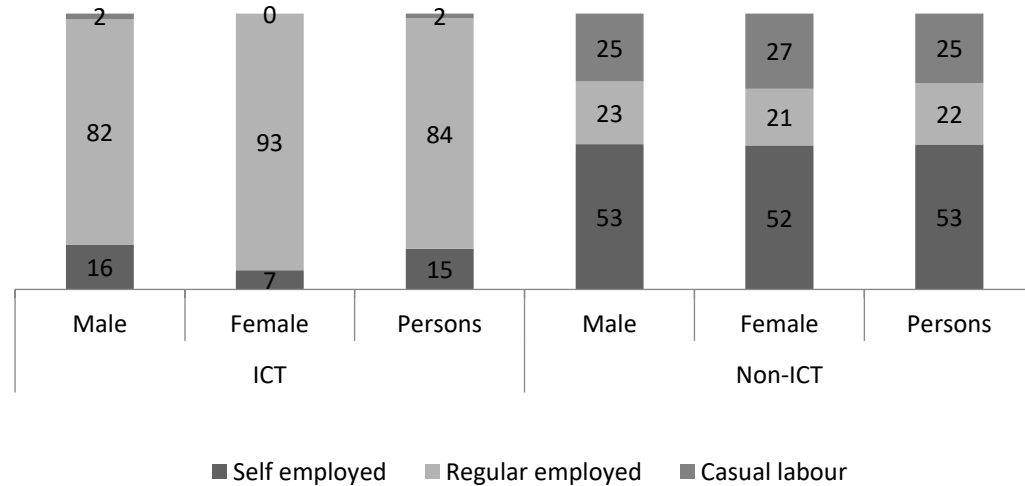


Figure 16: Workers by Enterprise Type and Male/Female (in percent)

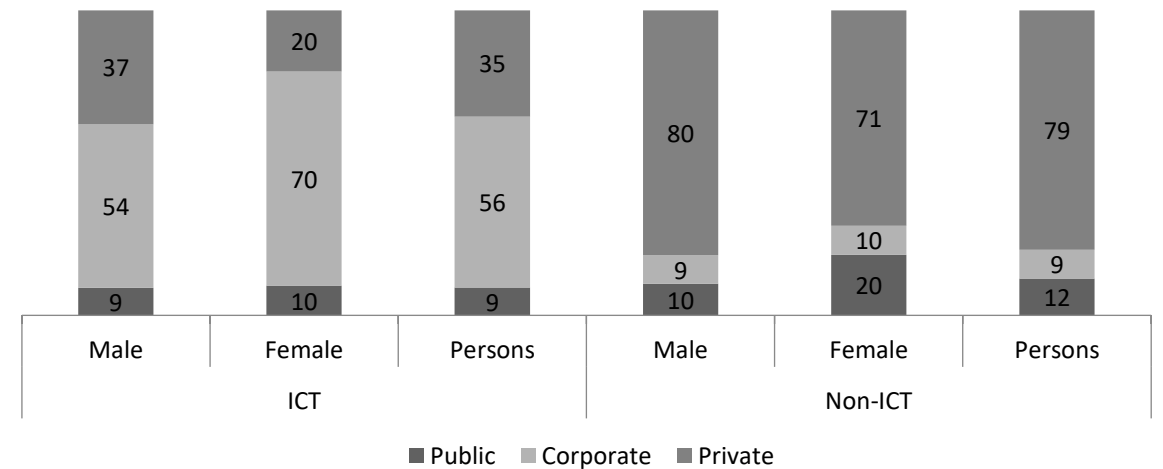
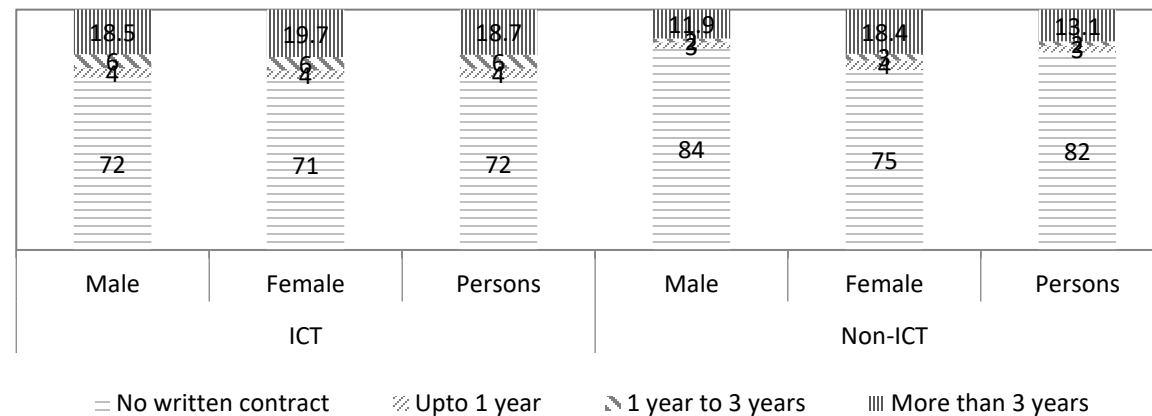


Figure 17: Period of Job Contract (Written Contract) of ICT and Non-ICT Workers (in per cent)



Productive and Decent Employment in ICT sector

Fair Working Conditions- The dimension of fair working conditions of decent work includes parameters such as paid leave, average earnings, working hours, annual leaves and social security benefits.

Figure 18: Eligible for Paid Leave - ICT and Non-ICT Workers (in per cent)

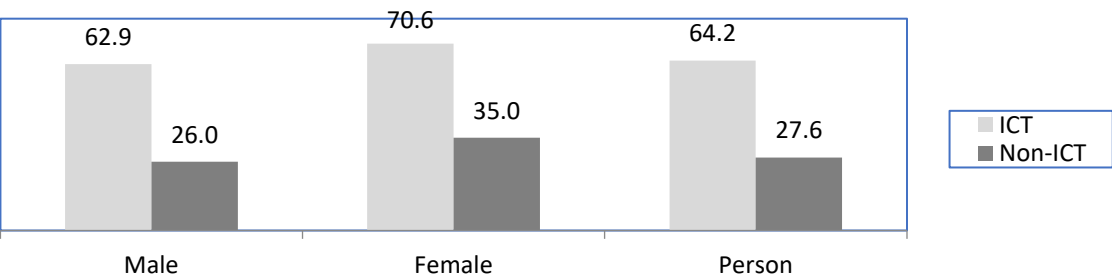


Figure 19: Average Daily Earning (in INR) in ICT and Non-ICT Service Workers

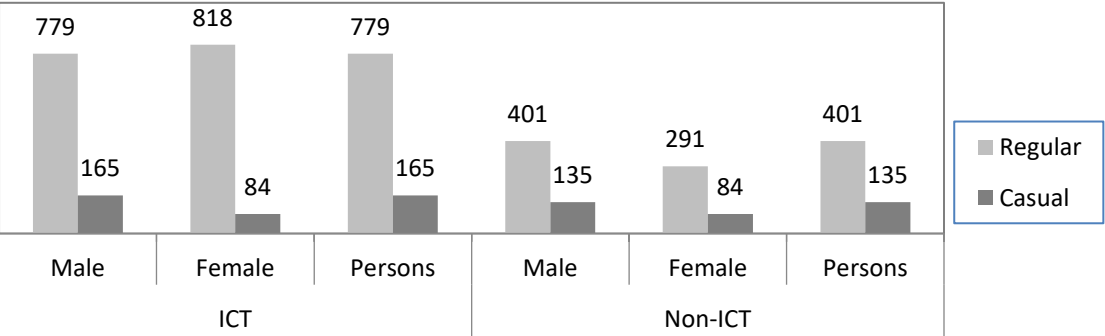
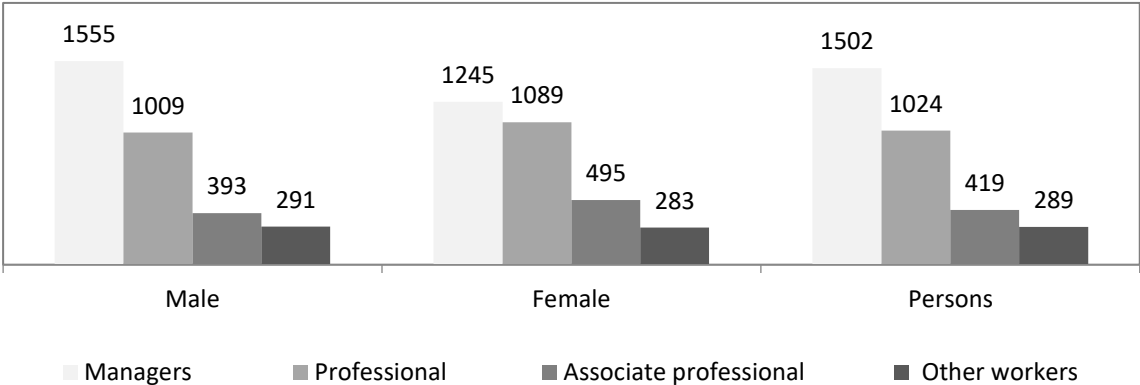


Table 1: Average Monthly Salary (in INR.) of ICT and Non-ICT workers

Average Income	ICT			Non-ICT		
	Male	Female	Persons	Male	Female	Persons
Upto 5000	2.7	1.5	2.6	15.4	18.0	16.0
5001-10000	20.6	19.1	20.4	46.0	48.3	46.6
10001-20000	28.2	23.1	27.5	23.1	21.2	22.6
20001-50000	33.6	33.3	33.5	13.1	10.0	12.3
50000+	14.9	23.0	16.0	2.4	2.4	2.4
Total	100	100	100	100	100	100

Figure 20: Average daily earning (in INR) of Regular IT-ITeS Workers across Occupation



Productive and Decent Employment in ICT sector

Figure 21: Average daily earning (in INR) of Regular Communications Workers across Occupation

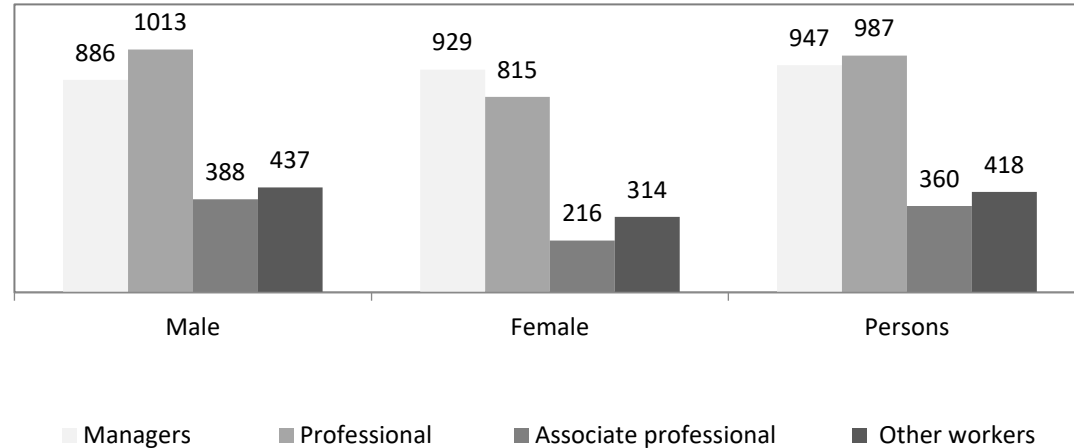


Figure 22: Social Security Benefits - ICT and Non-ICT Workers (in percent)

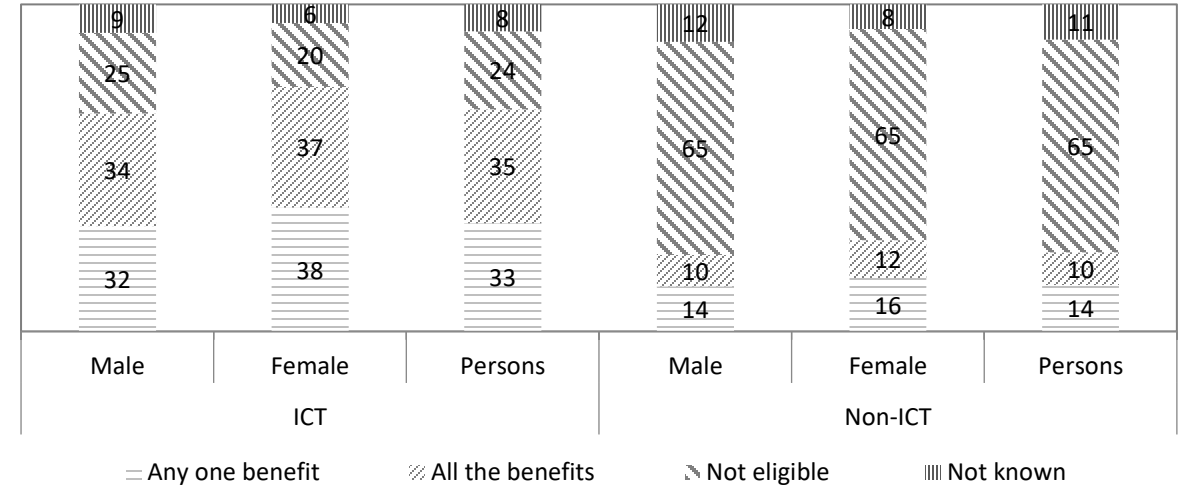


Table 4.2: Working Conditions (percent) in IT-ITeS Sector

	IT	ITeS	Total
Leave			
Annual Leave	23	26	25
Casual Leave	11	12	11
Average Working hours			
Night Shift Per day	9	9	9
Day Shift Per day	10	9	9
Availed entitled leave (per cent)			
	62.7	79.3	71.0

Source: IHD Survey and Mehta & Singh, 2017

As per the survey conducted by (Mehta & Singh, 2017), the human resource heads of the firms revealed that when deadlines approach nearer, there are instances of working for 16-18 hours a day and staying back in the office over the weekend. Survey results also confirm that women employees availed only 25 days of annual average leave and worked for about 9 hours per day in day and night shifts (Table 4.2). Around 30 percent of them were unable to avail their entitled leaves due to deadlines and work targets. This phenomenon is more pronounced in the IT segment than in the ITeS segment.

Productive and Decent Employment in ICT sector

Freedom of Association- The freedom of association dimension includes presence of union/association and its membership

Figure 23: Presence of a Union of ICT & non-ICT Workers (in per cent)

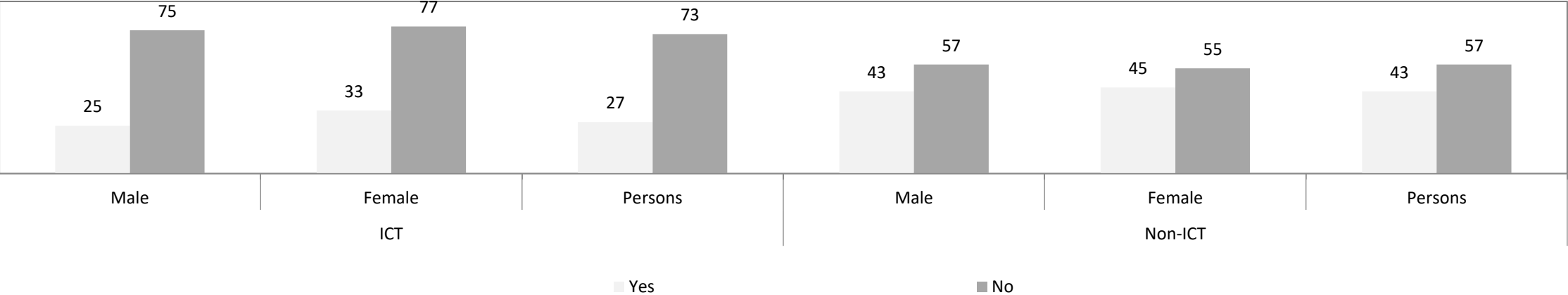
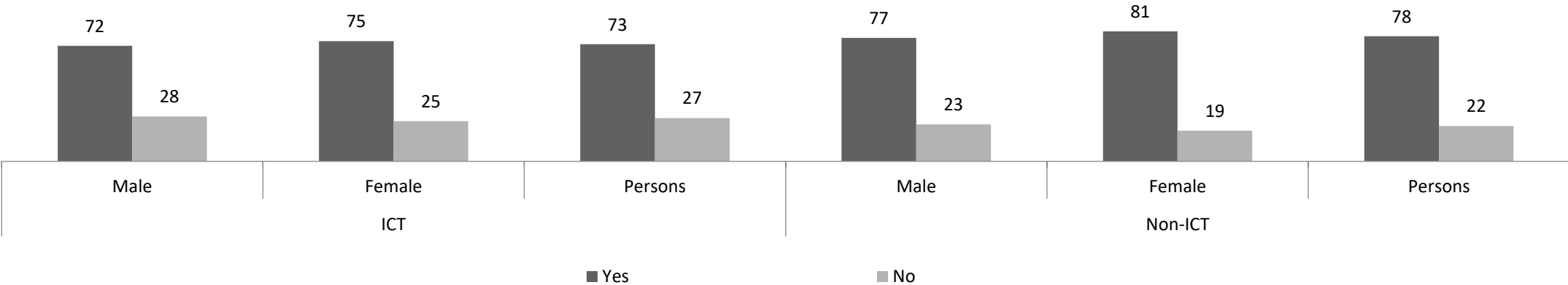


Figure 24: Proportion of ICT & non-ICT Workers as Members of Union/Association (in per cent)



Conclusion and Way Forward

ICT sector has led to the ***emergence of a 'new economy'*** in the country and has been the provider of better paid jobs. Yet, **employment growth in the sector has been close to double-digit level in the recent years**, which is highest among all the sectors of the economy. After considering the indirect employment this sector has generated, its **total employment contribution goes up to more than 10 million**.

Social security benefits are more in the ICT sector than in the non-ICT sector. However, social security benefits of informal sector workers, both in ICT and non-ICT, are almost negligible. On one hand, long-term job contract (more than three years) in the ICT sector is more in comparison to the non-ICT sector. However, contractual jobs up to three years (about 15 per cent) indicate low security. In the ICT sector, presence of associations/workers' forum in the activity has gained momentum over the years. Around 36 percent of the workers in the ICT and nearly 30 percent in the non-ICT sector reported to have presence of union/association in their activity.

ICT sector is **largely mega cities/metro located** and is a **provider of regular and formal sector employment**. Nonetheless, with the onset of gig economy and use of ICT, its **reach is unlimited**.

Low union/association presence and a substantial segment is **not covered under social security benefits**. These problems are more noticeable in the IBM segment than in the IT segment and these are intensified by the fact that the sector has experienced high and unprecedented growth of employment in the past decade.

Conditions of **employment for the 'low skilled' segment of the IBM sector are not very good**, provoking some researchers to term it **'Cyber Coolies'**.

There is therefore, an urgent need for new regulations on workers' safety and social security so the SDG 2030 agenda of decent and productive employment with high and inclusive growth can be achieved. Further, ICT sector justifies periodic reforms and strengthening to compete globally and harness the 21st Century opportunity to leapfrog towards the vision of Digital India, New Economy, USD 5 Trillion economy by 2025 and New India

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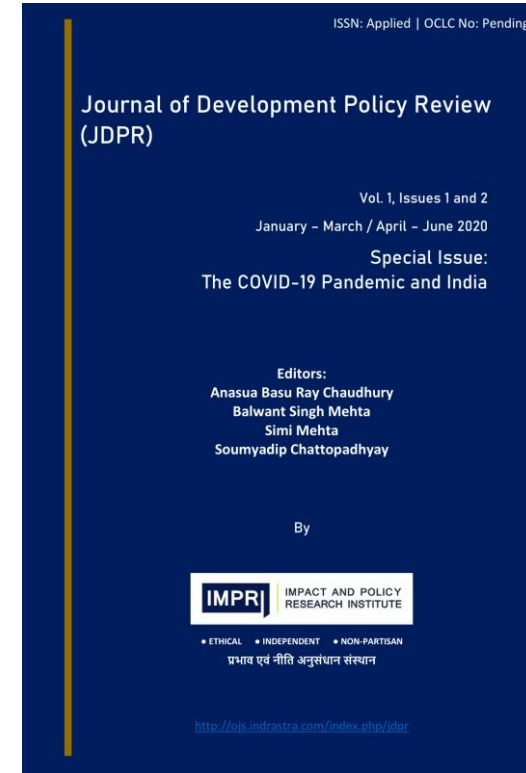


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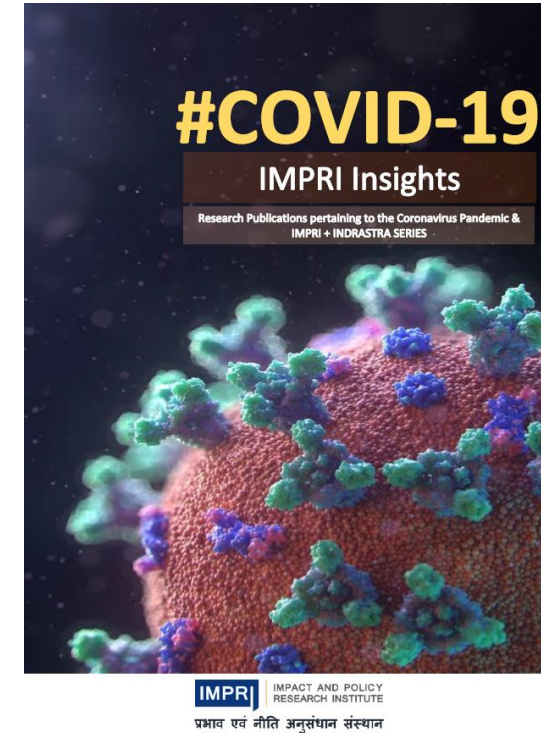
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