

Adoption of Digitization for Employment

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Abstract

Over the last year or so, there have been numerous expressions of concerns that Digitization, in particular robots and artificial intelligence will replace jobs and increase inequality. These concerns come from the research community, technologists and trade unions and are widely reported in the media. As a result, according to the latest Indian Survey, while 75% of Indian think that Digitization has a positive effect on the economy, 72% also think that Digitization replaces more jobs than it creates. As Digitization is a major factor of change in Indian societies, it is important that the Government takes the fears expressed seriously, even if they may be partly unfounded and rely more on perceptions than on evidence. On the contrary, for last five years Indian Government has consistently believed that Digitization is and will be an important source of economic growth and jobs creation as the two always come together. Our main objective is to manage the changes well and turn ongoing digital developments into real opportunities. We need to acknowledge that there is a need to accompany people through this transition - and as some tasks will be replaced, workers will have to work with machines, traditional occupations will be modified and new activities will emerge. Policies need to be put in place to address the adjustment costs that the digital transformation of the economy brings about on the employment.

Digitization enables higher productivity across the economy, which leads to lower prices, higher real incomes to higher standards of living. It also facilitates the creation of new and better products and services with fewer resources, reduces physically demanding efforts and exposure to dangerous activities in the workplace. Much of this is yet to come. For those embracing this revolution with technological know-how, the digital economy offers plenty of opportunities: for IT-savvy workers, for creative people, for traditional industries, for disadvantaged regions etc.

At the same time, Digitization, like previous technological advances, will also have repercussions on employment. Some jobs will be replaced, some jobs will be created, and many jobs will be transformed. For the moment, it is impossible to estimate the job replacement and job creation effects with any degree of certainty. Moreover, new jobs may not go to the same people as the old ones, and may not go to the same geographic areas. In any case, there will be a significant adaptation process. Key policies will mainly fall in three groups: active employment policies and policies ensuring that employee enjoy an adequate level of social protection

comparable to the one they now enjoy; fiscal policies, to ensure that redistribution reduces potential inequality gaps that may result from employment polarisation; education and training policies to ensure that the workforce has adequate skills to thrive in the digital economy. These skills include the ability to work within the digital environment, and also the capacity to go beyond the logical reasoning at which computers excel. It needs to be underlined that these policies are mostly within the competence of nation

1. Introduction

The debate on the impact of Digitization on economy and society has gained considerably in prominence over the last year or so. One of the reasons for this rise in importance are concerns about the unknown effects of digital transformation on job content, profiles and occupations, and potential inequalities. As a result, the main headline in this policy debate has changed from “technology X will create Y billion in revenues” to “technology X will replace Y millions of jobs”.

The social acceptance of digital technologies is a key factor for the success of the digital transformation. Addressing these concerns implies basically two elements. Firstly, a detailed analysis of how Digitization actually affects the employment, and the need to separate, where possible, fact from fiction. Such an analysis should cover both positive and negative aspects, and it should acknowledge where available data is too limited to come to definitive conclusions. However, it is difficult to make forecasts in a fast-developing environment.

2. The Impact of the Digital Transformation on the Employment

2.1 Digitization Transforms the Economy

Like previous waves of technological progress, Digitization, including artificial intelligence, big data, 3D printing, the Internet of Things, and advanced robotics brings enormous benefits to economy and society[1]. However, the scale, scope and speed of the digital transformation sets it apart from other technological developments. Digital technologies can be scaled up to any size and number. As a general purpose technology, digital affects all sectors of the economy, from agriculture to teaching. And anything which can be incorporated into software can be replicated millions of times at zero cost over night. As a result of all this, Digitization enables higher productivity across the economy, which leads to lower prices, higher real incomes, higher standards of living, as well as facilitating the creation of new and better products and services with fewer resources. For example, firms that adopt data-driven decision-making have been found to have a higher output and productivity[2].

The most recent estimates put the potential for additional data workers at 1.3 million new jobs in 2020 compared to 20175. Contrary to previous technological breakthroughs, Digitization also allows much higher degrees of personalisation, thus enabling products to correspond more closely to the needs of the consumers. With all this, one has to keep in mind that despite the

numerous effects Digitization has already had, the digital transformation is still only at its inception. Artificial intelligence has not yet been deployed widely. The number of 3D printers sold doubled and will continue growing at more than 20% a year. The arrival of the Internet of Things will allow Digitization to move away from the screen and into the real world on a large scale; and autonomous vehicles are expected to become common place on the roads in the next ten years or so.

Given these trends, Digitization is no longer a choice businesses can afford to ignore. It is now a necessity: any business missing out on the opportunities of digital will not be able to sustain the competitive pressure from more digitised rivals. Similarly digital disruption has a global reach. Therefore, a scenario where a country's transition to digital slows down and workers are protected does not exist. Digitization cannot be stopped but needs to be accompanied. Failing to embrace the digital paradigm will not protect workers; it would only expose them to the threat of global competition by making the companies where they are currently employed vulnerable. For those embracing this technological revolution, the digital economy offers plenty of opportunities:

- for technology start-ups which can dream up new products and services;
- for towns and regions across India which can attract re-shored automated production;
- for inactive people who can enter the market more easily thanks to collaborative economy platforms that remove some of the traditional entry barriers;
- for new sustainable business opportunities resulting from the better use of resources through collaborative economy platforms, including via new or alternative business models which foster inclusive jobs and growth (eg in social enterprises and the social economy);
- for small producers to take advantage of larger markets;
- for creative workers who can take advantage of the new possibilities to blend technology and art, etc.
- Policy makers need to prepare for the fact that Digitization, again like previous technological advances, will impact employment, since job profiles are changing and skills mismatches are occurring.

2.2 The Challenges of Digitization for Employment

- 1) Job replacement In the digital transformation of the economy, certain types of jobs may be replaced. A recent research [3] put the headline figure at 9% of jobs which can be automated. Three years ago, a debate on the future of jobs began after the publication of a study which estimated that 47% of jobs in the India were in danger [4]. However, this approach has since been criticised because it treats jobs as either automatable or non automatable. In reality, most jobs are somewhere in between: jobs consist of tasks that can be automated and others tasks that cannot. Very recent research now shows that robots have a negative impact on local employment[5], but macro economic data does not

reflect this. Recent research has found that after a recession, employment continues to recover at the same pace as it always does. Finally, on average middle-skill employment did not recover more slowly after recent recessions. Therefore, for the time being, technology has not caused jobless recoveries in developed countries [6]. There was indeed lower employment growth between 2011 and 2015 in the mid-paying jobs, but this was due to the heavy losses of mid-level employment in the construction industry in several countries. However, the crisis in this industry was not linked to Digitization.

Despite a high degree of uncertainty as to the size of job replacement, the impact of Digitization on job creation/job replacement will affect far fewer people than the transformation of current jobs (where some of the tasks will be automated and other tasks will be added). This is because Digitization affects virtually all jobs, from the farmer who digitally monitors soil humidity to the teacher accessing online educational resources.

2) Mid-level jobs may be most concerned

Increased efficiency due to ICT has reduced the number of routine jobs in the middle of the income distribution. In contrast, low-end jobs and in particular highly qualified jobs have increased in number. At the same time, wages have increased faster for higher-qualified jobs in some countries.

3) A need to adapt

It is important to recognize that the digital disruption of employment can be unsettling for people. Even if more jobs are being created than replaced (and this is impossible to prove), and as economic well-being greatly increases, there may be friction and fear due to uncertainty. This fear may be well-founded on a personal or regional level: the newly created jobs may not go to the same people as the old ones, and may not go to the same geographic areas. Another issue which could arise is the organisation of social security systems. Some forms of self-employment and a typical forms of employment supported by Digitization which are currently not covered by existing arrangements, may become more common. Also, people will be expected to change jobs more often than they do now. The burden will be shifted onto the worker's ability to adapt his or her skills. Whilst these new forms of employment may be suitable to many workers for personal and/or professional reasons, current national social welfare structures are not equipped to provide social protection and ensure collective bargaining for these workers. The use of digital technologies at work may also impact other areas such as work/life balance, privacy, health and safety etc.

2.3 The Benefits of Digitization for Employment

All these negative concerns need to be weighed against the positive impact of Digitization on employment:

First - digital transformation creates jobs for ICT specialists. There were nearly 8 million persons employed in 2015 as ICT specialists, representing 3.5% of total employment[6]. 40% of companies recruiting ICT specialists reported problems finding candidates with the required skills[7]. Vacancies for ICT specialists can represent up to one quarter of all online vacancies by region and more than half of ICT specialists work outside the ICT sector. Overall, within the ICT specialist profession, there is also a trend towards higher levels of qualification: from 2013 to 2015, high-level jobs such as systems analysts grew by more than 10% per year, while lower-level jobs such as help desk workers only grew by less than 5% per year in the India.

Second - Digitization reduces costs for setting up a business and finding employment. It also creates opportunities for small companies to innovate and grow faster (by making it easier to distribute products, market services and reach a global audience).

- This is of great importance for job creation opportunities by successful start-ups: the 7% of small startups that do grow, create a disproportionate amount of jobs – ranging from 21% of the total job creation by new companies.
- It also impacts traditional companies, which can reduce their marginal cost of production. This has a growth effect on supply and helps to push up demand for workers.
- It also enables the creation of markets which are entirely new, even outside the ICT domain. This can occur where demand is too small to support the overheads of regular shops but big enough to entice suppliers, particularly if no overheads need to be paid for. These markets account for a fair share of online trading. By increasing traders' access to new markets, this also has a positive impact on jobs.
- Many of these businesses will require people to complement their rational and rules-based digital hardware and software skills with emotional intelligence and social interaction skills. In some cases, the core requirement of these new jobs will be creativity, and human empathy in order to ensure that the digital equipment and services are fit for human or consumer use. eCommerce India estimates that 1.75 million jobs can be directly or indirectly attributed to the business-to-consumer e-commerce sector.

Third – digitization enables new ways of working. This trend has been driven by collaborative economy platforms. Technology could make jobs more accessible as they lower some of the physical and social barriers to entry, and facilitate flexible work for both men and women. Nevertheless there remain significant challenges because women are significantly less represented in Science, Technology, Engineering or Mathematics related academic and educational fields. Targeted efforts are needed to attract girls into these sectors which offer good job perspectives. Female participation is crucial and necessary if we are to increase the total number of ICT specialists.

Fourth – there is also an income effect – since the digital transformation leads to higher levels of income, this additional income will be spent on many kinds of products and services, whether digital or not. This additional demand will support additional employment. How much of this employment will be high-paid and low-paid will depend on which products and services will be particularly sought after. For example, in the context of the rapidly ageing population in the developed world, one of the sectors likely to benefit most from this development is the care sector. One million new healthcare jobs are projected by 2020 and an additional 7 million job openings are expected due to replacement needs[8].

2.4 Conclusion: the Impact of Digitization on the Employment in a nutshell

Digitization creates economic growth. As this is a new evolving trend, there are no reliable forecasts yet on the net employment effect. However, the total gross job creation will partly be offset by jobs displacement. For example, online shopping partly replaces physical shopping, and therefore some jobs in physical retailing will disappear. Similarly, ICT specialists will manage machines which have replaced workers on specific and probably repetitive tasks. Finally, technology may also affect the quality of existing and new jobs. Automation could make certain jobs more attractive and improve the well-being of workers. Rather than expose humans to health and environmental risks, robots could undertake the least attractive, most physical, and unsafe jobs

3. References

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